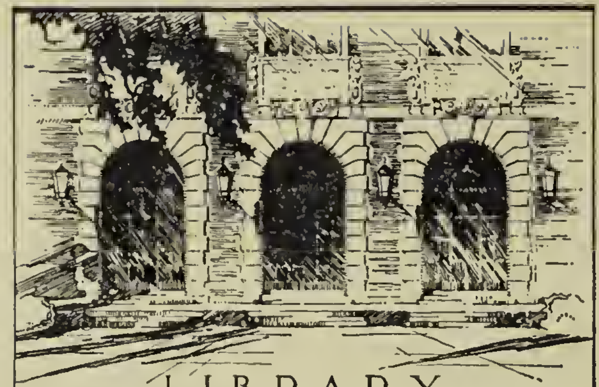

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GEORGE H. SIMMONS, M.D., LL.D.

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INDUSTRIAL MEDICINE AND SURGERY: THE NEW SPECIALTY *

HARRY E. MOCK, M.D.
CHICAGO

Preventive medicine and preventive surgery within the last five years have become a very active factor in the industrial life of our country. Our modern industrial concerns have employed experts to study their expensive, complicated machines, in order to preserve their mechanism and obtain their maximum of efficiency. The human machine alone was neglected.

Gradually, due to both external and internal causes, a new, humanizing influence pervaded a few of these industries, and they began to consider the welfare or betterment of the employees from various angles. It was soon apparent that this movement reacted to the welfare of the employers. The realization of this mutual benefit to employee and employer marked the birth of an entirely new economic point of view, which is rapidly extending to every branch of our American industrial life.

The conservation of life by the prevention of disease and accidents among employees, the basic principle underlying all forms of industrial medicine, is the greatest influence for socialization in our country at present. And to the company surgeon of today and of the future is given the opportunity of extending medical science into this vast, unlimited field of endeavor. In the past, and in many industries at the present time, the care of those meeting with accidents has been the chief duty of the company surgeon, with very little attention paid to the protection, the health and the working ability of the individual employee. Likewise, concerns having company surgeons often fail to realize the great economic advantage at their disposal for increasing efficiency by utilizing the expert knowledge of their physicians along these lines.

Due to this ignorance on the part of so many industries and the lack of vision and enthusiasm on the part of many company surgeons, this field of medicine has been considered very narrow, and the physicians engaged therein have been insufficiently paid, resulting in a restricted growth, and have been viewed with more or less contempt by the majority of the profession. But when a company surgeon realizes that for greater efficiency an employer has the right to demand a healthful, physically and mentally normal working force; and that the employee would be, and is, justified in demanding a healthful, sanitary working place, uncontaminated by diseased fellow employees; and that business principles, as well as a spirit of humanitarianism, demands all his powers for the conservation of the life and limb of the employee; and when he attains the vision of all that this means, and brings to his work an undying enthusiasm and a knowledge sufficient to master every detail, then he becomes of unlimited value to the concern for which he works, and is remunerated accordingly. And, most gratifying to him personally, he is recognized as an equal by his fellow physicians and as an advanced student in the science of medicine.

It is apparent that the company surgeon of the future must be a very broadly trained physician. Some of the largest industries can afford to have several doctors on their staff and thus can divide the medical work into its various specialties; but even here the chief of staff must be trained thoroughly in all branches of this work. In the smaller corporations, however, the company surgeon must be a surgeon, an internist, a diagnostician, a sanitation expert and an all-round medical utility man. As he follows the growing ramifications of his work and realizes its influence on the individual employee, its influence on the industrial concern and finally its influence on the community and society in general, and sees the state being forced to assume the responsibilities that his work is making so apparent, then the company surgeon gradually awakens to the fact that he has become a sociologist as well as a physician. Armed with this broader point of view, he becomes not only a doctor for the ills of the individual, but a physician to the ills of society.

Industrial medicine and surgery is rendering a wonderful service to the great mass of workers, but it is also rendering a greater service to those physicians engaged in the work. It is molding them into specialists in the great medicosociological problems which are confronting this country more and more.

The size of the medical staff, the size and location of the doctor's office or company hospital, and the amount of work necessary to conduct a comprehensive plan of medical and surgical supervision of the health of employees must depend chiefly on the size, number of employees and the type of work of each industry. These are details which each company surgeon must work out, and which will certainly be changed with the growth of his work.

The industry with which the writer is connected has gradually extended its medical staff and equipment from a four-room office with one doctor and two nurses in 1909, to an eighteen-room office with seven doctors, twelve nurses and two dentists in 1916. The doctors spend three and one-half hours per day at this work, so rotating that there is always some one in charge of the company office. While many of our best company surgeons devote all of their time to the industries employing them, yet, as a rule, the various corporations will find that they can secure better-trained and broader physicians if they require them to give only a part of their time to this work. The situation is quite analogous to that found in our leading medical schools. The heads of departments and those associated with them give a portion of each day to teaching and clinical work; the rest of their time is given to private practice, study and investigation. Because of their clinical experience and the broadening influence of their private and public work, these men become the leaders and scholars in our profession and their influence in the community at large is much greater than it would be if they devoted their entire time, on a salary, to teaching in a medical school. Thus with a company surgeon, the greater name and prestige he can build up for himself in his community, the greater his value to the industry with which he is connected and the greater his influence over the employees and their confidence in him.

---

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* This article and the one by Dr. Clark which follows are parts of a symposium on Industrial Medicine. The remaining articles by Drs. Lemon and Smith and the discussion will appear in THE JOURNAL, January 13.

THE WORK OF THE MEDICAL STAFF: PREVENTIVE SURGERY

Those engaged in emergency accident work for any industry are naturally trained, by the very nature of the work, to view every case from the economic standpoint of both the employee and employer. An accident occurs, and at once we plan the subsequent handling of the case with these four fundamental principles in mind: (1) how to prevent a recurrence of the accident; (2) how to aid recovery the quickest; (3) how to prevent permanent disability, and (4) how to avoid a fatal termination of the case.

The welfare of the patient, the protection of the other employees, and the interests of the employer all demand the careful consideration of these principles.

The evolving of the simplest and yet most adequate methods of enforcing these four principles is the foundation of preventive surgery. And just as prevention of disease will eliminate some surgery, so the prevention of accidents will eliminate vastly more, and the best surgeon of the future, whether engaged in industrial work or otherwise, will be the surgeon who is very conservative in operating, but very radical in the prevention of all causes that make surgery necessary.

The safety engineers with their safety appliances and the educational propaganda of all safety first movements have been instrumental in preventing a great many accidents, especially from machinery. But the alert emergency surgeon, by carefully analyzing the cause of every injury that comes to him for treatment, and then by cooperating with the safety engineer, making certain that that cause has been removed, becomes one of the greatest factors in all accident prevention. Very often the cause for the accident lies within the employee himself, in his physical or mental condition at the time it occurred. It is therefore the paramount duty of the surgeon to carefully analyze the condition of that employee in his search for the cause. This analysis must include a thorough physical examination and mental tests, and an examination of both the working and home conditions of that employee. This last duty can be performed by a competent trained nurse, who is the greatest adjunct to the company surgeon in all his work. The removal of the cause, whatever it may be, or wherever found, in every case of accidental injury that comes before him, is the duty of the preventive surgeon, and is the most logical and most economic form of service that he can render to the employee or employer. And the time is not far distant when municipalities, the state, and the federal governments will awaken to the great waste of life and limb, the result of accidents, not only in industries, but in the homes, in the streets and in every branch of our daily walks of life. And we as surgeons will be required to do our share in analyzing every case of injury brought to the office or the hospital and report the same to the proper authorities, so that the cause for that accident can be removed, just as we are now compelled to report on contagious diseases. And we as surgeons will look backward with saddened hearts on these dark ages when our sole service to society was merely the repair of the frightful injury to the individual, or simply pronouncing him dead, without a single thought given to preventing some other unfortunate from suffering a similar accident.

The immediate care (and by immediate I mean within a very few minutes) of every one injured, no matter how slightly, is another most important duty of preventive surgery. The first aid movement, which is sweeping the country under the leadership of Dr. Joseph Bloodgood, is one of the best signs that the surgeons are alive to prevention. But every first aid man or woman must be taught that he is only for first aid, and every first aid kit must contain supplies only for first aid. There should be a bottle of tincture of iodin (5 per cent. is sufficient) and a bottle of applicators; a bunch of sterile dressings put up singly in envelopes or paper; a few large pads, sterilized, and to be used in case of hemorrhage or large wounds; bandages and a constrictor. The constrictor I advocate is a stout muslin bandage rather than a rubber tourniquet, as it is safer in the hands of a layman. You may add to this a bottle of aromatic spirits of ammonia with directions as to its use, but no other medicines are indicated. The industries must be taught that the safest and cheapest first aid for them to employ is a doctor in a company office located at the plant, where he can render immediate surgical care to every one injured, and at the same time can supervise the health of the employees. In the outlying portions of a large plant or in the dangerous departments the employees may injure themselves in such a way that first aid is necessary until they can reach the doctor's office. In such departments in one industry I have placed first aid supplies orderly arranged in substantial looking boxes. But on these boxes, at the head of the directions for the use of the supplies, I have this warning:

> READ CAREFULLY
>
> This is a FIRST AID OUTFIT ONLY. It is not to be used for subsequent dressings. The purpose of the *First Aid Man* is not to replace the *Doctor*.
>
> Send every injured employee to the Doctor's office AT ONCE NO MATTER HOW SLIGHT THE INJURY. Use these supplies for temporary dressings until the proper medical care can be obtained.

Two years ago I obtained statistics from a number of industries and accident insurance companies and found that it was the minor accidents, such as scratches, pin pricks, nail wounds, splinters and small cuts that caused the largest amount of disability, and this disability was usually due to infection. Infection in major injuries was comparatively rare. These facts are due to the difficulty of preventing these minor accidents, and because an employee as a rule does not seek medical aid for a slight scratch or cut until it becomes infected, whereas a serious injury forces him under the care of a surgeon at once. To combat these minor accidents we have resorted to an educational propaganda against them, the removal of every possible cause for them, and the management insists and enforces the rule that every injured employee must report to the doctor at once, no matter how slight the injury. But the best preventive surgery measure thus far adopted is the immediate use of tincture of iodin on all wounds that break the skin. Every department is supplied with from one to ten bottles of tincture of iodin and applicators (cotton rolled on the end of a toothpick) held in containers made as attractive as possible and placed in conspicuous places. Directions on the box tells the employee to paint every pinprick, scratch, cut, puncture wound, etc., with the iodin at once and then he must report to the doctor's office at once. The use of the iodin alone is not sufficient. Reporting to the doctor at once is not sufficient. But use the iodin at once and then come to the doctor at once. Reaching the doctor may take five or ten minutes, but the use of the iodin does not take over a few seconds. So it is the immediate disinfection of the wound with the application of dressings very shortly afterward that gives the results.

In 1909 I first introduced this use of tincture of iodin among employees and since then it has become quite universally used among many industries. Several company surgeons still raise objections to its use and cannot see its superiority over other antiseptics. Many employees so have the habit of using hydrogen peroxid that it is difficult to replace this usually inert liquid with the iodin. The actual figures as set forth in a previous publication[1] show conclusively that the results warrant its use. From 1909 to 1912 there was a reduction of 38 per cent. in the number of hand infections. At that time the management became more active in enforcing these rules. In 1912 out of 2,693 accident cases reporting to the doctor's office, 28.6 per cent. became infected. In 1915 out of 5,000 accident cases reporting to the doctor's office 10 per cent. became infected. Most of the infections in 1915 occurred among new employees and all of them except twenty-four failed to follow the instructions concerning the use of iodin and reporting at once. Not a one of the twenty-four who used iodin were infected sufficiently to require opening, neither did they lose any time from work. Thus among the injured employees who use iodin at once and report to the doctor at once, less than two tenths of 1 per cent. become infected.

After an accident has occurred in spite of all our methods of prevention then it is the duty of the preventive surgeon to so institute the best form of active treatment at once that he will secure the quickest recovery, the least deformity, and prevent a fatal termination. Temporizing methods by the surgeon are to blame too often for great losses to both the employee and employer. By temporizing methods I mean trying office treatment or home treatment when the best hospital treatment should have been instituted at once; failing to watch carefully for the earliest indications of threatening complications; leaving the patient too much to the care of an assistant or an intern; and failing to take advantage of every known means of diagnosis and of every known method to attain the quickest and best results.

PREVENTIVE MEDICINE

The common aim of preventive medicine and preventive surgery is so obvious, and yet it is only recently that the two have been mentioned in unison. It was left to the work of a few company surgeons scattered over the country to bring out the indivisibility of the two. A comprehensive plan for the supervision of the health of employees if adopted by all industries would be the greatest movement in this country for preventive medicine, and at the same time would be the greatest safety first movement that they could install. Here again a temporizing plan will not yield the best results. The medical staff must do its medical and sanitation work thoroughly and completely. A mere inspection of employees must not replace a thorough medical examination because it takes less time and is immediately cheaper for the employer; work that should be done by the doctor must not be left to a nurse or trained lay assistant; and conditions in the employees that mean a premature retirement to the scrap-heap must not be tolerated because to correct them means an immediate loss of time. Even temporizing methods, it is true, are better than the old methods, which did not consider in the least the health or life of the employees, but the company physician today must show that the benefits to the employer are in direct ratio to the thoroughness and completeness of the plan which he adopts for the supervision of the health of his employees.

The thorough medical examination and reexamination of each individual is the chief aid in supervising the health of any group of people in intimate contact with each other; therefore, every employee in the active working force should be examined for the following purposes:

1. To ascertain the condition of health of each employee and to give personal advice to those who need it, along the lines applicable to their cases.
2. To discover diseases among the employees in the earliest stages and therefore while still curable. Many diseases of which there was no knowledge are thus discovered, and the afflicted employee is advised as to methods to overcome the trouble or at least to prevent its advancement. Many of these are referred to the family physician months before the patient would voluntarily seek his counsel.
3. To find any one who has contracted a disease that might be communicated to a fellow employee. Tuberculosis is the chief of these diseases. Not only is the working force protected from contamination, but the disease is usually found in such an early stage that practically always a cure is possible.
4. To discover the chronically diseased employee who is still able to work, and to recommend for him a position where he will be efficient and which will not hasten the course of his disease. Thus, the man with organic heart disease would be an inefficient heavy trucker and such work would be of great danger to his life, whereas he would make a good straw-boss or light packer, positions which would enable him to control his disease.

Likewise the medical examination of all applicants for work should be made, not for the purpose of choosing only the strongest, healthiest workers, as such a plan would be too great an injustice to our weaker fellow men, but for the following reasons:

1. To prevent those with contagious diseases from mingling with our healthy employees.

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[1] Mock, H. E.: Treatment of Hand Infections from an Economic Viewpoint, Surg., Gynec. and Obst., 1915, **21**, 481.

2. To prevent those with serious diseased conditions from going to work, for their own protection.

3. To choose the proper type of work for those with some chronic disease which does not totally unfit them.

Next in importance to the medical examination in supervising the health of the working force is the personal contact between the doctor and each employee, which enables him to advise concerning all matters of health and means of prevention which are suggested by their individual cases. Thus, they are told when a diseased condition is present and how best to overcome it and when they should consult their family physician. They are warned against wrong lines of treatment and the dangers of consulting quacks and advertising doctors, and the uselessness of taking "patent medicines." The personality of the doctor is a most important factor in this personal contact with the employees. He must be a friend, a teacher, and a kindly adviser at all times in order to gain their absolute confidence.

Arguments have been raised against the medical examination of employees, chiefly by leaders of labor unions. They say that unscrupulous employers could adopt such a system for the elimination of all but the very healthiest, and most efficient employees, or for the elimination of undesirable employees among the union help. These objections are worthy of weighty consideration, if any employer adopts this plan from such an inhuman standpoint. But if hand in hand with this medical work there is constructive work on the part of the employer to better the sanitary conditions of the working place, to assist the employee to regain his health, and so to regulate his work that it will not be detrimental to him, then these arguments are at once completely nullified.

We have thoroughly examined employees during the last seven years.[2] During the last three years we have also examined all applicants for work.[3] For the years 1914 and 1915 we examined 15,151 old employees, 27 per cent. of whom were found with definite diseased conditions, while a great number of very minor defects were found but not classified. None of these employees were discharged, but they were advised as to the best methods to overcome or control their diseases, many were given vacations, or free hospital or sanatorium care, others were referred to their family physicians, or when investigation proved they could not afford to pay for special care, this was rendered to them free of charge by the medical staff. Whenever the work of an employee was found to be detrimental to his health he was transferred to some other position: as a rule his health improved and he became a more efficient employee at once. In the matter of tuberculosis among our employees we have cared for 284 patients free of charge, a majority of whom were treated at sanatoriums.

During the same period of 1914 and 1915, 13,764 applicants for work were examined and 19.9 per cent. had definite diseased conditions, but only 3.4 per cent. of these were rejected for employment. In every case a rejection was made only when the applicant had some diseased condition which made work at the plant detrimental to him, or some contagious disease which might be spread to the active working force. These figures and these facts are the strongest rebuttal we can possibly give to the arguments advanced against such a humane system of preventive medicine.

But when such a system becomes more universal, great hardships will fall on the 3 to 5 per cent. physically unfit employees who are unable to secure employment because they cannot pass the medical examinations. Because of these hardships we are brought face to face with another problem which must always go hand in hand with any system of universal supervision of the health of employees, namely, either state or federal control of such a system and either state or federal health insurance laws, insurance against nonemployment, and old-age pensions. But these same laws must be so carefully worked out that they will not react as a hardship to some other branch of society, and it therefore behooves the physician to devote much time and attention to this subject.

The sanitation work, the ventilation, the study of temperature and of humidity, the disinfection of departments in which contagious cases have developed, the disinfection of toilets and of cuspidors, and all matters dealing with the sanitary conditions of the working place make up a large portion of the work which must come under the direction of the specialist in industrial medicine and surgery.

Likewise, the personal hygiene of each employee, his exercise and recreation, his housing conditions and the home environments, his personal habits and even his family history are matters which must be included in the scope of this work.

The industrial visiting nurse, who also must have a vision and a social sense, is responsible for the investigation of many of these latter problems, and no plan of medical supervision of employees can be complete without her assistance. Also the industrial dentist is coming more and more into this work as an aid in upbuilding the health efficiency of the employees. A human laboratory for work and research in practically every branch of medical science is found in this field of industrial medicine and surgery. And the company surgeon who takes advantage of it is destined not only to become a skilled, conscientious physician and surgeon, a sociologist, and an economist, but the influence of his work extends from the shop walls to the entire community.

Parinaud's Conjunctivitis.—Surg. G. L. Collins, U. S. P. H. S., in *Public Health Reports,* Dec. 15, 1916, says the health officer should keep in mind Parinaud's conjunctivitis in his search for trachoma. Although he may regard granulations of adenoid tissue in the tarsal conjunctivae and retrotarsal folds as almost pathognomonic of trachoma, several other conditions, as Parinaud's conjunctivitis, may closely simulate trachoma. Collins reports a case in a vigorous young woman, a gymnastic teacher, in whom the conjunctiva of each lid was greatly congested, and at the nasal side of the upper lid were many granulations, and also in the upper retrotarsal fold, where they were crowded close together. The granulations had a peculiar, yellowish, semitranslucent appearance, and examination with a loupe showed minute white areas on the surface, with considerable mucoid secretion, but no pus. A few granulations could also be noted on the epicanthal fold, and a minute subconjunctival hemorrhage on the bulbar conjunctiva. The condition was unilateral and there was an enlarged and tender preauricular lymph gland. The other eye was normal. There were slight constitutional disturbances. The symptoms were characteristic of Parinaud's conjunctivitis, and subsided in two or three weeks under simple treatment. The source of the infection could not be determined.

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[2] Mock, H. E.: Medical Work and Industrial Sanitation, July, 1910.

[3] Mock, H. E.: An Efficient System of Medical Examination of Employees, Tr. Nat. Assn. Study and Prev. Tuberc., May, 1914; ibid., May, 1916.

MEDICAL SUPERVISION OF FACTORY EMPLOYEES

RESULT OF FIVE YEARS' EXPERIENCE *

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The basis of this paper is work done in the Department of Health and Sanitation at the Norton Company and Norton Grinding Company, Worcester, Mass., from May, 1911, to May, 1916.

The medical department in a factory has five functions, as follows:

1. To make physical examinations of all prospective employees, and reexamine all defective employees.
2. To treat accidents immediately after they occur — and subsequent treatments.
3. Examining and advising cases of sickness.
4. The control of sanitation throughout the works.
5. Health publicity.

I will take up these functions in order, and discuss each one briefly, giving our results.

PHYSICAL EXAMINATIONS

The best time to make a physical examination is before the employee is hired. This immediately eliminates any man who is totally unfit for the work to which he is assigned, and prevents contagious diseases becoming established in the shop. Rejections should, however, be made only when they are absolutely necessary, as many men are perfectly capable of doing work in certain departments though unfitted for work elsewhere. A physical examination should be made not only on a prospective employee but also on each employee who is transferred from one department to another for reasons just mentioned. Periodic examinations, about once in six months, should be made on all men having defects of a nature which is serious enough to require inspection.

Completeness of Examination.—We believe that examinations cannot be made too complete. When the department started, there were certain examinations which we did not consider necessary, such as examinations of the feet, and blood pressure. We have since, however, changed our minds as a result of experience. We now believe that the applicant should be completely stripped at some point during the examination and that as thorough examination should be made as in a general hospital on the admission of any medical case. We consider blood pressure a distinct advantage as an indication of possible trouble in the kidneys. This is especially valuable as a time saving device, being much quicker, and simpler than making a urinalysis of all cases. Our rule is to do blood pressure on every man over 20, to do urinalysis on every person under 40 who has a systolic pressure of 150 or over, or a diastolic of 100 or over: all men of over 40 years have a urinalysis regardless of their blood pressure.

REJECTIONS[1]

We arbitrarily reject:

1. All applicants over 45 years of age.
2. All men having only one eye. This because the work about grinding wheels is particularly hazardous to the eyes, even when goggles are worn.
3. All men having vision reduced to ½ in both eyes.
4. All cases of contagious disease, including, of course, tuberculosis.
5. All cases having more than a second degree hernia (using the classification of the Conference Board of Physicians in Industrial Practice).
6. All cases of heart disease with disturbed compensation.
7. All cases of varicose ulcer.
8. All cases of fourth and fifth degree flatfoot where the arches apparently give trouble.
9. Marked hypertension.

We have worked out this list of rejections by rule of thumb. Each cause of rejection has been gone over most carefully and has been decided on only as a result of actual experience.

Since Nov. 1, 1915, we have made 100 rejections. During the same period of time we have examined 2,618 applicants. The causes of rejections are given in Table 1.

TABLE 1.—CAUSES FOR REJECTIONS

Causes	Number
Age (over 45 years)	20
Eye defects	35
Heart defects	2
Lung defects	4
Hernias	32
Venereal diseases	2
Nephritis and hypertension	3
General (numerous defects)	2
Total	100

There has been some question as to the selection of 45 years as a rejecting age. Analyzing the physical examinations of the men rejected on account of age we find the gross defects given in Table 2. All of these defects are enough to disbar a man even though his age came under our limit.

TABLE 2.—DEFECTS IN APPLICANTS OVER 45

Defects	Number
Defects of eyes	9
Defects of ears	6
Defects of hearts	6
Hernias	5
Nephritis and hypertension	9
Pronounced flatfoot	2
Varicosities	1
Defects of lungs	1
Total number of defects	39

In other words, in twenty men over 45 years of age we found thirty-nine defects sufficient to disbar the applicant even if his age were under 45.

DEFECTS FOUND IN EMPLOYEES THAT DO NOT BAR THEM FROM EMPLOYMENT

There are very few men who apply to the Norton Company for work who have no defects. The average workman, though having numerous slight defects, is perfectly capable of doing almost any work in the factory. There are, of course, some departments in which restrictions are higher than others — departments where there is considerable heat, heavy lifting, and more than the average amount of dust. In these departments we try to get the most absolutely fit men that we can procure, provided they have the mental capacity for doing their work. Examining the mental capacity of the prospective employee is a function of the employment department and does not come under our jurisdiction. During the first three months of 1916 we examined 1,379 prospective employees. Forty-three of these were rejected for reasons just given. The last thousand consecutive cases showed the minor defects indicated in Table 3.

The cases of tuberculosis existed among those who were rejected, and many of the persons with hernia were also rejected. Each one of these prospective employees was told of his defects, and wherever possible instructions were given to show him as to how this defect might be remedied or be kept from troubling him. It may be interesting to note that several patients with hernia have since our notification gone to the Worcester City Hospital, had curative operations and later become employees of the Norton Company. Several other employees having marked defects of both eyes have procured glasses remedying these defects, and have been placed in departments where there is no danger of foreign bodies getting in the eyes.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Rejections are made by employment department. The term "rejections" here refers to medical risk, as reported to employment department.

TABLE 3.—MINOR DEFECTS

Defects	Number
Defects of the eyes	100
Defects of the ears	23
Defects of the nose	148
Defects of the throat	35
Defects of the teeth	569
Defects of the neck	16
Defects of the heart	62
Defects of the lungs	17
Defects of the extremities	339
Defects of the inguinal region	106
Genito-urinary defects	53
Defects of the spine	3
Defects of the skin	24
The more serious defects consisted of	
Defective vision in both eyes	56
Endocarditis, mitral insufficiency	41
Pulmonary tuberculosis, active	3
Flatfoot	311
Hernia (second degree or more)	50

Blood Pressure.— Our experience with blood pressure has tended to confirm the general experience where large numbers of blood pressures were taken. In the last thousand cases, dividing the men by decades we found the average as given in Table 4.

TABLE 4.—BLOOD PRESSURE

Age, Years	Systolic	Diastolic	Pressure Pulse
From 20 to 30	129.5	88.5	50.3
From 30 to 40	135.1	89	47.2
From 40 to 45	140	91.6	48.2
From 45 to 50	158.8	92.8	66
From 50 to 60	167	100.8	72.5
From 60 to 65	178	100	77.5

I believe that the average systolic pressure is a trifle higher than normal on account of the excitement of the examination. This fact has been brought out by Dr. Roger I. Lee, who came to this conclusion after examining the Harvard medical students. The averages, however, are pretty much within normal limits. It is rather interesting to note the increasing pressure pulse as age increases, remaining about the same for the first three decades and then rapidly climbing.

To sum up the result of five years' experience with physical examination of employees in a factory of about 2,800:

1. The average workman does not object to physical examination, and the majority of them are pleased to have such an examination made.

(*a*) On account of the information it gives them.

(*b*) Because it throws them in intimate contact with the doctor to whom they are going to apply afterward in case of sickness or accident.

2. A physical examination cannot be too complete. The most complete form of examination the average man requires takes ten minutes, provided a urinalysis is not done.

3. Periodic examinations of markedly defective men tend to keep such employees in good condition and prevent an increase in their defects.

4. As it is impossible to employ men who have no physical defects, a physical examination enables us to place men in departments where they will suffer the least risk and maintain the highest degree of physical efficiency.

5. A fresh examination each time a man is transferred from one department to another prevents the possibility of a man being assigned to work for which he is not physically adapted.

6. A periodic examination of the entire force once a year is not necessary because:

(*a*) The examination is made each time a man is sent from one department to another.

(*b*) All men having any sickness or accident apply to the hospital and are there examined if there is anything indicating the necessity for such an examination.

7. The number of rejections, even with a rather highly restricted list of defects, is very small, and is no argument against but rather an argument for the advisability of physical examinations.

HANDLING OF ACCIDENTS

All accidents occurring at the Norton Company and the Norton Grinding Company receive treatment in the department of health and sanitation. This has been so thoroughly drilled into the foremen that we invariably see accidents within fifteen minutes of the time that they occur, except in cases of foreign bodies in the eye. In these cases men sometimes do not realize that they have received a small foreign body in the eye and do not report to the hospital until the next day, when reaction is beginning. The result of this prompt attention to all injuries has reduced our loss of time from accidents to the minimum during the five years the department has been in operation. We have never had a case of sepsis. I do not feel that I can make the statement that we have never had a case of infection, for in several cases there has been a single drop of pus, or a moderate exudation from a wound. By sepsis I mean pain, heat and redness accompanied by swelling. As we have been treating on an average of 241 accidents a month, it will be seen that the methods we use must be efficient. Although these are undoubtedly those used by the majority of shop hospitals, I will give our routine:

The wound is first thoroughly washed with commercial gasoline. The gasoline is slushed on and used like water, being poured not only over the wound but into the wound itself, and a rather vigorous scrubbing is given the surrounding skin with sterile gauze. Immediately after this, tincture of iodin, U. S. P., is poured into the wound and over the skin. This is allowed to dry and a sterile gauze dressing is applied. If for any reason we suspect the wound of being pretty dirty, a second dose of iodin is poured on after the first is applied. My experience with this method of cleaning is not confined to the Norton Company, as I have used it in my private practice and active service in two large hospitals. As there has been some discussion as to the efficiency of iodin, my own experience may be summed up as follows:

Iodin to be 100 per cent. efficient as an antiseptic must be used within thirty minutes of the receipt of a wound. The efficiency decreases 25 per cent. every fifteen minutes beyond this time. After two hours it is almost useless.

The immediate treatment of accidents undoubtedly reduces the time of disability. If sepsis is eliminated, fractures promptly set, and backs strapped immediately after strains, many patients are able to return to work within a very short space of time in spite of apparently severe injuries.

During the month of April at the Norton Company we treated 474 accidents, but one of which was severe enough to draw compensation. That is, there was only one man injured severely enough to keep him out of work over fourteen days. During the year from May 1, 1915, to May 1, 1916, we treated 2,895.

The facilities of the shop hospital for the after-treatment of accidents has never been thoroughly brought out. The peculiar situation of the shop hospital enables it to get a rapidity of cure in both accidents and sickness which cannot be reached by any other method. There is no other method of treating ambulatory patients by which the patient can be brought to the doctor at a moment's notice and by which as many treatments as are required can be made during the day. The two weaknesses of the general hospital outpatient department are, first, that the patients frequently do not follow advice or fail to report, and second, that in cases requiring redressings these must be done by the patient at home. The shop dispensary, however, provides a place where the men may have dressings done in the shortest possible time by the most competent dressers, and by a follow-up system it can be definitely arranged that a patient will report at regular intervals through the day for such dressings.

To sum up, our experience with accidents in the last five years has convinced us that: 1. A very little inducement will bring every accident, no matter how slight, to the shop hospital for treatment. 2. The shop hospital is the place to treat accidents of all kinds, and first aid should not be done in the shop unless it is absolutely necessary to save life. 3. Gasoline followed by tincture of iodin is the best antiseptic, and if used within fifteen minutes is practically sure of producing a clean wound. 4. Safety engineering has reduced the number of serious accidents to the absolute minimum, but is unable to reduce the very slight minor cuts and smaller injuries, the latter depending on the personal element of the employee.

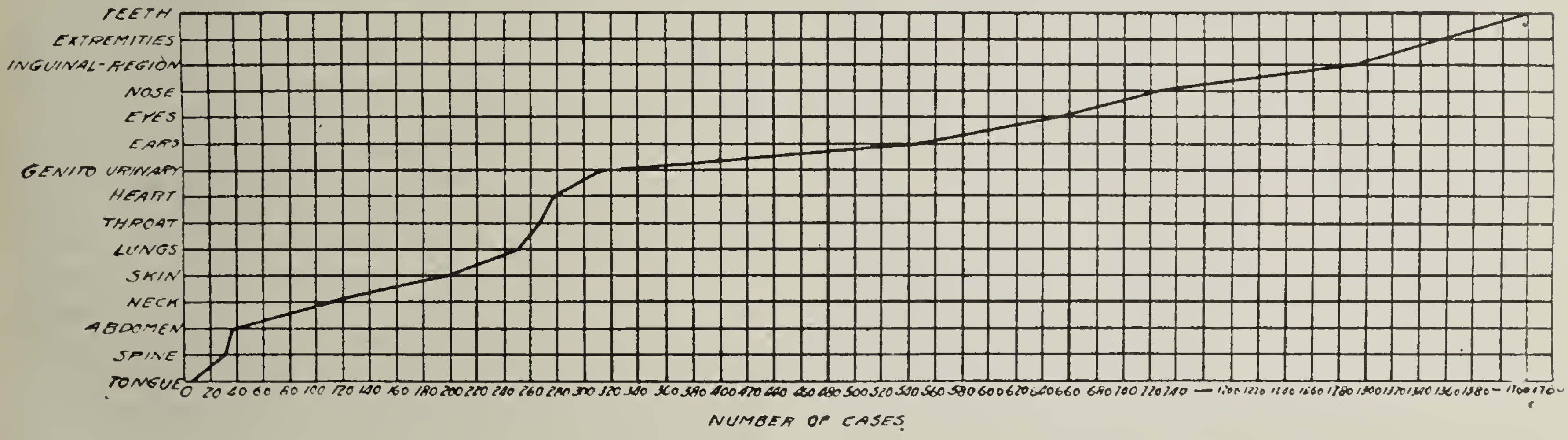
TREATMENT OF SICKNESS

Our treatment of sickness is prophylactic, not curative. When a man is sick enough to need a doctor we send him to his family physician or to the hospital. If he has no family physician we give him a list of doctors from which to choose. Our idea of handling sickness is to make a correct diagnosis and to treat the minor ailments which if not attended to promptly may lead to more serious conditions. Such cases are sore throat, coryza, beginning bronchitis, constipation, diarrhea, muscular pains and similar slight ailments. For such treatment we have a small supply of simple drugs which in the majority of cases is efficient. If we have to treat a man more than twice for a condition requiring medication, we immediately advise him to go to an outside doctor. Any man who is really sick we endeavor to diagnose, but do not attempt to treat him ourselves. When a man has a temperature of 100.4 he is sent home and not allowed to return to work until he has presented himself to the hospital in perfect condition. I wish it to be distinctly understood that I do not believe the function of treating sickness belongs to the average shop hospital, but I do believe that many diseases may be prevented by immediate simple treatment, by observation and advice. As I have before said, I like to consider the medical function of the shop hospital as a diagnostic clearing house.

During the past year we have treated 3,474 cases and have, I believe, materially reduced the disability from sickness, by simple preventive measures.

To sum up:

1. Our treatment of sickness is preventive, not curative.
2. Our effort in serious sickness is to diagnose and see that the man gets immediate attention from his family physician or from a specialist where one is indicated.



Number of defects and regions affected found by examination of 6,000 employees.

I have been surprised at the speed with which infections clear up when treated in this way. As I mentioned in my previous section, we have had no sepsis from any accident; but in many cases we have had men apply to the shop hospital with infections which they have incurred from neglected wounds occurring outside the works when home treatment has been used. Furunculosis is very common, and we have, I regret to say, a number of cases of foreign body in the eye in which the patient has not realized that the foreign body was present until twenty-fours or more have elapsed. Four-hour dressings of infections will, I believe, curtail the time of disability almost 50 per cent., and, moreover, the employee will keep on working because he knows he will get attention with little loss of time. In foreign bodies of the eye, after the foreign body has been removed, we have the patient report every three hours to receive hot compresses and instillations of argyrol. We seldom have an eye which is not cured completely in forty-eight hours, and in the majority of cases men lose no time while the treatment is being carried on. The same applies to some medical conditions, particularly tonsillitis and other forms of sore throat. In these cases we paint the throat two or three times a day with iodin and glycerin, providing a hot gargle for the patient every three hours.

3. We believe that a man with a temperature of 100.4 should not be allowed to work and should not be allowed to return to work until his temperature has reached normal and all signs of the disease have disappeared.

4. By arranging that all men feeling sick must come to the shop hospital, we have prevented a large amount of sickness and have isolated a number of contagious diseases in the last five years, besides in many cases saving life through early diagnosis in such cases as acute appendicitis.

6. Such treatment will materially reduce the time lost by employees throughout the shop.

We believe the follow-up system by which the absent employee is visited by a member of the employment department when reported from work is of the greatest value to the medical department. In this way we can be sure that: (*a*) no man has received an accident and failed to have it cared for at the medical department; (*b*) an employee has not a contagious disease which is unknown to the medical department; (*c*) an employee is sick and has not received adequate medical care on account of his financial condition; (*d*) a patient who has been coming regularly to the hospital is not absent from work because of some trouble arising from the injury.

The follow-up system, therefore, has a double function. First, to hunt down the men who are absent with the idea of getting them to return to work as soon as possible, and second, to investigate any patients absent on account of sickness or accident, and to report the same in detail to the medical department, so that the medical department may take further action.

The control of sanitation should rest entirely with the medical department.

At the Norton Company the entire cleaning of toilets, wash-rooms, as well as the removal of rubbish, garbage and paper is in the hands of the department of health and sanitation. In this way the work is centralized and can be systematically arranged so that each man of the force has a definite round of work to perform. Although the company has been expanding greatly in the last two years, and as a result the toilets and wash-rooms have been badly crowded, thanks to careful, systematic work there has been no complaint whatever. One of the things with which we have had most difficulty is to find a good type of cuspidor. The one which we now use is made of stone, is almost unbreakable, and cannot be upset. It is filled with sand and chlorinated lime, and has proved absolutely satisfactory.

HEALTH PUBLICITY

Much educational work can be done throughout the shop by means of leaflets written in simple, clear language on the subject of hygiene and general medicine. We have been publishing such leaflets monthly, enclosing them in pay envelopes, and their reception has been most gratifying. The best bulletins of this type are probably those recently approved by the Conference Board of Physicians in Industrial Practice.

37 Pearl Street.

Feeblemindedness.—The term feebleminded is used generically to include all degrees of mental defect due to arrested or imperfect mental development, as a result of which the person so afflicted is incapable of competing on equal terms with his normal fellows or managing himself or his affairs with ordinary prudence.—American Association for Study of the Feebleminded.

THE PREVENTION OF CHRONIC MIDDLE EAR SUPPURATION *

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When we consider the frequency with which it occurs, the resistance it offers to treatment, the damage it does to hearing, and the risk it incurs to the life of the individual, the subject of chronic middle ear suppuration becomes one of importance, and the question of how best to prevent it deserves the time and attention of the section that the chairman has seen fit to assign to it.

The prevention of disease is the highest aim of the medical profession. To accomplish successfully this aim we must possess first a knowledge of the disease that we hope to prevent. A comprehensive knowledge of any disease implies a knowledge of the pathology and diagnosis. This applies especially to the subject of chronic middle ear suppuration, for the reason that it is a disease capable of manifesting itself in a variety of ways and liable to many complications. It is not only necessary to recognize the disease when present, but we must actually anticipate it when certain factors are favorable to the development of the disease. Thus we see that a knowledge of the etiology is even more important than a knowledge of the pathology and diagnosis, in that it goes a step farther.

These requirements, a knowledge of the etiology, pathology, and diagnosis, are necessary if we hope to prevent chronic middle ear suppuration.

A knowledge of the diagnosis is essential, for without it we can know nothing about the condition which we are attempting to prevent, nor are we able to say that a particular case is chronic or acute. For instance, when a patient presents himself for treatment with the history of a running ear lasting over a prolonged period, the diagnosis of chronic middle ear suppuration may be inferred, but should not be concluded, for the evidence is insufficient. The diagnosis must include a knowledge of every feature of the case ascertainable from all available sources of information, including the history; the functional hearing and static tests; the otoscopic examination; the rhinoscopic examination; the skiagraphic examination; the examination of the secretions from the middle ear for consistency, color, odor, etc.; the microscopic examination of the washings from the ear for cholesterin or other crystals; for micro-organisms, including the smear and cultural methods of examination in order to ascertain the nature of the infecting organisms; blood and urinary examinations; in many cases a neurologic examination, and indeed occasionally a general physical examination of the entire body. There is no disease that requires a more exhaustive examination. By such complete methods only are we able to determine, with some degree of certainty, the pathologic conditions that exist in the middle ear, eustachian tube, attic antrum region and mastoid cells; whether the suppuration is an acute or chronic process; whether it is tending toward spontaneous recovery or extension; whether the extension is toward the inner ear or intracranial structures; whether cholesteatoma is present or not; whether the suppuration in the middle ear is producing a detrimental effect on the patient's general condition of health or vice versa. Besides, from the knowledge obtained by a thorough examination combined with experience gained in similar cases, some idea may be formed as to the prognosis with and without treatment and the probable effects of selected treatment. I use the words "selected treatment" advisedly, for the reason that treatment cannot be routine in a disease in which the conditions are so variable as they are in chronic middle ear suppuration.

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We have referred to the importance of a comprehensive diagnosis and how the diagnosis depends in a large measure on our knowledge of the pathology, but only in a direct, physical-mathematical sort of way, as determined by laboratory methods. On the other hand, the indirect (predisposing) symptomatic, and, we might add, the physiologic factors, as determined by clinical methods, are not included in the study of pathology. It is these latter features that play an important rôle in the individual susceptibility and variability in the manifestations and course of the disease, so that it would hardly be fair to dismiss the subject of etiology with a mere reference to the pathology.

Since chronic middle ear suppuration is the sequela of acute middle ear suppuration, the prevention of the chronic form is possible only when we are able to arrest the suppurative process while it is still in the acute form. Just how long an ear may discharge before we may class the condition as a chronic middle ear suppuration is a question difficult to answer. Probably no two authorities would agree. It was taught in the Politzer clinic that an ear that discharged for more than two years might be classed as a chronic condition and should be operated on radically, while a discharge lasting for a shorter time was classed as acute and should be operated on after the simple method. Politzer then cited a limited number of exceptions to this rule.

The question of duration is a relatively important one when considered along with other factors, more especially the influence of treatment. For instance, if an ear continues to discharge for more than six months in spite of carefully conducted conservative treatment covering a period of two months or more the writer would be inclined to consider the case chronic, but not necessarily one requiring radical operation.

The treatment of acute middle ear suppuration depends on many factors, local or distant, recent or remote; the presence or absence of complications, the susceptibility of the patient to a particular infection, and the vitality of the patient, measured by his general resistance to all diseases and his power of recuperation.

Local factors that tend to prolong a case of acute middle ear suppuration may exist in the form of adhesive bands in the middle ear spaces, left there by one or more previous attacks of acute secretory catarrh; narrowing of the eustachian tube anywhere along its course, the result of organized exudate following acute secretory catarrh. Anything which tends to obstruct the free drainage of pus from the middle ear spaces becomes a factor of importance in prolonging an acute middle ear suppuration. The normal route for the escape of middle ear discharge is down the eustachian tube, which is at the same time the most favorable. The reason why discharge finds its way out through a perforation in the drum membrane in the case of acute suppuration of the middle ear is because the normal route down the tube is temporarily closed. It follows, therefore, that when the normal route continues closed beyond a certain period, the suppuration tends to last proportionately long. Drainage down the eustachian tube may be obstructed by inflammatory edema of the mucous membrane, but this is usually transient. The more important obstructions are the organic, and the most frequent of these is to be found in the narrowing that follows the organization of exudate from acute tubal catarrh. The loss of the cilia with metaplasia of the epithelium, in spite of patulousness of the tube, may act as a relative obstruction in that drainage is not favored, as is the case when the epithelium is in normal condition. Very large adenoids may obstruct the orifice of the tube and interfere with normal drainage. A frequent location for obstruction is to be found at the upper end of the tube, or, more properly speaking, in the pretympanum. In this location membranous diaphragms are sometimes formed. The opening in this diaphragm may vary in size at different times in the same individual.

Obstruction in the middle ear cavity may be found in the form of so-called adhesive bands, which tend by their presence to close off partially dead spaces. In one case it may be the attic region, in another the antrum region, and less frequently the hypotympanum. These bands may exist from birth, due to incomplete absorption of the connective tissue that existed there in the embryonal state. More often it is due to the deposition and subsequent organization of exudate following a catarrhal condition. It is this same process that leads eventually to the so-called chronic adhesive process of the middle ear. When the adhesive bands tend to close off the antrum the possibility of complicating mastoiditis is increased. The way to the antrum, instead of being closed off by material bands, may be concentrically narrowed by the organization of exudate from similar causes. Temporary closure, partial or complete, of this region may result from inflammatory swelling of the mucous membrane. The perforation in the tympanic membrane may be too small or unfavorably located to permit of proper drainage, in which case it would be well to enlarge it. My impression is that far more attention is paid to the size of the perforation in the membrane than to the condition of the tube, when in fact obstruction in the tube is by far the more important factor of the two when both conditions are present. The first place to look for imperfect drainage is in the tube; correct it and the size of the perforation often becomes a factor of secondary importance. On the other hand, I do not wish to criticize any one for giving attention to the size of the perforation, but rather for neglect of the tube. Anything that obstructs the free flow of pus from any part of a suppurating middle ear tends to prevent spontaneous recovery and therefore to chronicity. The exact nature of the obstruction should be sought and corrected by the simplest known method. If the obstruction is due to necrotic areas in the bone, with granulations, or to cholesteatoma, or to large polyps, the condition is already chronic, and a discussion of them would be foreign to our present subject.

When the obstruction can be located and its nature determined, the logical thing to do is to remove it, if possible, by the simplest means at our disposal. When these fail, as they do at times, more radical methods must be adopted, for neglect of drainage will surely result in chronicity if not complications. The question of correcting an obstruction narrows itself down to the diagnostic judgment of the otologist in locating it and his manipulative skill in handling it when it is located. One thing that I have observed and wish to emphasize is the frequency with which local inflammatory swellings acting as obstructions clear up promptly after a simple mastoid operation. In other words, a simple mastoid operation will side-step an otherwise irremovable barrier to drainage. Nor is this to be wondered at when we consider that an organic obstruction located between the middle ear cavity and the antrum will drain the posterior spaces better by a posterior opening, while the anterior spaces will drain better anteriorly.

A mastoid operation is not to be urged except when other more simple methods have been tried and have failed. On the other hand, the operation should not be postponed in the presence of the indications for operation. By temporizing we may fail to clear up the case by the simple operation and thus necessitate a more radical operation later.

Among the neighboring and more distant conditions that may tend toward prolonging an acute middle ear suppuration may be mentioned adenoids, when extremely large, by blocking the pharyngeal end of the eustachian tube. This has been referred to previously when discussing the question of drainage. Aside from the fact that enlarged adenoids may act mechanically to obstruct drainage, they may menace the health of the ear in other ways. For instance, the presence of adenoids increases the susceptibility of the patient to infections, and these again tend to increase the size, for the time being, of the already enlarged adenoids. By this means it not infrequently happens that the patient with an acute middle ear suppuration experiences aggravations and added infections from repeated colds; furthermore, the original infection in the nose and throat is prolonged because of their presence. When such conditions prevail it is important to remove the adenoids at a time best suited to the circumstances.

Enlarged and chronically diseased tonsils act in a similar manner, but less directly than do enlarged adenoids. Chronically enlarged tonsils are more susceptible to acute infection than normal tonsils and there is no telling just when a flare-up is going to occur; so that in a case of acute middle ear suppuration that does not tend toward recovery within a reasonable time it is a safe plan to remove the enlarged tonsils along with the adenoids. Success does not always crown our efforts for the reason that there may be other factors tending to make the case chronic.

Nasal obstruction may seem to some a far-fetched cause of chronicity in middle ear suppuration. Nevertheless, experience teaches us that the correction of nasal obstructions act beneficially in all pathologic conditions of the middle ear. Different theories have been advanced to account for it, which I will not take your time to discuss at present. The importance of nasal obstruction in its bearing on suppurative middle ear conditions, although previously recognized by the writer, was further emphasized about a year ago, when, after failing to clear up a case of subacute middle ear suppuration within a reasonable time by the usual conservative methods, the condition promptly cleared up after a submucous resection of the septum performed by another physician to whom the patient had gone. Embarrassing as it is to confess it, the case is cited because of the lesson it teaches.

A common cause for delayed recovery in acute middle ear suppuration is to be found in the so-called chronic infections, tuberculosis and syphilis, especially the former. A large percentage of the persistent cases of acute suppuration in infancy are tuberculous, when we frequently find the ear conditions associated with enlarged cervical lymphatics. In some of these cases the ear condition had its origin in a tuberculous infection in the middle ear, perhaps masked by the mixed infection that usually follows the breaking down of tubercles. In other cases the primary condition in the ear was due to some other infection, the process never becoming tuberculous; however, the tuberculosis elsewhere in the body acts detrimentally to the health in general and prevents prompt healing of the suppuration in the ear. Early evidence of caries suggests a tuberculous process in the middle ear.

In either event, care of the ear alone will generally fail to bring about a cure. The case should be treated as one of tuberculosis, along general lines, as in the case of tuberculosis in other parts. As is well known, the operative treatment of tuberculous ear conditions is prone to be followed by tuberculous meningitis, especially where the patient's general health is ignored.

Concerning syphilis of the middle ear much less is known and fortunately the condition is rare, but the same remarks apply in a general way to this process as to tuberculosis. Diabetes is prone to delay healing in acute middle ear suppuration if it does not actually contribute largely to its etiology. It should be suspected in all patients over 40 years of age when there is delayed recovery of suppurative processes generally, including those in the ear. Sequestration of the labyrinth as a whole or in part calls for a careful urinary examination for sugar and acetone. To treat successfully the ear condition attention must be given primarily to the diabetes.

It is needless to cite all the conditions that may contribute to chronicity in acute middle ear suppuration; suffice it to say that any disease of the kidneys, heart, lungs, gastro-intestinal tract or elsewhere which tends to depreciate the patient's health and vitality tends also to prolong acute middle ear suppuration and make it chronic; while any form of treatment directed toward the correction of these organic conditions contributes to the healing of the middle ear suppuration. Lack of vitality may exist from known causes, including some of those already mentioned; besides lack of proper hygiene, improper clothing, insufficient nourishment, etc.; furthermore, lack of vitality may result from unknown causes often inherited, general weakness due to lack of care of the mother, alcoholism in the parents, etc. The child need not be puny as an evidence of lack of vitality, for on the contrary it is sometimes fat, however, a flabby fat. Lack of vitality is also found in the feebly old.

Lack of vitality manifests itself in two ways. First, by the lack of reaction to disease, the case showing asthenic from the start. There is but slight general reaction, shown by the relative lack of fever and scarcity of symptoms. There is but slight local reaction; the swelling of the parts is but moderate and the pain insignificant; while the patient's wants are few. Nevertheless he looks sick and is sick. The tendency is for the infection to spread rapidly; it does not become circumscribed by the normal process of lymphocytosis.

Another manifestation of lack of vitality is evidenced by the manner, or rather lack of manner, in which the patient responds to treatment. Remedies aimed at stimulating the patient generally or the parts locally fail to do so, but more often have the opposite effect, when the prognosis becomes bad indeed.

Complications by way of extension of the suppurative process to neighboring parts may be a cause for delayed recovery in acute middle ear suppuration. The most frequent extension is to the mastoid cells, with resulting mastoid abscess; less frequently to the internal ear, the lateral sinus, the dura and other membranes of the brain and the brain itself. It would take entirely too much time to discuss these various conditions in a limited paper. Nevertheless, they are important factors that deserve careful consideration and study, and should be borne in mind, if not anticipated, in all cases of delayed recovery. This calls for a searching examination, suggested in the earlier part of the paper, for by it alone are we enabled to approximate an exact diagnosis in the full sense of the term.

It may be well to mention the fact that none of the complications arise suddenly, even in those cases in which they appear to, for on the contrary we generally find prodromal symptoms of longer or shorter duration. These prodromal symptoms are generally due to a serous form of inflammation due to the action of bacterial toxins that filter through the bony partition that separates the infected area from that which is threatened. For the alert diagnostician, therefore, sufficient time is generally allowed to intercept the more dangerous suppurative form of inflammation.

Susceptibility to a particular organism, lack of immunity or failure to generate proper immune bodies in sufficient quantities may be a cause of chronic middle ear suppuration. Theoretically the vaccine treatment should be ideal for this condition. In behalf of this treatment a great deal was promised a few years ago. I almost hesitate to confess what little service the treatment has been to me. I tried it early and carefully and over a long period, and was encouraged at first, thinking I had at last found a panacea; but later disappointment came and the disappointments were repeated. Autogenous vaccines were used when the time and circumstances permitted; when they were not used the stock preparations were. When the results were apparently most brilliant with the vaccines the conditions were favorable and the same results were duplicated in other cases in which vaccines had not been used. In the most trying cases the vaccines failed me as did other methods. There is a field for vaccines, but it is a limited one. I have not given up their use, in spite of my many failures to obtain results with them. If the preparation of the vaccines is all right, failure to obtain results would seem to show that we are not on the right track, and the cause of the chronicity must be sought in some other factors previously referred to.

My effort has been merely to outline some of the causes of delayed recovery in acute middle ear suppuration, the prompt cure of which would mean the prevention of chronic middle ear suppuration.

The Heritage of the Profession.—We are a curious mixture of heredity and environment—a curious blend of optimism and pessimism. Our heritage is a glorious one, for we present an unbroken line of professional workers with one ideal which was old before the Christian era. From the time Hippocrates taught his disciples at Cos to the present, the one great idea, the one great controlling thought, has been to find the truth, and, having found it, to use it for the benefit of mankind. The truth sought for has never been sought that it may be put to the base use of man's destruction.—J. M. Putnam, Address before Buffalo Academy of Medicine.

NONOPERATIVE TREATMENT OF OTITIS MEDIA *

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Chronic suppurative otitis media is rather easily cured in a large number of cases if proper methods are adopted, but it is exceedingly difficult to obtain men with sufficient self-abnegation, one might say, to carry them out. I refer here especially to our public clinics, in which we find that assistants do not give the attention to nonoperative treatment of chronic suppurative otitis media that they should. Such work is regarded as an uninteresting grind; hence the tendency is all toward hastening these patients to the operating table.

The proper treatment depends on the location of the area of the middle ear involved, that is, whether the disease is more or less located in the tube, the cavum or the mastoid portion of the middle ear; on the stratum that is involved, that is, whether it is relatively superficial, the epithelial structures being most affected, or the tissue under the epithelium, or whether it is the periosteal layer and bone. You know the mucoperiosteum, as its name would indicate, serves two purposes, as a mucous membrane and as a periosteum, the bone beneath deriving its nutrition immediately from the mucoperiosteum. The treatment also depends on the character of the pathologic process, that is, whether it is merely a pus-producing microorganism, being a streptococcus, staphylococcus, or one of the various forms of diplococci, whether it occurs as the result of diphtheria or scarlet fever, or of tuberculosis or syphilis.

Tubal disease is very rarely purulent. Large quantities are blown out with the catheter. Purulency in a discharge from the ear means, as a rule, disease of the bone. When the discharge from the tube is purulent, it indicates involvement of the tubal cells, a series quite separate from the mastoid system, and calls for operative intervention; obviously, not the so-called radical operation, but one outside the scope of this paper to describe. The mucus or purulent mucus comes invariably from the tissues above the periosteal layer of the mucoperiosteum. The mucus from the cavum is exceedingly scant, the moisture here being secreted by the surface epithelium; there is little or no glandular tissue in the cavum. In the tube these structures are quite evident, being more abundant at the pharyngeal opening and decreasing as the isthmus is approached, where it is absent, and again gradually increasing toward the caval opening. The perforations in the tympanic membrane from tubal disease are situated in the anterior portion of the pars tensa practically always. They are usually large in chronic cases, but may be small. They are central and never marginal in uncomplicated tubal disease, that is, an area of tympanic membrane intervenes between the perforation and the annulus. In centrifuging this discharge we find no evidence of bone cells or bone chips. This discharge may be quite abundant, may be quite fluid, is usually stringy and tenacious, but not purulent. This discharge may continue a long time, for years, more or less, with exacerbations occasionally, diminishing to a point at which the patient scarcely notices the discharge, or completely ceasing for a time. But it is chronic and continuous in many cases. The treatment should be directed to the tube. These are the cases that depend for their continuance on pathologic conditions outside of the aural structures per se. This has been sufficiently brought out in preceding papers. Besides removing the associated pathologic conditions in the nose and postnasal space, we should get rid of the hyperplastic tissue in the tube itself. This may be done by application to the tube by means of the eustachian catheter, applicator, Weber-Liel catheter or syringe. Schwartze long ago recommended that in such cases the tube be syringed out. This can be done through a catheter, the irrigating fluid coming through the perforations of the tympanic membrane. We should, therefore, be careful in these cases to have a large perforation, a perforation of proper size made by the condition or artificially by surgical enlargement. The irrigating fluid we use for this purpose should be nonirritating. A normal salt solution is ideal. Nitrate of silver may be applied in these cases. A small wire, preferably not silver wire, one strand being wound about another, makes a very cheap and efficacious applicator for this purpose. A small piece of cotton is wound on the end and this is immersed in the nitrate of silver solution, and carried to the cavum. In such operations the hard rubber catheter should be employed. One should begin with a low percentage, 2.5, and increase, according to the resistance of the patient, to 10 per cent. This should be carried through the isthmus to the caval opening of the tube. We may apply the medicament to the tube with a syringe fitted into the catheter, but this method is less effective.

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In a majority of cases, when uncomplicated by diabetes, syphilis, etc., or when the tubal cells are not involved, this will bring such a discharge to a close. In case, however, these patients do not recover, then the question comes up whether ossiculectomy is permissible, or whether we should take away a large portion of the tympanic membrane, establish a permanent opening by way of the external auditory canal, and by some method endeavor to seal up the eustachian tube and destroy the tubal cells.

Now we come to inflammations of the cavum. For descriptive purposes anatomists have divided the middle ear into the tube, the cavum and the mastoid cells. As regards the pathology, these divisions do not hold. They are artificial, in other words. The middle ear begins with the pharyngeal opening of the eustachian tube and ends with the most remote pneumatic space of the mastoid, all being covered by a membrane of unbroken continuity. We may have these so-called superficial inflammations that do not involve the bone, but the covering of the bone, extending from the tube to the cavum, and even the mastoid cells themselves. It is a rarity to find either an acute or chronic inflammation limiting itself to any one division of the middle ear. It is in the epitympanic space that we behold the anatomic conditions which tend to perpetuate even simple inflammation, because of insufficient drainage conditions. I refer to those innumerable little pockets in the epitympanic space formed by the various ligaments that attach the malleus and incus to the surroundings, all covered with mucosa. For a long time undrained, infectious material causes the mucosa to take on the usual inflammatory changes, causing a discharge which resembles that from pure tubal disease. In a large majority of these cases the perforations will be anterior or posterior to the manubrium, and in the pars tensa.

How are we to get at these little pockets? The best way is by irrigation through the eustachian tube and through the opening in the pars tensa. This can be done by means of the epitympanic cannula. It can be done through the tube itself by the Weber-Liel catheter, a catheter made of woven silk, which is introduced through the eustachian catheter to the cavum, or to the isthmus, and the fluid forced in through the epitympanic space by means of a syringe. I do not hesitate to do this; I believe in these chronic cases the danger of forcing infectious material into the antrum is more or less, preferably more, fallacious.

Here comes in the use of the boric acid and the dry gauze drain. There was a war preceding the present war in Europe by some years, between the various camps in Germany, Munich and Halle being the respective citadels, and it became almost as deadly as the present conflict, one camp standing for the irrigation of the ear and battling against the dry method, the other upholding the standard of the dry and bitterly militating against the wet method. Now we all know that irrigation has its place. It has its place to remove débris, to remove secretions. But we should be very careful how much we irrigate the ears in chronic otitis media suppurativa. There is no doubt that there are cases in which injudicious irrigation only perpetuates the discharge; but when we find that this is true, all we have to do it to use either a boric acid pack or a dry gauze drain. The dry gauze drain that I prefer is one made from xeroform gauze, one-half inch wide, packed against the perforation in the tympanic membrane, not pressing it, but in contact with it, and changed as often as this drain becomes moist. Or the boric acid will produce results in cases in which the dry gauze drain will not, and this is especially so in cases in which the promontory of the cavum is largely exposed, in which perhaps the malleus handle has become necrotic and disappeared, and in which the mucoperiosteum of the promontory is granular. In these cases, if the dry gauze drain does not produce dryness or a decrease of secretions, the head is bent to one side and the whole external auditory canal is tamped with boracic acid. This can be done, of course, only in cases in which the perforation in the tympanic membrane is large.

Granulation tissue in the cavum, projecting as a polyp through a perforation above or below the short process of the malleus or covering the promontory as a sodden mass, means that profound changes in the circulation of the mucoperiosteum have taken place, and that therefore the bone beneath has become more or less involved. This should be removed by snare or cautery (chromic acid, iron perchlorid, trichloracetic acid), with proper precautions. Alcohol, with or without salicylic acid or boric acid, is a most useful application in this class of cases, as well as in small cholesteatomas of Prussak's space.

Now we come to the cases in which the mastoid is involved, and these are cases in which the bone must be taken into consideration. Here we may have perforations in the pars tensa, or most frequently in Shrapnell's membrane; these are usually situated at the periphery of the tympanic membrane. These are usually cases of cholesteatoma produced by the overgrowing of the epithelium from the auditory canal into the epitympanic space, which causes pressure, and this pressure causes destruction of the bone within the antrum and mastoid. This is not a condition which necessarily demands operation. It is our duty to ascertain the extent of the disease. I have cured numerous cases of this kind, when small and not too old, by the use of the epitympanic cannula and alcohol. This epitympanic cannula is inserted through the perforation of the epitympanic space, or in case there is a fistula, posterior or anterior, and that is washed out, and frequently I wash out large masses of cholesteatoma. After this I either pack with boracic acid or dry gauze.

How do we know the mastoid is involved? By the history of the patient, as to whether there have been symptoms of spontaneous pain or tenderness on pressure, of swelling back of the mastoid at the beginning of the otitis media; as to whether the discharge produced is purulent; as to whether the perforation is situated in the pars tensa or pars flaccida; by the skiagraph; by the recovery of cholesteatomatous tissue from the washings; by the presence of cholesterin crystals and bone plaques in the centrifugalized pus; by the presence of symptoms indicating meningeal or labyrinthine irritation. Certain groupings of these symptoms indicate radical operative procedures, but this subject cannot be even touched on in this paper.

I have just two more points: first, as to suction. That has been tried a great deal. Personally, I have seen very little good come from it. I do not believe, however, that it does harm or that it may be dangerous. It should certainly be tried if any one would like to try it. In one sphere it is especially useful, and that is in diagnosis as to the region whence comes the pus.

Second, as to vaccines: I have seen only one kind of case of chronic suppurative inflammation in the middle ear benefited by vaccines, and that was a case in which the epitympanic space was involved, characterized by a considerable discharge of mucus, and here we have found in two cases a pure culture, in one the staphylococcus, and in the other staphylococcus greatly in excess of the other kinds of bacteria. Here the autogenous vaccine produced a cure in a little over two weeks in one patient who had been under treatment for as many months.

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THE END-RESULTS OF TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA *

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The end-results of treatment naturally fall under two heads, namely, the nonoperative and the operative.

In nonoperative cases the results depend much on the correctness of the diagnosis. In any case that is, in fact, a nonoperative one, the end-result should always be a cure of the discharge and improvement of function, provided the cause of the aural discharge is not a constitutional one, such as syphilis or tuberculosis, and there is no labyrinthic involvement present. Many cases that are properly classified as nonoperative in so far as concerns the ear are, nevertheless, operative in the sense that the environment of the ear is bad, so bad indeed that operative measures for the improvement of nasal breathing are necessary. In such as these the end-results of treatment depend much on surgical means for the removal of infectious foci of the nose, nasopharynx or pharynx.

We may, therefore, dismiss the nonsurgical aural cases with the statement that when assured that any given one is actually in the nonsurgical class, cure should in the vast majority of cases be expected, and the hearing power should usually be improved.

The end-results of the surgical treatment of chronic suppurative otitis media depend on many things.

1. The age of the patient: This, in my own experience, has had little to do with the outcome of surgical treatment, further than that the radical measures necessary to cure are somewhat more difficult in children than in adults, and the after-treatment usually cannot be so thorough with crying children as with older patients. However, in cases of children in whom the aural disease or its treatment is not modified in any way by the conditions I shall shortly mention, I have found the end-results satisfactory in a high percentage of cases.

2. The condition of the nose, nasopharynx and pharynx: The end-results of surgical measures for the cure of chronic otorrhea are often failures to a great extent if the diseased environment of the ear is not corrected. This fact is now generally accepted, I believe, by aural surgeons, for if, as believed, the nasal and nasopharyngeal diseases were the chief predisposing factor in the causation of the chronic aural affection, then cure of the aural disease must be unlikely so long as the diseased environment remains. Clinical experience in the treatment of chronic running ears bears out entirely the correctness of this belief.

3. The nature and violence of the original aural infection: These probably more than any other factors determine the end-results of surgical treatment. If the bacteria of invasion were violent of action, as is usually the case in the infectious diseases of childhood or in the severe epidemics of grip and as a result serious invasion of the osseous walls of the drum cavity or of the deeper portions of the adjacent mastoid or petrous parts of the temporal bone occurred, the nature of the final outcome may be in doubt; however, the end-result of surgical treatment will even then usually be a cure, but may possibly be only a partial cure and sometimes is a failure. While of course the proportion of cures, partial cures and failures depends much on the conditions present in the patient, as set forth in the points of argument to follow, much depends on the skill of the surgeon at the time of the operation, and on his energy in following the case personally a sufficiently long time afterward.

4. The presence of complications at the time surgical measures are attempted: The end-results of surgical treatment of chronic aural affections, when complicated by extension of the infective processes to the labyrinth, meninges or lateral sinus, furnish a brilliant example of the progress and efficiency of aural surgery. The end-result, of course, here depends very much on early diagnosis, since success in this class of surgery goes hand in hand with prompt diagnosis, which alone gives the surgeon his essential opportunity. Increased knowledge on the part of the internist concerning the possibilities that may arise from a chronic aural discharge and the greatly increased facilities to early diagnosis of aural complications now at hand, when taken together with a better surgical knowledge on the part of the aurist than ever before existed, furnish the reason for the many brilliant cures that have been reported as a result of surgical measures for the relief

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of brain abscess and sinus thrombosis. About 50 per cent. of these patients are now cured, whereas formerly 1 per cent. was regarded high. The present percentage of cure will no doubt be raised when internists and others have greater solicitude for those patients who have chronic aural discharge. Earlier diagnosis in a larger percentage of cases will then be made, and of course earlier operative opportunities will be presented.

The weakest spot in surgical otology today is the end-result of meningitis, especially leptomeningitis, as a complication of suppurative otitis media, since practically all patients now die, whether operated on or not. Some encouragement has been offered from operative methods and subdural drainage, especially by Crockett, who recently reported three cases of cure from this plan; but the majority of operators have not reported anything but failure. The chief end-result at present, in so far as concerns meningitis, is prevention, and there can be no doubt but that all who operate for chronic suppurative otitis media according to the most approved technic frequently prevent this dangerous intracranial complication; hence it is evident that the end-results from treatment, especially the curative end-results, often depend on:

5. The period of the disease in which the operative attempt to cure is made: Largely, no doubt due to the facts that a chronic aural discharge is not often painful, and to the tradition that it may be helpful to the system, operative measures are not considered by the patient until danger signals have arisen which are clearly evident to the experienced aurist. The nature of the end-results are often reversed by the delay, for results prove that radical mastoid surgery performed for the cure of a running ear, if done at a selected time, and before there is present any extension to some vital center, is among the safest surgical procedures, and also that when performed by those especially trained and experienced in this class of surgery, the cure of this discharge should be expected in the vast majority of such cases. The end-results at present are, therefore, not so good as they should be. The fault lies with both the physician and patient. The physician who should know the dangers resulting from delay should reeducate the public concerning the actual dangers due to prolonged aural suppuration. Considerable knowledge about discharging ears existed centuries before disease of the appendix was known, yet today both physician and laity know vastly more of the diseases and dangers lurking about the appendix than about the equally common and equally dangerous chronic suppuration of the middle ear. The only conclusion one can draw is that the abdominal surgeon has gone to greater pains to enlighten the public than has the otologist.

6. The physical condition of the patient: No argument is needed to prove that the end-result from the surgical treatment of chronic otorrhea depends much on the physical condition of the patient. Conditions of ill health may be due to bad environment, overwork, undernourishment, chronic malaria, septic states due to the ear itself, or other foci of infection. Most of these and others can usually be sufficiently overcome, in preliminary treatment, to insure a satisfactory end-result. Likewise, when syphilitic, the condition of the patient may be so cleared that satisfactory aural treatment may be instituted. Unfortunately, however, tuberculosis, either general or local, is often present in these cases, and the outcome usually is failure to cure.

7. The skill and judgment of the operator: While of course these attributes are necessary to the success of any class of surgery, they are especially essential in the performance of the bone surgery necessary to the cure of necrosing osseous tissue which lies in the midst of important and somewhat dangerous structures, the semicircular canals, facial nerve, lateral sinus and brain coverings. Overoperating incurs great risk of injury to one or more of these structures, while timidity on the part of the surgeon is pretty certain to result in failure to cure, because of failure to remove all the disease.

The nature of the end-result, whether cure or failure, frequently depends on the efficiency of the after-treatment of the patient following surgical means of cure. The most satisfactory end-results are secured when the surgeon who operates gives personal attention to the after-care until the wound is dermatized, and healing is assured. Failure is a not infrequent termination in patients, even though thoroughly well operated on, if afterward they are assigned to the care of physicians not especially trained in the management of this class of surgery. I have the personal feeling that my work is only well begun when a radical mastoid operation is performed and that it is quite as much a duty to note the entire after-progress as to operate.

The nature of the end-result often depends much on the patient himself, for sometimes as soon as he is able to leave the hospital, and when the external wound is healed, he acts on the belief that all has been done in the way of treatment that should be done, and therefore neglects to return for further observation or necessary care. I have seen many examples of total failure due to such neglect following the most skilful operations. On the other hand, I have observed many successful endings in cases that, during the first few weeks or even months following operative measures, were most unpromising, the final cure being obtained, I believe, by persistent, well-directed after-attention. While the foregoing points determine in large measure the end-results of treatment, the results themselves may be considered.

As to the effect on the hearing: This, in the bona fide nonsurgical cases in which there is no labyrinthic involvement, is usually favorable, since there is frequently much improvement in function and seldom actual loss above that already present. Following surgical treatment, especially following the radical mastoid operation, there has been, in my experience, usually a retention of the same degree of hearing as before the operation. Occasionally I have observed some loss of function, and I think quite as often there has been slight gain. Great improvement of function should not be expected as an end-result of surgical treatment. The prime object of such treatment is to conserve life, and improvement of hearing should usually not be promised. I am aware that a few American aurists make claim of almost invariable marked functional improvement following their own technic of operation, but I believe this claim is not made by the majority of aural surgeons.

As to cure of the suppuration: In strictly nonsurgical cases ultimate cure may be expected. In patients operated on in a more or less radical way ultimate cessation of the discharge and dermatization of the operation wound will follow in 90 per cent. of cases, provided the hospital facilities are modern in every respect, the surgeon is well experienced, and the after-care of the wound is given by one skilled in the healing of this class of wounds. This estimate is, of course, exclusive of tuberculous cases.

As to the mortality of the patient: Nonsurgical aural discharge, while it remains nonsurgical in its nature, probably never ends disastrously to the patient. When bone necrosis occurs, and when the case is therefore a surgical one, danger to the life of the patient is present in each case and at all periods of the progress of the disease. Proper surgical treatment does not add to that danger, but on the contrary is the best-known means of avoiding a fatal result. Radical surgery of the temporal bone, performed for the purpose of curing chronic aural discharge, is of itself remarkably free from danger to life. In a record of about 300 radical mastoid operations I do not recall death in a single instance that could be attributed to the operation. The real danger to life arises in neglected cases of chronic aural discharge, when the disease has already approached or actually attacked some vital spot. The radical mastoid operation may therefore be regarded as especially free from danger to life in all cases in which it is employed before the meninges or sigmoid sinus has been attacked by the aural suppuration.

Any discussion of the end-results of treatment of chronic aural suppuration would not be complete without mention of the fact that rarely the dura is uncovered accidentally during operative procedures, the sinus may be lacerated and the facial nerve may be exposed or severed. Accidental exposure of the dura or penetration of the sigmoid sinus are of little or no consequence if the wound is left clean and the accidental injuries are properly dressed and managed. Injury to the facial nerve is of course a serious accident, and one much regretted, but it should always be remembered that Nature, through the necrosing processes incident to the chronic otorrhea, produces many more facial palsies than does the experienced, careful surgeon-otologist.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MACKENZIE, PIERCE AND BARNHILL

Dr. Francis P. Emerson, Boston: Whether we have a chronic suppurative middle ear or an acute suppurative middle ear, the first essential is drainage through the membrani tympani, drainage which implies a sufficient opening, with the removal of granulations or anything that blocks the free flow of pus. After that has been established certain primary conditions of the eustachian tube, dwelt on by Drs. Pierce and Mackenzie, will have to be considered. They are fundamental. In a rational consideration of this subject we must have in mind some conception of the way in which this infection becomes chronic, and the methods which would be employed to clear it up. One of the very early conditions is that connected with imperfect ventilation of the nasal pharynx, which is caused by the septum. With a badly deflected septum there is either a compensatory hypertrophy of the middle or inferior turbinal. This is followed by an increased function and hypertrophy. The hypertrophy causes imperfect ventilation and imperfect drainage. This latter is followed by a low grade infection which is constant and persistent and a source of reinfection of the eustachian tube. A little later comes a more virulent infection, and this is followed by sinusitis. Any preventive measure must take into consideration all of these factors—ventilation, drainage, reinfection. In certain cases of mastoiditis in children it is impossible to heal that mastoid until we remove the adenoids. The primary cause of this middle ear trouble was an acute infection in the nasopharynx, and because the connection is not more evident when these cases come to us as chronic cases does not imply that the primary focus is not still active. Any conservative treatment must take into consideration the remedying of these conditions which cause reinfection. These infections that have their focus in the sinuses extend to the epipharynx, to the eustachian tube, and later to the middle ear, so that a conservative treatment of the middle ear suppuration implies straightening of the septum and trimming the turbinals. You must also cure the epipharyngitis, which is often a very active cause in keeping up an irritation in the tube.

Another point is that the eustachian tube on the side of the middle ear which is most involved is always the one most open. If you catheterize the eustachian tube you will find that to a certain extent it has lost its power of contraction and that the condition is often made worse by autoinflation by the patients themselves.

After you have relieved the primary foci and the resulting infection, and established drainage of the middle ear, many patients will get well without further treatment. All the other measures that are applied directly to the middle ear come in as a part of the secondary treatment.

Dr. W. Eugene Dixon, Oklahoma City: I was very much interested in Dr. Pierce's remarks on otitis media, especially on the tubal treatment, but I wonder how many here find difficulty in using the No. 1 wire with cotton on the end passed through the catheter as a guide into the eustachian tube. I cannot get through the isthmus of the tube as easily as the doctor says he can. I want to present a technic for passing cotton wound applicators, bougies, electrodes or syringes into the eustachian tube by the direct method without using the catheter as a guide. Wind the cotton very thinly, but securely, around the applicator from the tip to one-half inch above the bend. Dip it into cocain, to cocainize the mucous membrane. Into one nostril pass the Holmes nasopharyngoscope. Adjust it so that the upper one half of the mouth of the tube is in plain view. Into the other nostril pass the cotton wound applicator in such a way that the tip of the applicator is on the floor of the nose. Looking into the scope you can see it as it emerges into the nasopharynx. Carry it outward, and backward into the mouth of the tube in a vertical direction, and remembering the anatomy, place the tip on or near the floor of the tube, rotate the applicator or syringe tip outward, upward and backward, all the time keeping the instrument after its rotation in the upper part of the tube, or between the anterior and posterior plates of the upper portion. It is very easily done.

Dr. Cullen F. Welty, San Francisco: Dr. Pierce said that chronic suppuration of the middle ear is easily treated and that a cure results in a majority of cases—if the proper treatment is given. This is a most remarkable statement coming from a man so prominent. I have tried for weeks and months to do the various procedures that have been described, with little or no results. Patients come back in two or three weeks or months with a discharge from the ear again. The number of patients cured by treatment as compared with the number cured by operative procedures, is almost infinitesimal. Dr. Pierce also says that he cures cholesteatoma by irrigating the middle ear, which is absolutely ridiculous. It cannot be done, as he well knows.

He also says that if there is mastoid involvement, these patients are not so likely to get well. How do you know whether there is mastoid involvement? He says: If there has been pain or tenderness back of the ear. I challenge anybody who makes such a statement as that. People may know whether they have had pain or tenderness back of the ear, but you cannot say there is mastoid involvement because of any such symptoms, as the pain and tenderness may be produced by tooth root abscess—imbedded teeth or a buried tonsil. I have had to contend with all these and many more. I wish to say furthermore, that in the radical mastoid operation a large percentage—90 per cent.—of the cases have large lesions within the mastoid cells, lesions that could be seen at from 10 to 15 feet. If we are confronted with such statements as Dr. Pierce has made, somebody must have the courage of his convictions and get up and explain why this is not just as stated. Dr. Pierce speaks of tuberculosis—that these patients do not get well, so what is the use of operating? The only treatment for a tuberculous ear is to operate thoroughly, and if you operate thoroughly you will cure them. I have such cases on record.

Dr. Emmett L. Jones, Cumberland, Md.: For many years I have treated my patients by a simple method which I described two years ago. I believe all ear infections originate in or travel through the rhinopharynx, and if we are to treat them successfully we must begin with the rhinopharynx. If we do that we will have nearly 100 cures in 100 cases. With this method the hearing is always restored, the perforations heal, the discharge ceases, and there are no mastoid symptoms. Patients who have had for several days purulent mastoid symptoms according to all accepted standards, following this treatment get well, and even some chronic cases are cured. The basis of the treatment is the daily application to the rhinopharynx of a strong solution of phenol (carbolic acid), tincture of iodin and glycerin, from which you have the reaction of a bad sore throat. Then in acute cases I dip the tip of a tampon in a solution of epinephrin in anilin, 1:1,000, with 10 per cent. of cocain added, and apply that frequently to the drum membrane. In a few hours the pain eases, the discharge soon amounts to nothing, and the trouble in the mastoid gets well, and there is absolute restoration of hearing.

Dr. J. Holinger, Chicago: The main part of Dr. Beck's paper is his pathology. Pathology of chronic suppuration of the middle-ear has not been given, and therefore we will not and cannot come to an agreement on how to treat it. If we have a carefully worked out pathology, the indications will become evident, and then we might agree; but this way we cannot.

Dr. A. E. Prince, Springfield, Ill.: I want to direct attention to a simple method of securing a partial vacuum in cases of incipient mastoiditis. Every acute inflammation of the middle-ear should be considered in its relation to the antrum and mastoid cells which are usually involved. The establishment of a partial vacuum in a large percentage of acute cases, and in some subsequent cases, will prevent the extension of the disease and bring about a cure. Dr. Baum carried through a series of cases which were recommended for mastoid operation, by the use of Bier's vacuum method, and cured 80 per cent. without an operation. The method I recommend is much simpler. It consists of instructing a mother or nurse to use the flaring end of a soft catheter which is selected to fit the external meatus. By sucking with the mouth at frequent intervals the patient is relieved, and the disease is prevented from extending to the deeper cells; an operation is avoided in a considerable number of cases. If the patient be mature he can do this himself. He will know when it hurts and avoid excessive suction. This is applicable after every paracentesis and every spontaneous rupture of the drum membrane. It does not apply to cases of chronic suppuration, but to recent cases.

Dr. Oliver Tydings, Chicago: The causes which brought into existence suppurative otitis media, if left uncorrected, are sufficient to keep it going to the end of time. I wish to endorse the tube introduced by Dr. Prince. I have used that treatment for a number of years. It was not original with me; I do not know where it came from. I am sorry to disagree with Dr. Pierce on cholesteatoma. I believe that cholesteatoma has a separate and distinct etiology—and this in spite of no less an authority than Politzer. My own experience is at variance with his, and proves conclusively to my mind that it is due to a separate and distinct entity from the cause of suppurative otitis media, and must be treated by separate and distinct methods of treatment. I have used the same catheter Dr. Pierce used; I have washed out the tympanic cavity until I was tired and the patient's endurance exhausted—and although I have not reached the degree of efficiency in the use of the catheter that Dr. Pierce has—and while I was doing that work patiently, and sometimes had an erosion of the semicircular canal with the resulting disturbance of equilibrium, showing that with all my washing, I still got enough accumulation there to appall me, so I quit washing out and I have not washed an ear for this malady for some time. The only thing I do or advise for cholesteatoma is to operate, and the sooner done the better. In regard to vaccines: I have found them useful in some cases and have gotten some very beautiful results with the mixed vaccine.

Dr. Harry B. Harris, Dayton, Ohio: It strikes me that Dr. Dixon's applicators are too stiff to pass through the eustachian tube without doing injury. The applicators I am using and have used in several hundreds of cases are those of Dr. Yankauer. I do not recall any case in which I was unable to pass the applicator through the isthmus and make my application as desired. These applicators are made of very delicate wire, bent back and twisted on itself which makes it double, leaving a very small loop at the end where the cotton is applied. It is impossible for the cotton to come off of this end if properly put on, and the applicators are so flexible that they easily mold themselves to the shape of the tube without undue force.

Dr. W. Eugene Dixon, Oklahoma City: I have been using these applicators since 1910, and never once in that length of time has the cotton come off. The cotton is wound not only on the end, but clear back of the bend and therefore it is always in sight. If it did come off all you would have to do would be to pull it out with a pair of forceps through the nose, as the bend of the instrument which is covered with cotton is not in the eustachian tube and therefore the cotton would be left hanging in the nasopharynx. The new applicators are threaded on the end for some distance which holds the cotton very securely, in fact so secure that it is very difficult to remove it after the use of the applicator. As far as injuring the tube is concerned, the cotton wound applicator can be passed just as gently as a catheter can be passed into the urethra. It is held in one hand and passed while with the other you hold the nasopharyngoscope, and see just what you are doing in every step of the operation. The sense of touch is acute and one can very readily develop a technic without doing harm.

Dr. William S. Tomlin, Indianapolis: As to tuberculosis of the middle ear, having had some experience as consultant in the treatment of tuberculosis for a sanatorium, a considerable number of patients have come under my care. Of most importance in their treatment is the local application of tuberculin emulsion. We start usually with the dilution No. 1 or No. 2, and gradually increase it. Our experience has been very favorable in the local treatment of these cases where the opening into the drum was sufficiently large to make a successful application. In some cases I have tried to introduce it through the eustachian tube, but that has not been successful when the opening into the drum was not large. These cases require especial attention when tuberculosis develops in the throat. Tubercular infection of the middle ear may be said to be almost always derived by way of the eustachian tube. I am also of the opinion that the primary causes which have influenced the development of infection of the middle ear must be removed if we expect them to recover with nonoperative treatment, and in many cases even with operative treatment the ear will continue moist, giving rise to recurrences, if you do not remove the cause. In some cases in which I have not been able to find adenoids, teeth, infected tonsils or indications of the source of infection, the treatment of the lower end of the eustachian tube has brought about results. In these cases I have found the patients would state that they had noticed when attempting to blow the nose in the ordinary way, without any extraordinary force, they would constantly hear the blowing of the air into the middle ear.

Dr. Charles M. Robertson, Chicago: I have been waiting to hear some one raise the point of diagnosis of perforation of the tympanic membrane. In chronic suppuration of the middle ear if the discharge consists of mucus from the eustachian tube, there is no use putting on suction; there is no use putting medicine in the ear, there is no use in lavage. If the patient wishes to clear the tube he can do it by blowing the air through from the pharynx. In case of suppurative disease of the ear per se, if the discharge is coming down from the attic, there is no use to wash by cannula as the case requires operative treatment. In regard to perforations, we divide them into innocent and dangerous. If it is a dangerous perforation there is no use in trying anything else but an operation. When the opening in the drum membrane is large anteriorly and of innocent type the case is usually tubal and the tube should be destroyed. With the perforation in Shrapnell's membrane, there is no use to expect results by topical treatment; the opening should be enlarged to promote drainage and if this is not sufficient to produce cessation of discharge the patient should be operated on by a complete exenteration. I use the gauze treatment in the last part of a suppurative discharge in acute cases and it has done very well in suppurations of this type. In all of these chronic cases a radical mastoid operation should be performed.

Dr. Clark W. Hawley, Chicago: I do not know how to treat suppurating ears. This man says do this, and that one says do that. I say it depends on the symptoms in each case. In acute suppurating ears do not use water. I use absolutely no water; I have not washed a suppurating ear for twenty years. I simply put a piece of cotton on a small toothpick and pass that into the ear until I get it clean.

Dr. George W. Mackenzie, Philadelphia: We should anticipate complications before they arise. In the first place, any acute middle ear suppuration which endures for more than six weeks is complicated. There is something that is delaying recovery, and it is for us with what knowledge we possess of the pathology of middle ear suppuration to determine what is at fault and whether there is a single factor or multiple factors. By a thorough examination one is often made aware of complications before the patient complains of symptoms suggesting them. Nine or ten years ago I examined a series of 117 cases of cholesteatoma. They were examined before operation and a diagnosis of cholesteatoma was made in every case by a microscopic examination of the washings from the ears. The results of these examinations were published. The secretion of little flaky particles that come out of the ear when washed is put under the microscope in its natural state and examined for micro-organisms and crystals. The crystals are rhomboidal in shape, many with a corner broken off. When cholesterin crystals are found, the patient has a cholesteatoma. In 117 cases in which radical operation was performed, the diagnosis made by the microscope prior to operation was substantiated. Furthermore, there was not a single case of cholesteatoma that had not one or more complications, which, I think, is the strongest argument in favor of operating in all cases of cholesteatoma. We run too much risk by trusting to conservative methods.

Dr. Norval H. Pierce, Chicago: My brief remarks were for the purpose of calling attention to my views regarding chronic suppurative otitis media, and I endeavored to show that chronic suppurative otitis media is not a simple matter. It is not an entity. A discharge from the ear is only a symptom of a very complicated pathology involving a very complicated organ. I think I do as many radical mastoid operations as any gentleman present. I do not hesitate to do a radical mastoid operation. But I think that the man who on seeing a chronic discharge from the ear says that the only possible treatment for it is a radical mastoid operation is devoid of proper education or is a fanatic. I regard cholesteatoma as it involves the ear as a very dangerous condition, one that most frequently calls for proper radical treatment. I have cured cholesteatomatous conditions of the middle ear by other means than the radical operation, and have retained for the patient a sound conducting apparatus that has a very much better function than the sound conducting apparatus of a patient who has been operated by the radical method after four or five years. I am not disparaging radical work. I am hoping that you will not regard the suppurative ear as an indication, and unequivocal indication, for radical work. Dr. Dixon drew attention to his applicators for the eustachian tube. The eustachian tube is not a straight tube; it is a tube that has more or less of an angle at the isthmus, and I cannot see how he can drive that straight inflexible staff up a tube that has an acute angle. That is the reason I use a very flexible silver applicator. There are tubes through which we cannot push even this very flexible applicator because of the acuteness of the tubal angle. Regarding the strictures of the tube, Schwartzen a very long time ago investigated on the dead body the frequency with which organic strictures of the tube occur, and his report was to the effect that in simple inflammatory conditions, strictures of the tube practically never occurred. They occur as the result of diphtheria, syphilis, and some other diseases, but then the strictures are situated at the pharyngeal end of the tube, and according to his report there was never a stricture at the isthmus. The reason men think the tube is very frequently the site of stricture is because the probe, or bougie, or applicator is arrested at the acute angle. I am sorry to think that any gentleman in this section would criticize a remark that I might make here as absurd and ridiculous. I have given this question of otology the best part of my life. I have tried to analyze cases, having ample opportunity and material to reach certain conclusions, and I say now, that if we do not treat these chronic suppurative inflammations in an intelligent manner, if we resort immediately to the destructive—because it is destructive—radical procedure; if we do not attempt to bring about a cure in these cases that present no symptoms of rapid advancement, of cerebral or other complications, then we are not doing our duty to our patients and are undoubtedly rendering ourselves liable to the very ignominious appellation of plain, ordinary, common or garden variety of butcher.

Dr. John F. Barnhill, Indianapolis: Some remarks were made that it seems to me ought to be corrected. The question is the problem we must meet in the chronic discharging ear. Each patient is a problem. If the problem is a simple one, if, as Dr. Pierce has said, the whole trouble is in the eustachian tube, clearly the problem is one of the eustachian tube and not of a mastoid operation. If the trouble is in the environment of the ear, if there is a bad state of ventilation, if it is the epipharynx that is involved, then the problem should be attacked from that angle. One gentleman says 100 per cent. of his patients were cured by his treatment of the epipharynx. I believe these were acute cases and therefore do not fall within the line of our discussion. I think every one recognizes the value, ordinarily, of treatment of the epipharynx, but to allow a statement such as Dr. Jones made, that 100 per cent. of patients were cured by this treatment, to go unchallenged, would be wrong. Now I think we have seen cases in which we have not had any time to make any application to the nasopharynx. There is often a mastoiditis almost as soon as there is a middle-ear disease, and it does not stand to reason that we could cure that kind of mastoiditis by local application to the nasopharynx. If there is necrosed bone, and if reasonable local treatment has been given, I think Dr. Pierce will agree with me that if the suppuration continues some kind of surgery is necessary, and that radical mastoid surgery is best. If there is cholesteatoma present, I think that not 95 per cent. but 99 per cent. of these cases are cases for the radical mastoid operation. So many of them are complicated. Suppuration from the ear means that something is rotting. Pus is the product of decay, and if something is decaying and the decay continues long enough it will get into the meninges, the sinuses and the labyrinth, or some other dangerous place. It is not wise to stand by indefinitely and allow a chronic suppuration to go on without warning our patients that an operation, after reasonable treatment, is the best and safest procedure.

Dr. J. Holinger, Chicago: I should like to caution against the use of anilin. I have seen serious symptoms of poisoning develop after a few drops of the oil were poured in the ear. It was a case of acute otitis media without perforation, and while it was not fatal, it kept me in hot water for a whole night. I never shall use anilin in the ear under any condition.

The Anesthetist.—The surgeon is greatly dependent on the anesthetist. The risks of anesthesia should not be disregarded, and will not be underestimated by any one who has encountered fatal idiosyncrasies in patients. In a difficult case the skill of the anesthetist may be of no less importance than that of the surgeon himself.—S. S. Goldwater, M.D., *Modern Hospital*, November, 1916.

WOUNDS IN WAR AND METHODS OF TREATMENT

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WATERVILLE, MAINE

Before the wounds produced by modern military projectiles as seen in the present war are described, and before the methods which have been found most efficient in dealing with them are discussed, a brief consideration of how these injuries are inflicted and especially of the conditions under which they are received may not be out of place, because those conditions have an important bearing on the character of the wounds and on their treatment. As Surgeon-General Sir Anthony Bowlby[1] has stated, "one of the most important points for present consideration in connection with the wounds of war is the geographical situation of the battlefield."

During the first five or six weeks of the war the fighting was in the open, but, since the battle of the Marne, with a few exceptions the contending forces have lived and fought in trenches. The territory in which the fighting has been done is, or was before the war, a thickly populated and intensively cultivated region. The soil, on the whole, is a rich loam, and for generations it has been heavily manured. It produces abundant crops, and provides sustenance for large numbers of cattle. Then, too, the climate is moist. During the winter months, from late October until early April, it rains on about five out of seven days, and during the summer months there are many cloudy days. Such conditions, as one might expect, are ideal for bacterial growth, and this soil teems with micro-organisms of every kind, including large numbers of spore-forming pathogenic anaerobes.

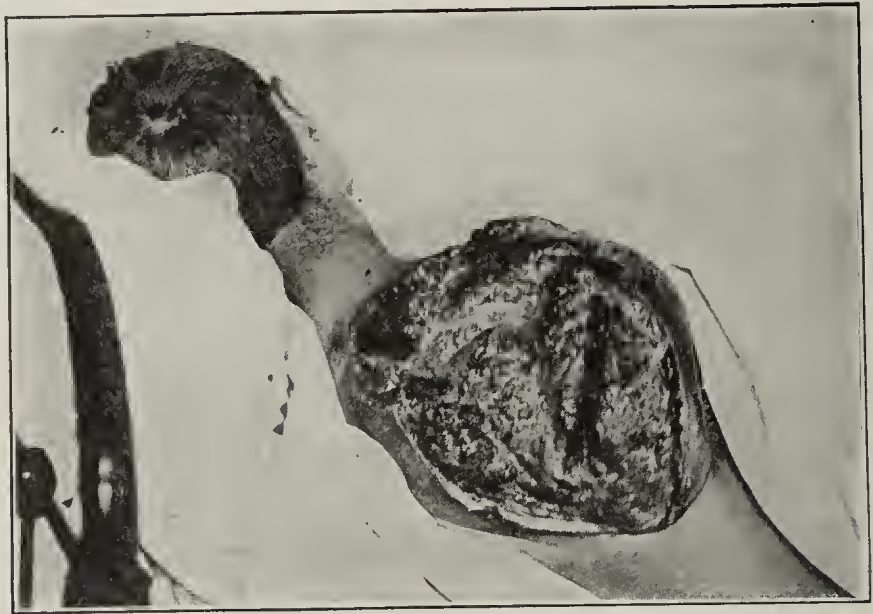

Fig. 1.—High explosive shell wound of right shoulder with destruction of deltoid and shattering of upper third of right humerus. (Photograph by King—American Ambulance.)

The trenches are deep, and for long periods the soldiers have to stand or move about in mud and water to their ankles or even to their knees. They have to sleep as best they can on the floor of the trench, on dirt shelves dug out of the trench, or in one of the scattered shelters made of rough timber, so that they are covered with dirt and mud from head to foot, especially during the winter.

If a man in the trenches is hit and falls, he has to lie in the dirt, mud or water until assisted by comrades. Every soldier is provided with an individual dressing which is immediately applied by himself, by a comrade or by stretcher bearers as dirty as himself. One can imagine what such a dressing is. If he is able to walk, he goes by a narrow communicating trench to the nearest *poste de secours* or dressing station located in an underground shelter or cellar, protected against shell fire, from several hundred feet to several hundred yards back. If unable to walk, he must be carried; but the trenches are narrow and crooked, and render the use of an ordinary stretcher out of the question. To overcome this difficulty, both French and English have devised an ingenious trench stretcher. If a heavy bombardment or an attack is in progress, the wounded often have to lie for hours where they have dropped, until they can with some degree of safety either walk back to the dressing station or be picked up and carried by stretcher bearers. During an attack on the enemy trenches it often happens that a wounded man has to lie in the open between the opposing trenches until nightfall affords him sufficient protection to crawl back to his own trenches, or permits a relief party to bring him in.

In a large percentage of cases there is a considerable interval between the injury and the first dressing at the dressing station. During the first month of the war many men remained on the field for a number of days before being picked up, and the results of such prolonged exposure to every factor favorable to infection would be impossible to describe. The sudden necessity of defending their territory made it necessary for the French to utilize every means of transport to push their troops to meet the rapidly advancing enemy and to keep these troops supplied with food and ammunition. Force of strenuous circumstances made the care of the wounded a secondary consideration. During the first month of the war large numbers of French wounded fell into the hands of the Germans. At the battle of the Marne, thousands of French wounded, after remaining on the field for several days in many cases, had to spend several hours more baking in freight or even open flat cars under a hot August sun on some railroad siding, their wounds in the meantime "stewing in their own juices," while trainload on trainload of troops was being sent forward to pursue the fleeing Teutons. By October, 1914, however, this state of affairs had considerably improved, and has been steadily improving ever since, until now the wounded are evacuated and cared for as quickly and as efficiently as can possibly be done with due consideration to the character of the fighting and the difficulties it presents. And these difficulties are great.

During the open fighting which characterized the first weeks of the war, the French armies, obliged to retreat before the vastly superior numbers of the Germans, could not establish any but temporary field hospitals. The best which could be done at that time was to put the wounded on cars and send them back to base hospitals in Paris and the provinces to the south. But after the battle of the Marne had forced the Germans to "dig themselves in" and the Allies to imitate them, it became possible to establish at short distances behind the lines temporary field ambulances,[2] which were gradually organized so that urgent operations could be done. We must remember that all these dressing stations and field ambulances are within artillery range. Sometimes field ambulances are located in buildings partly demolished by previous bombardments; sometimes in a cellar; others again are located, as in the Vosges and Argonne districts, in underground chambers dug out of the side of a hill and carefully concealed and protected against shell fire. The equipment of these ambulances depends to a large extent on the resourcefulness and ingenuity of the surgeon in charge. In spite of tremendous difficulties, however, many of these field hospitals are equipped with every essential to the performance of all kinds of major surgery.

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[1] Bowlby, Anthony: Bradshaw Lecture on Wounds in War, Brit. Jour. Surg., 1916, 3, 451.

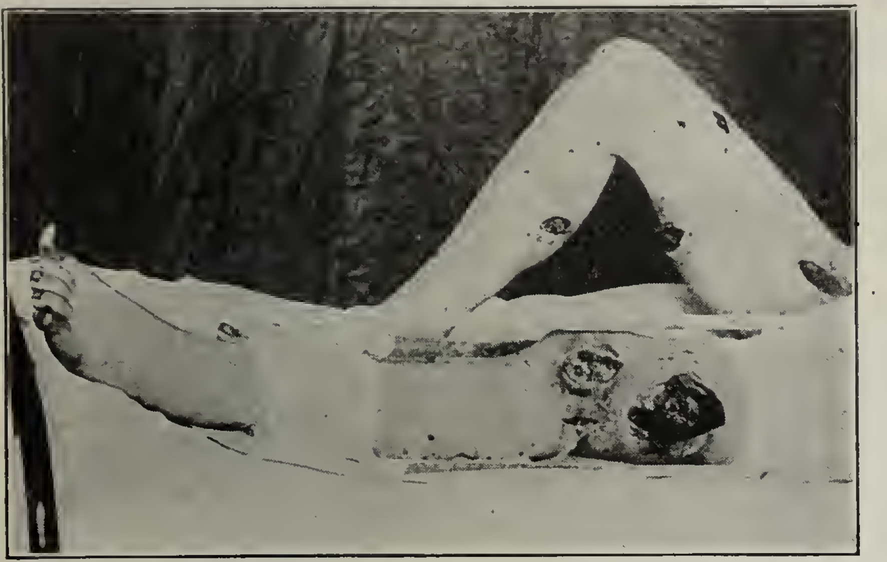

Fig. 2.—Multiple shell wounds of both lower extremities with purulent arthritis of left knee. Photograph taken on admission. Bridge plaster cast applied at evacuation hospital. (Courtesy of the American Ambulance.)

To give an idea of the difficulties with which they have to contend, a French surgeon in charge of a field hospital of 2,000 beds behind the Somme front told me not long ago that, in one period of thirty-six hours, 600 wounded had passed through his own hands. He had worked out a new splint for fractures of the femur, but with such a rush of the work he had been able to apply it in only a few cases and had not been able to follow its results, because the wounded had to be evacuated immediately to make room for fresh arrivals. This impossibility of following cases and seeing the final results of their work is one of the most serious handicaps of field ambulance surgeons. But war is war, and a field hospital must always be ready to receive and quickly care for the newly wounded and keep itself cleared by evacuating them as soon as possible to the base hospitals by way of the intermediate evacuation hospitals. This will explain why it is that the best ground on which to study the wounds of the war and the different infections and complications which so frequently accompany them is the base hospital, because here cases can be followed, and the results of any line of treatment can be controlled by daily observation. Another surgeon, working behind the Verdun front, told me that in one week he and his associate had performed 400 operations in an underground ambulance and under shell fire much of the time. Under such circumstances errors of judgment are to be expected, and technic must be boiled down to the bare essentials.

At the dressing station the wounds are given their first real dressing by a surgeon, who may have had antebellum surgical experience, or who, previous to the war, may have been a general practitioner or a recent hospital intern. No operations are performed at the dressing stations. The wounds are examined, quickly dressed with a view both to the cleanliness of the wound and to the comfort of the patient, and the men sent back, on foot if they can walk, or on a stretcher suspended from a two-wheeled cart pushed or pulled by two men, or sometimes in a horse-drawn ambulance, to the nearest field hospital. Here they are given one or more doses of tetanus antitoxin, their wounds are explored and drained, accessible foreign bodies are removed, fractures are temporarily splinted, and all patients in condition to be transported are then sent by motor ambulances to the nearest evacuation hospital. In very serious cases the patients may be kept at the field hospital until their condition warrants transportation. At the evacuation hospital, for instance at Bar le Duc or at Révigny for the Verdun front, or at Amiens for the French part of the Somme front, they may be kept for a few hours to several weeks, depending on their condition, the intensity of the fighting going on at that portion of the front, and the numbers of wounded requiring attention. Here wounds are more thoroughly drained; fractures are put into more permanent splints for treatment or for transportation, and the men are then sent on by train to the base hospitals in Paris or in other provincial cities. By the time they reach the base hospital, therefore, they have as a rule had more or less treatment, although during periods of heavy fighting it occasionally happens that some men reach the base twenty-four, thirty-six or forty-eight hours from the time they have been wounded, and with the original dressing applied at the dressing station still undisturbed. The average time between the wound and the arrival at the base hospital is about two weesk.

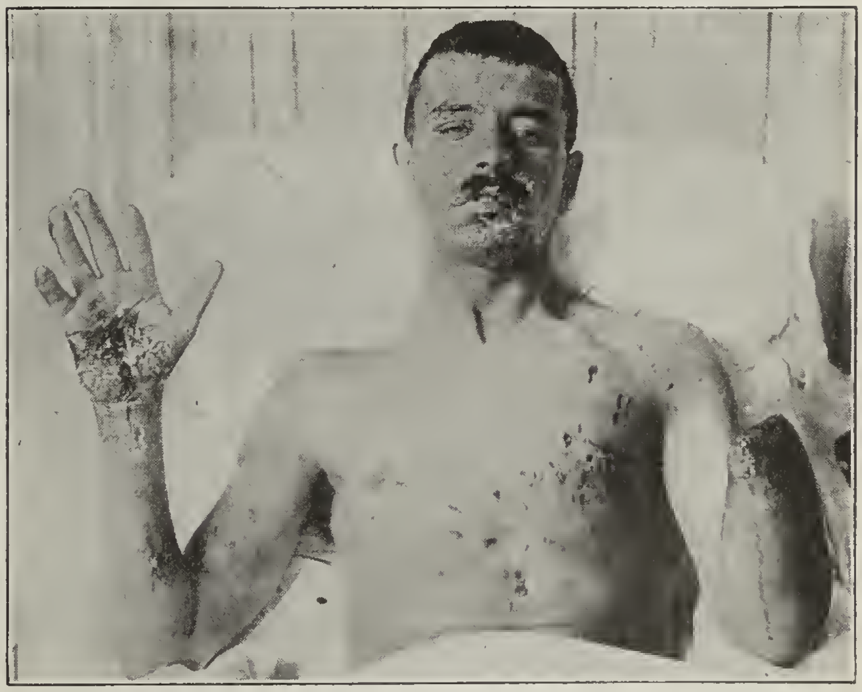

Fig. 3.—Multiple bomb wounds of face, chest and both upper extremities. (Courtesy of the American Ambulance.)

PROJECTILES AND WOUNDS

It is impossible at this time to estimate the proportion of wounds caused by bullet, shell, shrapnel, bayonet, bomb or grenade. During the first weeks of open fighting leading to and including the battle of the Marne, the number of bullet wounds was relatively high. Since that time, however, a large proportion of the wounds have been caused by shell, shrapnel, bomb or grenade. Bayonet wounds are rarely seen except in the immediate zone of fighting, because such injuries, being inflicted at close quarters, the long blade generally penetrating the abdomen or the chest, usually mean instant or early death. Men so wounded seldom live to reach a base hospital.

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[2] "Ambulance" is a name given in France to a temporary military hospital to distinguish it from a permanent military hospital.

The construction and ballistics of the different types of projectiles have been amply described and explained by others. I shall limit myself, therefore, to those features which are peculiar to this war.

The effect of the pointed rifle bullet depends largely on the distance from which it has been fired. The proximity of the opposing trenches accounts for the frequency of the explosive effects observed in many cases. During the early stage of the war such results led to charges that the Germans were using dumdum bullets. There may have been isolated instances in which a soldier turned the bullet rear end forward in order to inflict more damage, but this is not at all necessary to explain the explosive effects, which Reverdin of Geneva has found to be due to the violent impact of the bullet on a fluid-containing object or tissue.

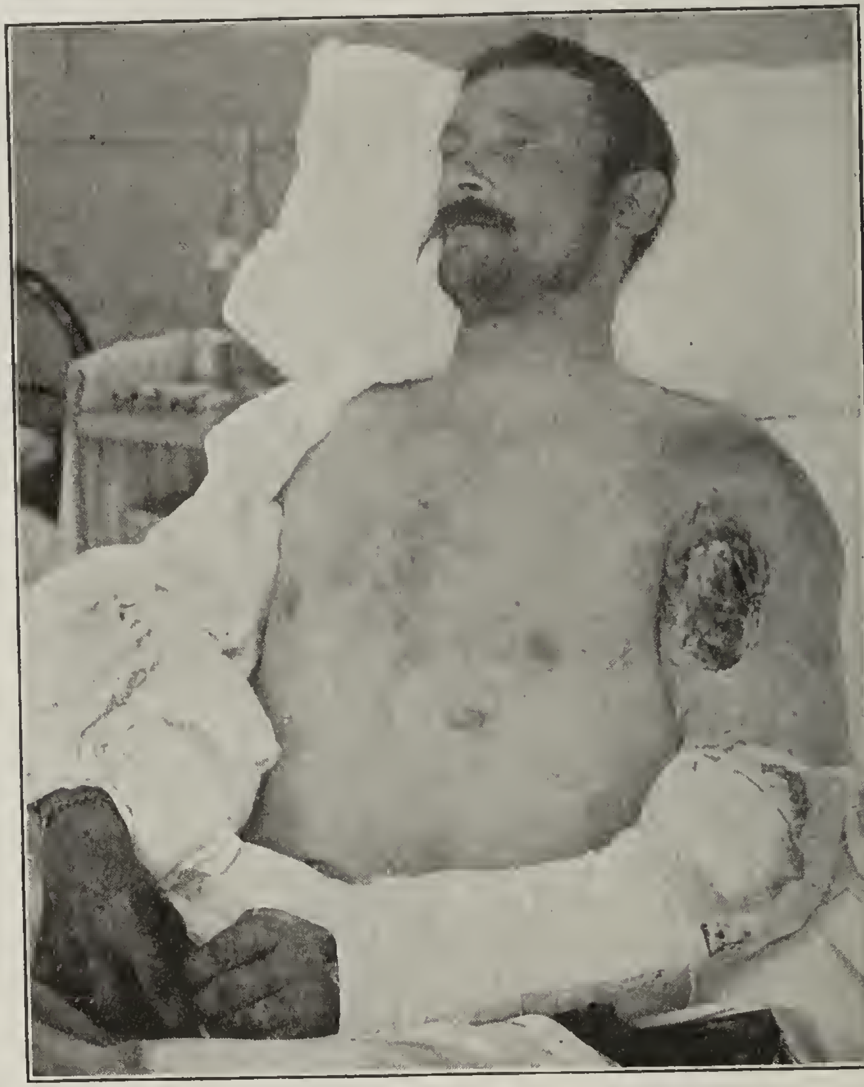

Fig. 4.—Perforating shell wound of upper left arm with compound, comminuted, and badly infected fracture of left humerus. (Photograph by King—American Ambulance.)

The impact of one of these bullets on a large bone, especially at short range, causes extensive shattering, and the fragments are driven with great force into or through the surrounding soft parts, with resulting wide rents of skin and fascia and extrusion of muscle. Rarely one encounters a clean perforation of a bone without fracture or with only a fissured fracture. Almost invariably, however, bullet fractures are badly comminuted.

Shells are largely of two kinds, shrapnel or high explosive, and on account of the greater effectiveness and destructive power of the latter, more and more of this type are being used. The effective range of the shrapnel shell is not very great, because the balls rapidly lose their initial velocity. The wounds they produce are not as bad as the worst of those inflicted by the ordinary rifle or machine gun bullet; but, being easily deformed, in some cases they are responsible for considerable damage. On the whole, however, their destructive power is not very great.

Of all the projectiles, none produces such frightful or extensive wounds as the high explosive shell, which in bursting projects with intense violence innumerable jagged fragments of every size from that of a grain of sand to pieces as big as one's hand. And the size of the piece may bear no relation whatever to the size of the wound. The sharp, irregular edges tear skin, fascia and muscle, and pulpify nerves and vessels, causing widespread crushing, contusion, extravasation of blood and sloughing of large areas. One of the worst features of such wounds is that these fragments of shell tear off pieces of clothing, which are carried into the deepest portions of the wound, so that it is extremely common, even in superficial wounds, to find their edges and raw surface covered with shreds of clothing. In deep wounds with widespread laceration of tissues, such pieces of clothing, covered as they are with the dirt of months in the trenches, find favorable lodging in recesses filled with extravasated blood, and are responsible for much infection. Even if a soldier is not actually struck by one of these fragments, the force of the explosion as the shell strikes the ground may project stones, sand and mud, and thus produce wounds which may be very serious. I well remember one man who had been wounded at Douamont, near Verdun. His right thigh showed three deep, penetrating wounds which, when incised and explored, were found to contain a small handful of stones. In another man I recall taking out several pieces of wood which had been driven into an ugly wound of the buttock.

The sudden violent explosion of one of these shells, especially those of large caliber, causes such an atmospheric disturbance in its immediate neighborhood as sometimes to produce death without any external wounds. In some of these cases there has been found a rupture of one or both lungs; in others nothing could be found beyond numerous petechial hemorrhages of the brain.

Bombs, grenades and torpedoes are of many kinds. They essentially consist of a container of iron or some other metal filled with a variable charge of high explosive powder, and are particularly vicious because they explode in the trenches, within a confined space, often producing multiple nasty wounds which, like the shell wounds, are always badly infected by the dirt, mud or clothing introduced by the fragments. These fragments are usually small, however, and as they quickly lose their velocity, do not generally produce the extensive ravages encountered in shell wounds.

In all these injuries the effects are not limited to the immediate wound tract, but may be spread over a wide area, and on microscopic examination pathologic tissue changes may be found "at a considerable distance from the site of the obvious injury." [1]

COMPLICATING FACTORS

By far the most serious complicating factor is the general infection of all the wounds. We have already studied the conditions that lead to this infection, which is always of a very mixed character, although in some cases one organism or another may predominate.

Tetanus and gas infection, while still occasionally encountered, are not nearly so prevalent now as they were in the fall of 1914. This dreaded gas infection, so rare in ordinary civil practice, has been and still is one of the problems of the surgery of this war.

GAS INFECTION

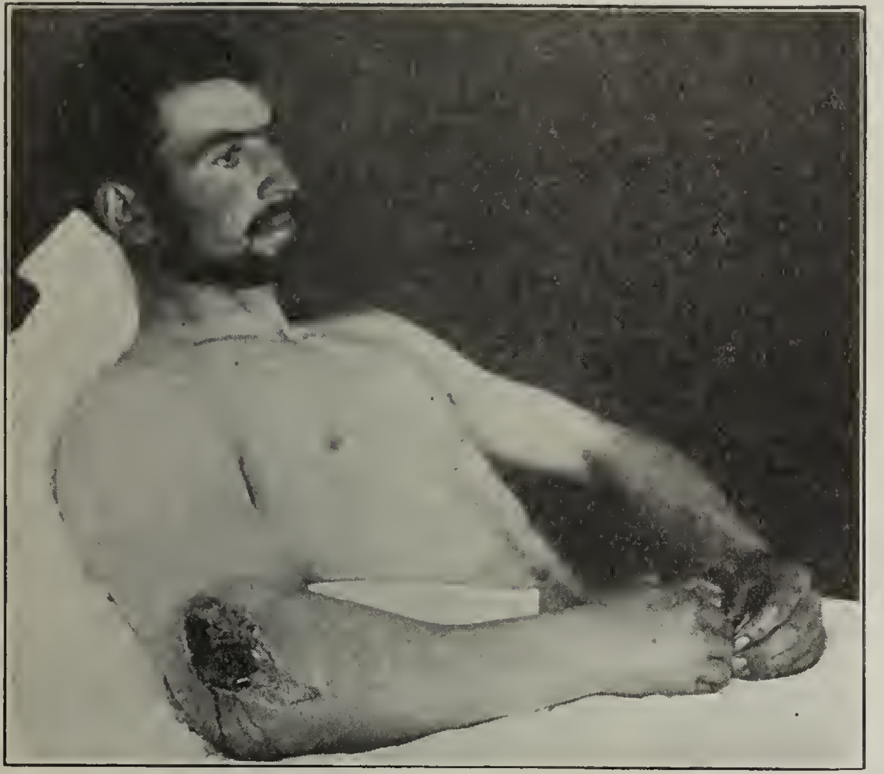

Fig. 5.—Gas infection of right arm with shell wound of lower arm. Note distention of arm and edema of hand. (Courtesy of Dr. Joseph A. Blake.)

The infection is due to the introduction into the tissues of gas-forming anaerobic organisms, chiefly the *Bacillus aerogenes-capsulatus* of Welch, known in France as the *Bacillus perfringens*. Cultures made from a long series of wounds at an early stage show its presence, usually in conjunction with pyogenic organisms, in a large proportion. Fortunately, in most of the wounds the tissues are so widely ripped open as not to provide the anaerobic conditions necessary for the growth and activity of the organisms, because in a large percentage of cases they disappear in a short time. In a few cases, however, while the gas formation may be limited to the injured part, the infection may be so intense as to overwhelm the patient in a few hours. The type of wound in which the rapidly spreading form of the infection is generally seen is the deep wound in which the projectile, instead of widely tearing the muscles apart, has split fascia and muscle, and lodged, often after injuring the vessels, in some muscle mass, as in the calf, thigh or arm. The majority of the cases seen were in deep wounds of the thigh.

To give an idea of the appearances and behavior of gas infection, I shall take an actual case and, for the sake of science, allow the condition to follow its natural course:

A French soldier was brought in during the night, let us say, having been wounded in the right thigh four days previously by a piece of shell. He has had only one or possibly two dressings. On entering the ward in the morning and approaching the new patient's bed, one may be struck by an odor which is something between fresh manure and ancient eggs. The temperature may be anything between 99 and 101 or 102, and the pulse from 100 to 120. The patient is restless and complains of considerable pain about his thigh. When the dressing is removed, the first thing to attract one's attention is the distention of the thigh; it may be twice its normal size. Areas of bluish or purplish discoloration and sometimes a number of blebs may be apparent in the region of the wound. On palpation the skin is tense, and on gentle pressure a distinct crepitation may be felt. On examination of the wound, the skin will be found split or torn apart, and a mass of dry, grayish brown muscle protruding. If the dead muscle is spread about the wound tract, or a probe passed into it, a thick, muddy brown pus will exude; and if pressure is made on the tissues about the wound, bubbles will be seen in the discharge or even on the muscle surface. The odor from the wound is quite characteristic. Aside from the restlessness, the patient may not look very ill, and one may be easily deceived. When first seen at 8 o'clock, the crepitation extended up to the groin. At noon the crepitation may have reached the umbilicus. The discoloration has increased. At 3 o'clock the crepitation may extend to the pectoral region. By 9 o'clock the gas has begun to raise the skin of the neck, and the local signs at the thigh have increased. In the wound the protruding muscle is quite dead, dry and brittle, except along the tract of the missile, which is covered with a dirty, muddy brown discharge mixed with bubbles of gas. At midnight the patient is more restless; the temperature may have gone down, but the pulse has begun to flicker. The neck is now well distended and crepitating. At 3 in the morning the eyelids begin to look puffy, and the patient begins to complain of difficulty with his respiration. The gas has invaded the tissues about the throat and, as it increases, the respiration gradually becomes stertorous. The patient, who, until now, has shown a clear mind, begins to wander, and by 9 o'clock he is dead.

This is about the course of rapidly spreading gas infection, but in some cases neither the onset nor the progress of the condition is so rapid. Furthermore, as already stated, only a small proportion of the wounds infected with gas-forming anaerobes follow such a course.

Taylor[3] has shown that the pathology of gas infection consists essentially of a widespread degeneration of the muscle fibers subjected to the increasing pressure of the gas resulting from the activity of the anaerobes, which find an ideal medium in masses of

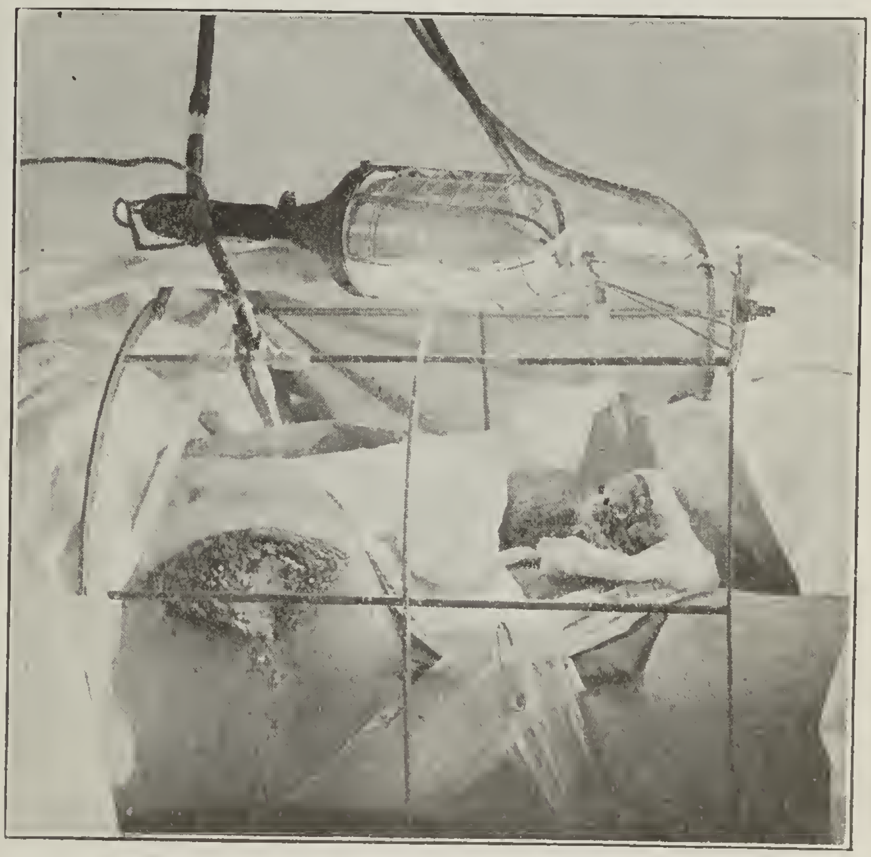

Fig. 6.—Superficial shell wounds of abdomen and scrotum with bilateral testicular hernia, treated with Dakin solution and electric light. Note erosion of skin of right side by solution. (Photograph by the author.)

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[3] Taylor: Observations on the Pathology and Bacteriology of Gas Gangrene, Jour. Path. and Bacteriol., 1916, **20**; La Ogangrène gazeuse—évolution et traitement, Arch. de méd. et de Pharmacie militaires, 1916.

contused and devitalized muscle, especially when the main blood vessels of the limb have also been involved in the injury. This is followed by rapid systemic intoxication and septicemia.

METHODS OF TREATMENT

In the surgery of civil life an injury is not usually exposed to so many evil influences, and the prompt attention it receives has much to do with the comparatively uneventful recovery of the patient. If a soldier could keep relatively clean, and if, when wounded, he could be immediately taken to a well-equipped hospital and cared for, instead of having to be left lying for hours in dirt and mud with one or more wounds filled with dirty clothing, dead tissue, extravasated blood, and one or more foreign bodies, we might expect a better course and a more rapid recovery, and reconstructive surgical procedures could be employed sooner with shortening of disability.

Much has been written about the treatment of wounds, especially in Europe, since the war has given such an importance to the subject. The first great problem, since it is impossible to prevent the infection of these wounds, has been how to combat this infection. It was early recognized that one important step in the right direction was an early and thorough exploration and cleansing of the wounds. It was for this purpose that both the French and the English took advantage of the comparatively stationary position of their armies to establish immediately behind their lines field hospitals in which the wounds could receive the earliest possible attention. This measure alone has been the means of saving thousands of men. In the cases with abdominal wounds, for instance, it has been shown that the mortality depended absolutely on the time between the reception of the injury and the operation. Unfortunately, the range of usefulness of these field hospitals has necessarily been somewhat restricted by the very conditions under which the work has to be done.

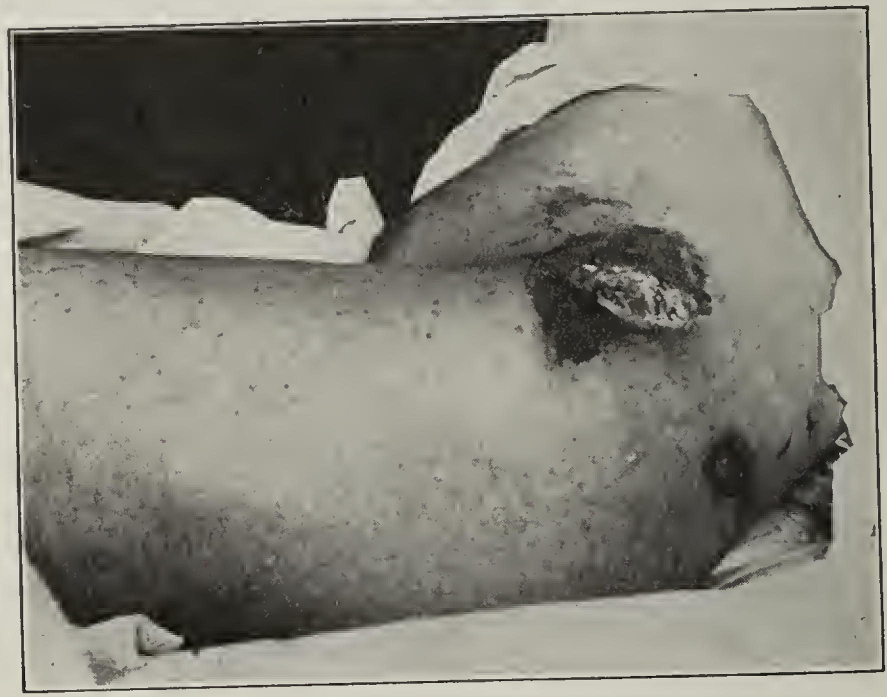

Fig. 7.—Perforating shell wound of left iliac region; no fracture. Simple drainage and wet dressings. (Courtesy of the American Ambulance.)

And now we come to another great problem, and that is the use of antiseptics in an effort to bring about rapid sterilization and healing. If I may again quote Sir Anthony Bowlby:[1]

> It is at this stage that we find two different schools of thought amongst those who are not at the front as to what is best to be done in the treatment of the wound. One school, which draws its experience mainly from the surgery of civil life, would persuade us that all our wounds, if properly treated, should be completely sterilized—at a single dressing if seen early enough—by the application of this or that antiseptic agent; and in any subsequently septic wound can only see evidence that the surgeon's work has not been done as well as it ought. The other school, which draws its limited experience from this present war, asserts that antiseptics are useless as such, and considers that they should not be used at all.

Sir Almroth Wright,[4] contending that the antiseptics in common use have no penetration and, therefore, cannot reach and destroy the organisms in the deeper portions of the wound, strongly advocated the use by continuous irrigation of hypertonic salt solution, which he had found to cause a marked inhibition of bacterial growth, and a rapid autodigestion and removal of sloughs.

Dakin, working with the hypochlorites, announced his results in the form of a new antiseptic for which he claimed that "wounds may be constantly irrigated for many days without producing noticeable irritation, and bacteriological examinations of the wound secretions demonstrate a vigorous antiseptic action. In addition to its antiseptic action the solution exhibits marked capacity for dissolving necrotic tissue." Many surgeons who tried it soon noticed that, though it did burn off sloughs in a short time, it was so irritating when used for continuous drip as to erode the skin where the fluid ran off the wound; and after a few hours the patients howled with the stinging, burning pain, and rebelled against it. It did clean the wounds, however, but their color was that of chemical irritation and not that of healthy granulating tissue. This was the experience of many workers, so that Dakin's solution gradually lost some of its vogue. Later Daufresne claimed to have succeeded in neutralizing the irritating element, and with this improved solution of Daufresne, Carrel has been able to secure a very rapid sterilization of wounds, which are then promptly sewed up.

Dakin subsequently proposed the use of chloramine as a valuable antiseptic. Others advocated hypochlorous acid. Gray, at Rouen, favors the complete excision and immediate suture of the wound. Some of the French surgeons are partisans of Carrel's method; others prefer silver nitrate solutions; still others strongly favor ether dressings, etc.

The results obtained by each worker depend in very large measure on the class of cases to which his particular method is applied. Carrel's hospital, for instance, is located at a short distance back of the lines, so that most of the patients admitted have been wounded only a short time before. The wounds are relatively fresh, and infection has not had time to develop to any great extent. The wounds are immediately enlarged and explored; every recess and cranny is laid open, and all foreign material (projectiles, clothing, etc.) removed. The wound is then filled with very fine catheters running into every corner, and through these little tubes is allowed to flow intermittently Daufresne's solution. There can be no doubt of the efficacy of this method, especially in wounds of the soft parts, such as constitute the majority of the cases received at this particular hospital.

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[4] Wright, A. E.: Wound Infections and Their Treatment, Lancet, London, Oct. 30, Nov. 6 and 13, 1915.

Let us now go to a base hospital in or near Paris. A large proportion of the wounded arrive from one to three weeks after their injury, having been cared for in the meantime by one or more surgeons in one or more hospitals. They may have bad compound fractures, resected joints, penetrating or perforating wounds of the thorax, skull injuries, etc. Infection has been going on a long time and, while the fundamental principles of treatment are the same, the conditions are not the same, and the treatment must be adapted to the conditions.

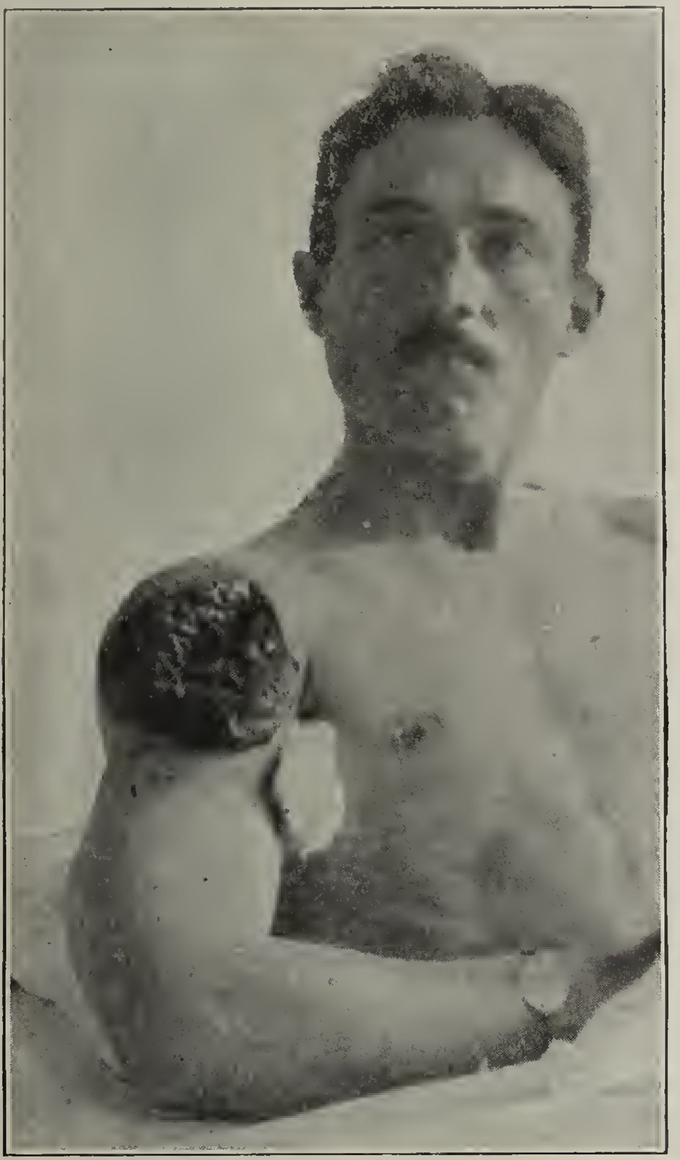

Fig. 8.—Shell wound of right shoulder, showing almost pure culture of B. aerogenes-capsulatus, but no clinical symptoms of gaseous emphysema. Wound healed quickly under wet hypertonic saline dressings. (Photograph by the author.)

The excision of wounds advocated by Gray and others is applicable in only a few cases; in the majority of wounds it is out of the question, especially in old cases with long standing infection in which the elements of infection have become deeply lodged; in such cases attempts at excision and suture often lead to reinfection and breaking down of the wound.

The point I wish to make is that no one method is applicable to all wounds. The first indication is the thorough exploration of the wound, the painstaking removal of all foreign material, excision of sloughs, and ample provision for drainage. At this stage continuous irrigation is of distinct value, because it dilutes the discharge and in this way greatly facilitates drainage. The use of antiseptic solutions, such as Daufresne's, used according to Carrel's method, is to be advised if the wound is one that can be thoroughly made accessible to the action of the antiseptic, in which case it does not seem to make very much difference which of a number of antiseptic solutions is used. At Ris-Orangis we divided the patients into series of ten, and treated the patients in each series with a different antiseptic solution, such as Dakin's, Wright's hypertonic saline, iodin solutions in different strengths, acetic acid solution, and sodium bicarbonate solution, with control cultures twice a week. Our results failed to show any distinct difference in the power of the different antiseptics used to shorten infection and hasten granulation — when the wounds were properly drained the infection soon subsided — but they did show that continuous irrigation, while of distinct value during the active suppurating stage of the wound, should then be discontinued and dry dressings substituted. Prolonged continuous irrigation seems to have a tendency to produce edematous, flabby granulations, and to retard the healing process.

In badly comminuted fractures, which are nearly all complicated by infection, besides thorough drainage, all loose, detached pieces of bone should be removed, as they only lead to persistence of infection; but pieces of bone that are not detached should be left sacredly alone, because they often spell the difference between a useful limb and a flail one. After two years in France, the only criticism of French surgery which I should dare to offer is that a few surgeons at the front have a tendency to make too many resections of comminuted fractures, thereby leading to pseudarthrosis and great shortening. The proper treatment of fractures and of bone injuries in general is an important part of the work of the military surgeon. Probably no one has done better work in that field than Dr. Joseph A. Blake, formerly of New York, who, by bringing together the ideas of a number of other surgeons with some of his own, has perfected an ingenious and simple method of treating fractures by suspension, with most creditable results. Flint[5] of New Haven, working at Passy, near Sens, also used the suspension method with a modification of details in its application. It is surprising how well most of these fractures unite under proper treatment; but when they do not unite,

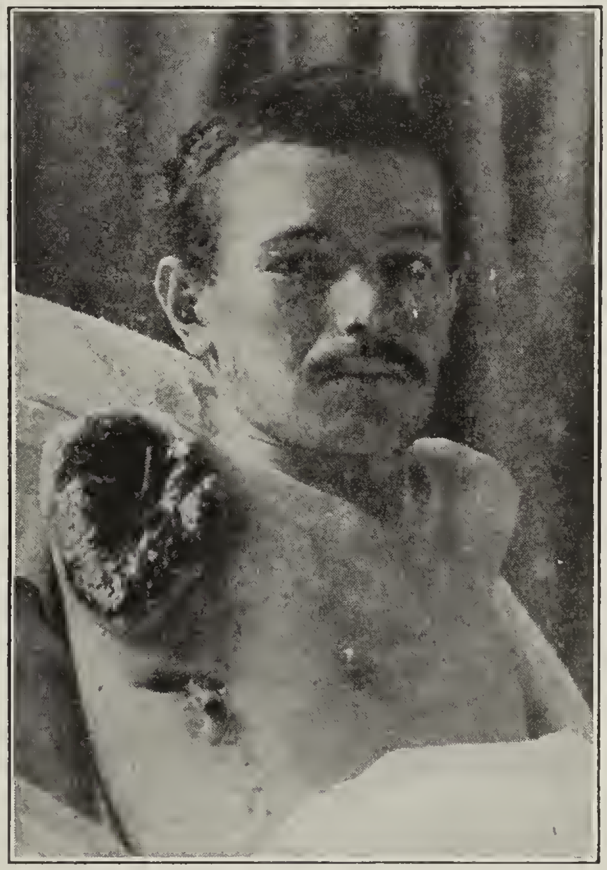

Fig. 9.—Right arm torn off by shell. Wound badly infected. Drainage and wet dressings. (Photograph by the author.)

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[5] Flint: The Treatment of Fractures by Methods of Suspension and Extension, Ann. Surg., June, 1916.

because of a too great loss of substance, Albee's method of autogenous bone transplantation facilitates the restoration to usefulness of limbs which, in years past, would have been doomed to amputation. Amputation is, as it should be, a measure of last resort, and, as the methods of dealing with infection and fractures are improving, the number of amputations is diminishing. The importance of the after-treatment of these fractures and joint injuries was soon realized by the French surgeons, and the Service de Santé has established in different parts of France large hospitals, thoroughly equipped to give mechanotherapeutic, electrotherapeutic and orthopedic treatment to large numbers of men.

The "plastic" restoration of losses of substance in the soft parts is another important phase of military surgery, and the keen surgeon, who is interested in plastic work, will find much stimulation in following the work of such men as Morestin of the Val de Grace, in Paris.

The treatment of gas infection depends entirely on the stage of the disease when first seen. If the injured part shows only a limited area of distention, with or without crepitation, the first indication is to lay open the infected area by multiple free incisions, and to remove all foreign material; the incisions are to allow the escape of gas, and in this way to prevent the destruction of muscle tissue. After ample drainage has been provided for, continuous irrigation may be tried. Taylor, after extensive experiments, advises the use of a 1 per cent. solution of quinin hydrochlorid. If, in spite of these measures, the crepitation continues to extend, no time should be lost in vain hope; the limb should come off at once. If the infection is located in the thigh, the amputation should be at or near the hip joint. Various methods have been tried, such as subfascial injections of oxygen gas or peroxid, but the results have not given much faith in such measures, in spite of their apparently sound theoretical basis.

The greatest lesson to be learned from the surgery of this war can be summed up in the two words, "intelligent conservatism."

THE PRODUCTION OF AN ANTIPOLIOMYELITIC SERUM *

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The many deplorable deformities attendant on infantile paralysis, together with the high mortality of recent epidemics, demands that a most intensive study be made to discover some therapeutic measure which may curtail the ravages of this disease. A study of the recent epidemics in Chicago, New York and elsewhere has revealed certain constant bacteriologic findings. What appears to be the same peculiar micro-organism has been repeatedly isolated from the tonsils,[1] brain, spinal cords[2] and cerebrospinal fluids[3] of patients in widely separated cities. The presence of this polymorphous organism so constantly in the spinal fluid during life,[4] even shortly after the onset of the paralysis, and the discovery that the coccus remains in the spinal fluid and can be readily isolated in pure culture several weeks after the onset of the disease, not alone offers a most important clinical diagnostic procedure but also suggests at once a source for obtaining the organisms both for experimental biologic studies and for animal immunization experiments. There is evidence to show that the coccus so constantly present in poliomyelitic spinal fluids is not present in normal cerebrospinal fluids, nor has it as yet been isolated from the spinal fluid of patients with scarlet fever, varicella, diphtheria or other diseases presenting more or less confusing clinical similarity with infantile paralysis. These studies will be made the subject of a subsequent communication.

A therapeutic measure which may ultimately offer hope in this disease would seem to be the production of a specific antiserum for the causative organism. The vital question apparently centers on whether or not the quantities of antibodies produced in animals by methods of immunization will suffice to exert either sufficient antibactericidal action or, what may be of even greater moment, to effect the neutralization of the toxins formed by the bacteria. It must be admitted that the most efficient antiserums have been obtained with those organisms which produce potent toxins. The meager evidence at hand suggests that the pathologic changes in poliomyelitis may be the result chiefly of the endotoxic products of the micro-organism. If this proves to be correct, then the problem appears more complex, since endotoxins do not as a rule produce highly potent antiserums possessing great therapeutic value in the treatment of human infections.

To determine these questions, animal immunization experiments were begun, Nov. 1, 1916. A detailed study of the production of an immune serum for the organism isolated from poliomyelitic cases forms the basis of this paper.

IMMUNIZATION OF ANIMALS

Three healthy sheep, two lambs and four rabbits were selected and immunized according to the rapid method described by Amoss and Wollstein.[5] They showed that an equally potent serum can be produced in from eight to twelve weeks by their method, instead of in from eight to twelve months, as required by previous immunization methods. The animals received intravenous injections of living organisms in increasing doses on three successive days, followed by periods of rest of seven days. The twenty-four hour growth on a dextrose agar slant was suspended in 2 c.c. of sterile normal salt solution, and 0.1 c.c. of this suspension, or one twentieth of an agar slant, was slowly injected in 10 c.c. of physiologic sodium chlorid solution into the jugular vein of each sheep. The rectal temperature was recorded hourly, and a febrile reaction following each single injection served roughly to gage the optimum dosage. Twenty-four hours after the first injection, 0.2 c.c. suspension and on the third day 0.3 c.c. of the foregoing suspension of bacteria in 10 c.c. saline solution were injected intravenously. This was followed by a period of rest of seven days, when the second series of injections was instituted,

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* From the laboratory of pathology of the Cook County Hospital.

* This work has been very materially aided by a special grant made by President Peter Reinberg and the members of the Board of Commissioners of Cook County, Ill.

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0.3 c.c. being given the first day, 0.4 c.c. the second day and 0.5 c.c., or one fourth of an agar slant, the third day. The first series of injections consisted of a group of five representative strains of the coccus isolated from poliomyelitic cerebrospinal fluids. For the second series, five strains isolated from poliomyelitic brains and cords at necropsy were utilized. To each of these representative groups new strains have been added, until now at the fifth series of injections each group consists of ten different strains of the micrococcus.

Small desensitizing doses are regularly employed during the first injection of each series, and after a lapse of two hours the full dose is given, the danger thus being avoided of any anaphylactic reaction and sudden death of the animals. Autolysates of the coccus were prepared by suspending cultures in physiologic sodium chlorid solution and incubating for twenty-four hours. These autolysates were alternated with the living organisms in the serial injections. The maximum dosage given to date consisted of 4 c.c. or two agar slants from the pooled growth of twenty different strains of the organism. Those strains of the coccus which are not agglutinated in varying dilutions of the immune serum have been incorporated in the groups used for serial immunization, thus producing a polyvalent potent antiserum.

Flaccid paralysis of the left foreleg of a young lamb undergoing immunization; complete recovery twelve hours after intraspinal injection of 1 c.c. immune serum.

The progress of antibody formation in the sheep serums was studied by agglutination, complement fixation and more recently by animal protective experiments. A steady rise in the antibody content of the serums has been noted following each serial injection. Seven days after the fourth serial injections, agglutination was complete at 1 : 5,000 dilution of the serum, and complement fixation was complete at 1 : 200. Thus far, as might be expected, it has been quite definitely proved that the organism of poliomyelitis stimulates the formation of antibodies in the blood stream of animals undergoing the process of immunization.

VIRULENCE OF THE MICRO-ORGANISM OF POLIOMYELITIS

In studying the virulence of the organism, young rabbits from four to eight weeks of age and of approximately equal weight and size were selected in groups of threes and inoculated intravenously with decreasing doses of various strains of the coccus obtained both from brains and human poliomyelitic spinal fluids. Later it was found more satisfactory to inoculate white mice intraperitoneally in series. These animals are quite susceptible to the germ, and rapidly develop a fatal septicemia. One-tenth c.c. of Strain Leitz caused the death of white mice in fourteen hours. The amount of cultures required to produce paralysis or death in rabbits is relatively large. Recent isolated cultures of the coccus are naturally more virulent than strains incubated for varying periods of time. It should be admitted that certain strains exhibit but slight pathogenicity, even when recently isolated.

ANIMAL PROTECTIVE EXPERIMENTS

Table 1 indicates that the polyvalent immune serum possesses a certain limited degree of protective value for white mice. Two-tenths c.c. of the serum protected against ten minimum lethal doses of Strain Leitz. Normal serum, however, and even sterile bouillon in 1 c.c. amounts exhibits some definite degree of protective value. The conditions of this experiment are perhaps rather severe since ten minimum lethal doses of Strain Leitz were employed—a strain recently isolated in a fatal human case and not as yet incorporated in the lots employed for the immunization of the animals.

Table 2 indicates the protective value of immune serum as compared with normal serum and bouillon when young rabbits are utilized. The strain Anna employed in this experiment was recently isolated from human poliomyelitic spinal fluid. One-tenth c.c. of the immune serum protected a 343 gm. rabbit against one minimal lethal dose of Strain Anna. It is evident from this table that normal serum and even bouillon were able to delay the course of the infection in rabbits, but apparently could not protect against either paralysis or an ultimate fatal termination of the infection.

After it had been determined that immune serum possessed certain properties not present in normal serums, a study was undertaken to determine the mechanism of the protective action. White mice were injected intraperitoneally with varying dilutions of immune serum and constant quantities of the organisms. At the end of thirty minutes and again at the expiration of one hour, a few drops of the peritoneal exudate were aspirated from the peritoneal cavity, and stained specimens were examined microscopically. It was determined that immune serum in vivo causes a rapid exudation of cells into the peritoneal cavity, chiefly polymorphonuclear leukocytes and smaller numbers of mononuclear lymphocytes. At the end of an hour most of the bacteria are readily visible within the leukocytes. The few remaining extracellular organisms appear clumped together, and many are markedly swollen to several times their normal size. Others have apparently undergone complete disintegration. Pfeiffer's phenomenon was complete, or nearly so, at the expiration of one hour with the higher concentrations of the immune serum.

In an attempt to determine whether or not the coccus of poliomyelitis produces toxins, eight day broth cultures were passed through a Berkefeld filter, and varying amounts of the filtrate were injected into the peritoneal cavity of mice. Relatively large amounts of the filtrate were required to produce toxic effects or death.

PROTECTIVE EXPERIMENTS IN MONKEYS

For my next experiments I utilized monkeys, since it is generally admitted that poliomyelitis can be experimentally produced in these animals. Furthermore, the histopathologic changes in the monkey closely simulate the disease as we are familiar with it in man. Accordingly, three healthy monkeys were selected, and after the lethal dose of the organism for the monkey had previously been determined, the first animal was inoculated intraspinally with 1 c.c. of Strain Leitz. The second animal received a similar dosage of the same culture plus 1 c.c. of normal sheep serum. The third monkey received an intraspinal injection of 1 c.c. of Strain Leitz plus 1 c.c. of polyvalent immune serum. The results follow:

TABLE 1.—ANTI-INFECTIOUS POWER OF POLYVALENT SERUM *

Strain Leitz	1 C.c. Pooled Normal Sheep Serum	1 C.c. Sterile Bouillon	0.1 C.c. Immune Serum	0.2 C.c. Immune Serum	0.3 C.c. Immune Serum	0.4 C.c. Immune Serum
10 minimum lethal doses	Protection in 2	Protection in 1	Protection in 3	Protection in 4	Protection in 4	Protection in 4

* Illustrating the protective value of immune serum when white mice are inoculated simultaneously with serum and cultures; 0.2 c.c. of the polyvalent antiserum protected against 10 minimum lethal doses of Strain Leitz.

Experiment 1. (Case 10).—Dec. 8, 1916, at noon, a large *Macacus rhesus* monkey was etherized, and the lower lumbar region shaved and sterilized. Lumbar puncture was performed, and 1 c.c. of clear spinal fluid withdrawn. Intraspinal injection was given of 1 c.c. of a mixed brain and spinal fluid culture of Strain Leitz plus 1 c.c. of normal sheep serum. At 4 p. m. the animal had recovered from the anesthetic and was quiet in the cage. December 8, at 9 p. m., the animal was sick, and not attentive to surroundings. December 9, at 10 a. m., the monkey was acutely ill. It lay prostrate in the cage, could not sit up, and fell over when lifted upright. There was marked weakness of the right front arm with definite wrist drop. Lumbar puncture was performed, and 1 c.c. of clear spinal fluid withdrawn. Stained smear of the sedimented spinal fluid revealed many polymorphonuclear leukocytes. Many gram-positive diplococci were scattered uniformly throughout the field, chiefly extracellular. Cell count revealed 920 per cubic millimeter.

One c.c. of immune serum was injected very slowly intraspinally. December 10, at 10 a. m., the animal exhibited a complete flaccid paralysis of both arms and a marked weakness of the hind legs. Lumbar puncture was performed, and only a few drops of clear spinal fluid obtained. Stained smears revealed marked agglutination of the organisms with swelling and dissolution of many of the bacterial bodies and vacuolization of the leukocytes. There were many intracellular organisms. One platinum loopful of the spinal fluid was inoculated into each of a series of agar tubes, and blood agar plates were made. A similar procedure was carried out with the spinal fluid before the administration of immune serum. At the end of twenty-four hours' incubation, the average number of colonies per plate before injection of the immune serum was eighty-four. Twenty-four hours after the intraspinal injection of the immune serum, only twenty-four colonies were counted per plate. This was interpreted as a definite antibactericidal action of the immune serum in vivo.

December 10, the monkey died in a convulsion, despite having received another injection of the antiserum.

Necropsy.—There was marked hyperemia of the pia-arachnoid vessels over the cerebral cortex of the brain. The brain tissue was edematous. There was no visible exudate anywhere over the brain or spinal cord. The gray matter of the cord was hyperemic. There were no visible hemorrhages in the leptomeninges.

Microscopically, there was marked interstitial infiltration of lymphocytes in sections of both brain and cord. There was hyperemia of the capillaries in cross section. There was definite degeneration of the motor ganglion cells. Neurophagocytosis was visible in the cord and also in the intervertebral ganglia.

On bacteriologic examination, a pure culture of the original gram-positive coccus was obtained in cultures from the cord, brain, spinal fluid and heart's blood.

An analysis of this case shows, first, that normal sheep serum afforded little if any protection against the infection. Twenty-four hours after the inoculation, and at a time when the course of the infection was undoubtedly decided, immune serum exhibited certain limited bacteriolytic properties, but could not save the animal's life.

Experiment 2 (Case 12).—Dec. 8, 1916, at 10 a. m., a large *Macacus rhesus* monkey was etherized, and 1 c.c. of Strain Leitz slowly injected intraspinally after the previous withdrawal of 0.5 c.c. of clear spinal fluid. December 9, at 9 a. m., the animal lay prostrate in the cage, and was very weak and tremulous. He was unable to support himself in an upright position. Lumbar puncture was done, and a very few drops of clear fluid obtained. Stained smears revealed many small diplococci, sharply staining, and evenly distributed throughout the field. Bacteria were chiefly extracellular. There were many polymorphonuclear leukocytes and smaller numbers of lymphocytes. One c.c. of immune serum was injected intraspinally. At 10 p. m. the animal was resting quietly. He refused food. Rectal temperature was 38 C. (100.4 F.).

December 10, the monkey was active and bright in his cage. Lumbar puncture was done, and smears revealed only a very few swollen diplococci, chiefly intracellular. Cell count revealed 382 cells per cubic centimeter. December 18, the animal remained well. No paralysis was present.

In this case we feel that the immune serum was able to prevent a fatal course of the disease, and apparently arrested the infection a considerable period of time after the inoculation of the bacteria.

TABLE 2.—PROTECTIVE VALUE OF IMMUNE SERUM IN YOUNG RABBITS *

Weight of Rabbit, Gm.	Amount of Culture, C.c.	Protective Substance	Result
314	0.2	None	All dead within 48 hours
315	0.4		
322	0.6		
		Immune Serum	
343	0.2	0.1 c.c.	All survived
350	0.4	0.2 c.c.	
356	0.6	0.3 c.c.	
		Normal Serum	
270	0.2	0.2 c.c.	Died after 9 days
275	0.4	0.4 c.c.	Died after 4 days
286	0.6	0.6 c.c.	Died after 3 days
		Bouillon	
318	0.2	0.2 c.c.	Survived
320	0.4	0.4 c.c.	Flaccid paralysis. Death in 6 days
330	0.6	0.6 c.c.	Died after 5 days

* Illustrating the protective value of immune serum as compared with normal sheep serum and sterile bouillon. Simultaneous intravenous injection of serum and cultures after previous incubation for thirty minutes.

Experiment 3 (Case 14).—Dec. 8, 1916, at 2 p. m., a small ring-tailed monkey was inoculated intraspinally with 1 c.c. of Strain Leitz plus 1 c.c. of immune serum after the previous withdrawal of clear spinal fluid. Serum and organisms were incubated together for thirty minutes previous to inoculation into the monkey.

December 9, at 10 a. m., the animal raced and climbed about the cage apparently little worse for the infection. December 18, the monkey remained well.

In this experiment the conditions were not entirely analogous to those of the former cases because of the incubation of the serum and culture previous to inoculation. The animal utilized was also of a different species. From the foregoing series of experiments, however, it would seem fair to conclude that immune serum possesses the power to protect monkeys against an otherwise fatal result.

During the course of immunization of the sheep, one of the lambs which had received but two series of injections — one intraperitoneally and the second intravenously — developed a complete flaccid paralysis of one front leg. The limb was carefully examined to exclude any possible trauma. A marked flaccid paralysis was present, and the animal limped along on the other three legs, dragging along the paralyzed extremity in a flail-like manner. At no time during a careful observation of ten hours did the animal bear any weight on the paralyzed limb. Ten hours after the onset lumbar puncture was performed, and 1 c.c. of clear spinal fluid was withdrawn. A twenty-four hour culture yielded a growth of the gram-positive coccus of poliomyelitis. One c.c. of immune serum was injected intraspinally. The following morning the animal had regained complete use of the paralyzed leg and has remained well since.

The final test of the value of any antiserum is its therapeutic efficiency in human infections. I do not wish to apply, at this time, the results of animal experiments to man. Suffice it to say that we have under treatment at the present time a child afflicted with the cerebral type of poliomyelitis. The gram-positive coccus has been isolated on several occasions from the spinal fluid by the physician in charge of the case. This patient has received several intraspinal injections of immune serum after the serum had been passed through a Berkefeld filter and tested for sterility by repeated cultural experiments. Thus far it has been possible to sterilize the cerebrospinal fluid and to bring about a certain definite improvement in the clinical symptoms of the patient. The details of this case will form the subject of a separate communication. From the evidence at hand it would seem that poliomyelitis is in many cases — probably always in the acute fulminating types of the disease — at first a general bacteremia with the rapid localization of the microorganisms to the central nervous system. If this ultimately proves to be true, it would seem fair to conclude that immune serum may be of great value in the treatment of this disease.

SUMMARY

1. By the process of animal immunization with the organisms regularly isolated from the spinal fluids and the central nervous system of human poliomyelitic patients, an antiserum can be produced. Its therapeutic limitations are as yet unknown.
2. Antiserum prepared in this manner contains agglutinins, opsonins and complement fixation bodies, as well as exhibiting certain antibactericidal properties.
3. It would seem fair to conclude that with potent polyvalent antiserum prepared in this manner, some definite therapeutic value might be anticipated in human cases of the disease.

GENERAL HEALTH CONDITIONS IN BELGIUM

AFTER TWO YEARS OF RELIEF WORK BY THE COMMISSION FOR RELIEF IN BELGIUM

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At the request of the Commission for Relief in Belgium, I spent May, June and July in that part of Belgium occupied by the Germans, in the examination of present health conditions of the population, with special regard to the welfare of the children. In this investigation I had the unremitting aid and counsel of the Belgian physicians and surgeons. The liberty of movement which I enjoyed, as a member of the American commission, enabled me to perform a broad survey of conditions, which, under present military restrictions, is not possible for the very able Belgian specialists themselves to undertake. It is difficult to generalize on the health of the whole population of the country even in normal times, when the aid of every branch of mortality and morbidity statistics can be brought to bear on the investigation, and therefore any generalization which I make in regard to Belgium, in the condition of stagnation in civic functions which exists today, is even more difficult. I had access to many local statistics, hospital reports and individual private statements and information which rendered it possible to reach some conclusions which I believe are not only of value to the relief work, but also of interest to friends of the population.

Broadly viewed, the objective of the inquiry was to determine what the health and nutrition of the population were as a result of the relief which has been given, what changes might be desirable in the character and manner of feeding, and if any other measures for the general health could be instituted.

In a general way, conditions of health in normal times vary greatly in all countries between different economic and social classes. The present economic and political situation in Belgium sharply accentuates these class differences, and therefore points to a discussion of the situation class by class. From this point of view we may divide the population into the well-to-do or so-called upper classes, agricultural classes, and industrial or lower commercial classes.

Well-To-Do Classes.—These classes in Belgium, as in any other country, are the last to suffer in any food emergency, and may therefore be dismissed at once as being today in as good physical condition as they were before the war. Certainly there is no particular increase of illness among these classes, and as there are always native provisions to be bought at a certain price in every famine, they do not suffer from malnutrition. The enforced economy and temperance of even these classes has probably had beneficial results from a health point of view. Furthermore, the almost universal response to the duty imposed on this class to care for the less fortunate has given stimulation and occupation, which has possibly had beneficial results and has, at least to some extent, neutralized any damage which might occur from overanxiety.

The Agricultural Classes.—The agricultural communities throughout Belgium may also be said to be in a very good physical state; indeed, so far as one can judge, their material condition has improved steadily since the arrival of the 1915 harvest. Having first access to the produce of the land, it is obvious that they do not deprive themselves or their families of nourishment; and the high prices which they receive for their surplus produce have increased their resources, so that they will undoubtedly be in a better condition after the war than they were before.

These two classes probably embrace about 35 per cent. of the entire population of the occupied territory of Belgium.

Industrial and Minor Commercial Classes.—When one turns to the industrial communities in the large cities, which have a greater percentage of the population dependent on the paralyzed industries and commerce of the country for their livelihood, there exists a situation in which the general health is open to more doubt and where, in any event, it is maintained only by extensive organization of relief and protective measures. In a general way, an average of 9,000,000 pounds of fat and 160,000,000 pounds of cereals are monthly imported from abroad by the relief commission and delivered mainly to these classes, and with this supply, together with such supplementary native supplies as can be procured, their nutrition must proceed. As this class must embrace about 5,000,000 people, it is obvious that their food supply is very close to the actual necessities of nutrition. It is chiefly with regard to the efficiency of this supply, therefore, and the results on the nutrition of the population for nearly two years that this inquiry has been directed.

It must be stated at once that, even with these supplies, the population has existed on the narrowest margin of dietary necessaries, and that the very careful balancing of the protein, fat and carbohydrate values of this minimum ration must, as in the past, continue to be a matter of concern. The constantly changing situation as to local meat and milk supplies, by seasonal changes and gradual depletion of stock, must be watched and met, for while the general condition of this class, with the exception of the increase in tuberculosis, is not acute, certain definite situations are developing which must be reinforced or serious results will ensue. It may be said at once that the increase in tuberculosis appears to me to be mainly a factor of nutrition, and if conditions were now to return to normal, the unaffected adults would, on liberal nourishment, probably return to their former health conditions within two or three months. This, of course, is not true of those who have become affected with tuberculosis, nor is it so true of the adolescent children especially, who are probably suffering more than any other single group in this class, although the radical measures now adopted of separate and extra feeding for the adolescent children in the schools may stem this deterioration. I am happy to say that the great devotion and stimulation of relief work for the infants and children of Belgium has raised their condition on the whole to rather better than normal. Before a summary of the specific conditions of each of the age divisions of this class is given, it is desirable to discuss the tuberculosis situation as this bears on the entire population.

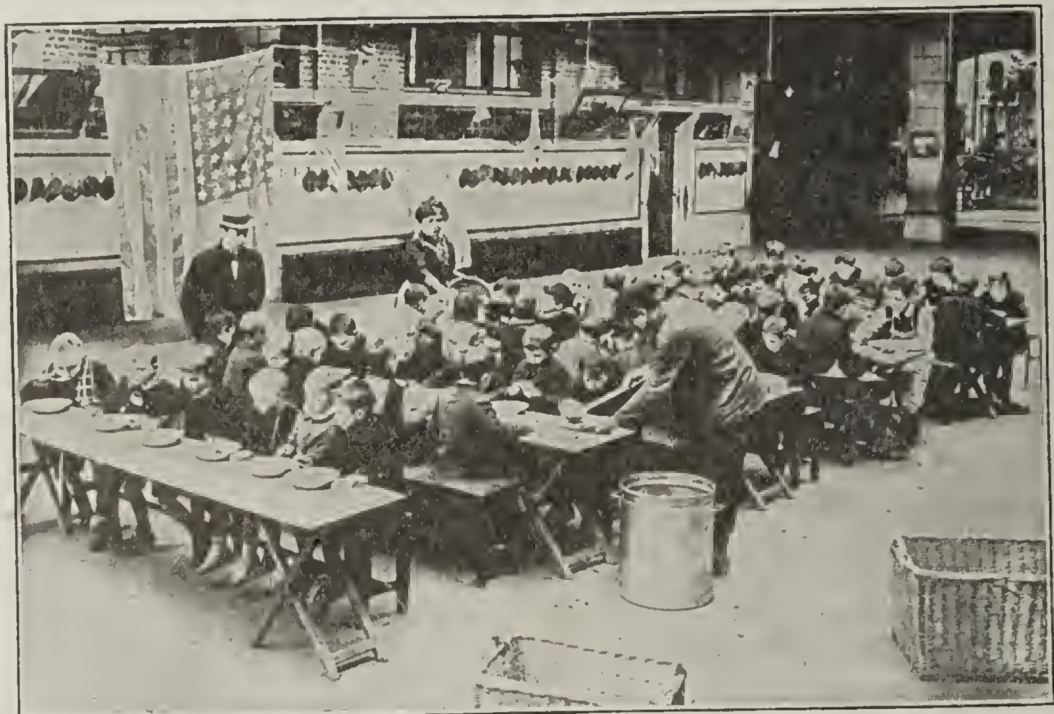

Fig. 1.—Type of school lunch which the Commission for Relief in Belgium is instituting throughout the country as a result of the recommendations in this report.

TUBERCULOSIS SITUATION

That the undernutrition of this class especially is mainly responsible for the fact that tuberculosis is increasing rapidly will be easily realized when one considers that the average consumption of fat lies somewhere between 20 and 30 gm. per day per individual. This, of course, is far too low, and especially so for the adolescent years. The lack in meat, both from the question of supply and on account of the high prices, makes it almost impossible for this class to obtain any animal protein in this way. The growing lack in the milk supply is another important factor in this nutritional problem, and during the coming winter, when there is a diminution in the native supply of vegetables and fruit, which, to a certain extent, this class is able to procure in summer, the ration will be considerably lower than it was during that season, and unless something can be introduced especially for the tuberculous of this class, the whole tuberculosis situation will undoubtedly progress more rapidly than it has in the past. As I shall show from the hospital reports and statistics, many cases of tuberculosis which were supposed to be cured are reappearing. From the fact that the sanatoriums and hospitals are all crowded, a continually increasing number of foci for the distribution of tuberculosis are rapidly forming and, under the present military conditions, it is difficult to carry on any educational campaign or any of the ordinary preventive sanitary measures against such a widespread increase in this disease.

The staff of every hospital and dispensary which I visited commented on the marked increase in the number of patients who are attending their clinics. The increase in the tuberculosis clinics was perhaps most marked of all, being in some cases over 100 per cent. more than they were before the war. Every tuberculosis sanatorium in Belgium is crowded, and the waiting lists of all the sanatoriums are larger and the cases waiting more acute than they were before the war. The following statements from various hospitals indicate the same conditions:

Dr. Verhoogen, the chief of the medical service of St. Jean Hospital, Brussels, states that there has been a considerable increase in the number of patients with tuberculosis coming to his general medical clinic. He finds that persons with old arrested cases of tuberculosis are returning in large numbers — cases which he had considered cured for a period of more than five years — and that their relapses are of a rapid and grave character. He finds that there is a more acute involvement of the lungs, there are many more cases of glandular tuberculosis and tuberculosis of the peritoneum than formerly, and he is especially struck by the increase in cases of tuberculous meningitis, probably the most fatal and fulminating type of tuberculosis that exists. He states the significant fact that his wards, which normally have ninety-eight beds, have had to be enlarged to 106, and that whereas during the summer he usually has had very few patients, in June and July, 1916, he had all his beds filled, and 35 per cent. of the cases were active tuberculosis; a higher percentage of tuberculosis than he has seen before in his wards.

In the St. Pierre Hospital in Brussels, Dr. Naewelaers, chief of the children's service, states that for the year 1912 he had only fifty-three patients with active tuberculosis in his infant ward, and in 1915 he had 125, but that in the first five months of 1916 he has had fifty-five, which, for the year 1916, would make 133 cases, and they have been more severe than formerly. The surgeons in all the children's hospitals state that persons with operative cases are much slower in recovering, and that open wounds in many cases refuse to close.

The chief surgeon of the throat clinic of St. Pierre Hospital in Brussels states that the increase of tuberculous conditions of the throat, which is one of the rarer forms of tuberculosis, has been most marked. He gives the following figures for his clinic: In 1912, 1.5 per cent. of his patients had tuberculosis of the throat; in 1913, 1 per cent.; in 1914, 1.5 per cent.; in 1915, 2.2 per cent., and for the first five months in 1916, 4 per cent., making an increase of 150 per cent. between 1914 and 1916.

Fig. 2.—Canteen for debilitated children, showing Dr. and Mme. Lathioir. This is the largest canteen for debilitated children in Belgium. Last summer, 1,500 children were being fed daily.

The chief surgeon of the children's clinic of one of the largest hospitals in Brussels reports the following figures of increase in tuberculosis: During the years 1909 to 1913 there was an average of 3.34 per cent. of his patients who had tuberculosis; in 1914, 5.9 per cent. had tuberculosis; in 1915, 5.4 per cent., and the percentage for the first five months of 1916 was 12.2 per cent.

Dr. Tieren, president of the Antwerp Provincial section of the Belgian League Against Tuberculosis, states that since 1913 the number of new patients with tuberculosis who came to the Institute Van den Nest increased two and one third times during the first four months of 1916, as compared with the same months of 1915. He states that not only have the cases of tuberculosis become more frequent, but that they are also more malignant; cures are much harder to obtain, and old cases, apparently cured for five years or longer, are reappearing in large numbers.

Dr. Wysen, head of the hygienic service of Antwerp, gives the following figures to show the number of deaths from tuberculosis (the percentages are expressed on the total number of deaths in Antwerp, not counting deaths in the floating population): For the first seventeen weeks of each year the mortality from tuberculosis has been as follows: 1909, 8 per cent.; 1910, 8.3 per cent.; 1911, 8.6 per cent.; 1912, 8.6 per cent.; 1913, 7.1 per cent.; 1914, 9 per cent.; 1915, 9.5 per cent., and 1916, 13.2 per cent.

In Namur also the mortality from tuberculosis has increased; the number of deaths from pulmonary tuberculosis and tuberculous meningitis for the year 1915 was thirty-eight, while for the first half of 1916 it had already reached thirty-four. In the Agglomeration of Brussels the following figures show the increase in mortality from pulmonary tuberculosis: In 1913 there were 502 deaths from pulmonary tuberculosis in the Agglomeration of Brussels during the first semester; for the same period in 1914 there were 521, for 1915, 506, and for the first semester of 1916, 662.

Dr. Lorent, physician for the poor in one of the large poor sections of Brussels, states that since the beginning of the war, and more especially since the beginning of the year 1916, cases of tuberculosis have become more frequent and have taken a more rapid and serious course. The physicians from one of the large dispensaries in Antwerp state that the greater part of the adults who visit the dispensary for the first time declare that their weights have diminished, and they state the average diminution to be over 5 kg., or about 10 to 11 pounds. Among tuberculous patients whom they are treating and to whom they have been giving a supplementary diet, they note that out of ninety-five tuberculous patients receiving the supplementary meals, fourteen gained from 0.5 to 3 kg.; twenty-three kept their previous weight, and fifty-eight lost from 1 to 9 kg. during an observation period of one month. During the same period, of eighteen nontuberculous patients who were under observation but who did not receive a supplementary diet, none increased in weight, five remained stationary and thirteen lost from 1 to 7 kg., that is, from 2½ to 15 or 16 pounds. The same dispensary gives the following figures for the attendance at their clinic: For the first three months of 1915 they had an average of 158 visits a month, and for the first three months of 1916 an average of 589 visits a month. The actual cases of tuberculosis had more than doubled during this period.

Dr. Gengou, secretary of the Antituberculosis Society of Belgium, states in a report which he has drawn up, based on a questionnaire sent to all the antituberculosis societies in Belgium, that the information obtained is unanimously to the effect that the spread of tuberculosis has progressed among the poorer classes, and that among the children of these classes the surgical types of tuberculosis have increased very markedly; for instance, from Verviers, Dr. Gustin states that there is a particular increase in tuberculosis among the working classes in that region. He is of the opinion that this increase is due both to the present conditions which have been created throughout the country and to the fact that the sanatoriums for tuberculosis are all filled, so that acute cases not isolated are spreading the disease rapidly. At Liége, Dr. Malvoz points out that the increase in mortality from tuberculosis there shows a change for the years 1913, 1914 and 1915 of from 164 to 170 to 179, and for the first trimester of the years 1915-1916, from 53 to 64.

Among children, Dr. Gengou finds from his questionnaire that the unanimous opinion of physicians throughout Belgium is that tuberculous adenitis has increased from five to tenfold. Some go much further in their figures, as, for example, Dr. Mine of Lockern, who states that none of the children of the working and middle classes in his community have escaped glandular congestion. This does not necessarily mean tuberculosis in an active form, but certainly indicates a lower resistance and a field ready for tuberculous infection.

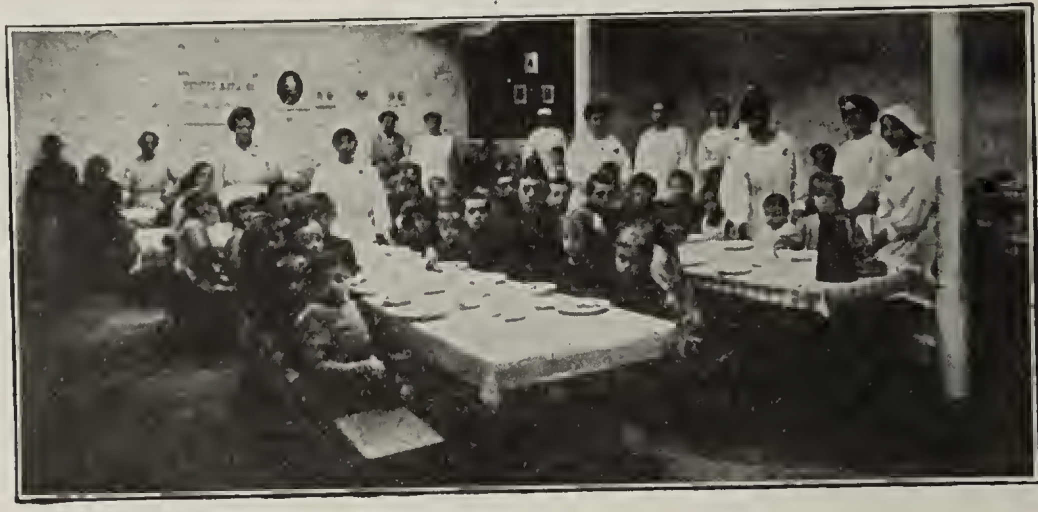

Fig. 3.—Canteen for debilitated children located in a cellar in Brussels.

Dr. de Moor, chief physician of the public schools in Brussels, gives the following figures for one of the public schools in Brussels:

Out of 485 boys between 6 and 14 years of age, 305, or 63 per cent., have developed cervical glands, and 190 of this number, or 40 per cent. of the total number, have developed considerably larger glands, 1.65 per cent. having glands which suppurate. In another large school, 482 children out of 683, or 70 per cent., have developed cervical glands, and 276 of these, or 40 per cent., have quite large glands, while 1 per cent. have glands which suppurated.

These conditions are especially true of the large centers, such as Brussels, Antwerp, Ghent, Liége, Mons and Charleroi. It is to meet this situation in the schools that it has been proposed, in a report which I made to the relief commission, to extend school lunches. This is especially important for adolescent children in the upper form schools. The school population of Belgium for the lower form schools is approximately 885,000 children, and during the last semester they have been given a supplementary school lunch provided by the commission. It was determined, if it should be possible to get the necessary imports, to extend these school lunches to the upper form children from the beginning of the next semester, October 1. This would probably include about 1,500,000 children in Belgium, or approximately the total needy schoolchildren population, and from 500,000 to 750,000 children in the North of France. It is especially important for the better development of the children and for the protection of the pretuberculous and tuberculous individuals who must remain at home that there should be an increased diet, with special measures to overcome the present deficiencies in fat.

As I have already stated, the tuberculosis sanatoriums and hospitals are all filled and have large waiting lists. Many of the sanatoriums for tuberculosis are now finding it difficult to obtain a sufficient supply of milk for their patients. The reduction amounts to as much as 50 per cent. in some cases. With the increased necessity for giving these patients supplementary diet, together with the patients who must remain at home and should also have additional supplies of milk and fat, the problem of special imports for the sick, especially the tuberculous, is a very important one.

The tuberculosis situation demands increased activity, but under present conditions it is very difficult to carry on an active antituberculosis campaign. There should be, however, an increased facility for the supplementary feeding of tuberculous patients. New dispensaries should be opened in the large centers where they do not exist at present, and from these centers, with special visiting nurses, a considerable amount of preventive work can be carried on. It is especially important to reach homes in which there are patients with active cases of tuberculosis who at present cannot enter tuberculosis sanatoriums. Special supplementary diets should be furnished these homes, and where possible provision should be made for sending children from them to the country or to temporarily improvised sanatoriums.

In connection with the deficiency in fat and animal protein, the lack of one of the most important food supplies should be noted. Already throughout Belgium the milk supply is not sufficient for the needs of the children and the sick, and this is especially true of the larger cities. Milk, as at present sold, is not only very expensive, but it is also of poor quality, being diluted or skimmed. The commission is already taking active measures to obtain special herds of cows to supply a certain amount of fresh milk to children's canteens or hospitals, but the natural supply can nowhere meet the demand, and during the coming winter the present supply will be even smaller than it is; hence definite and active measures should be taken for supplying some good milk products, such as condensed milk or milk powder, for the children and sick of Belgium.

GENERAL ADULT POPULATION

That the condition of the adults of these classes is being somewhat disturbed, although not severely damaged, is evidenced by such facts as these: It is the current opinion of employers and those competent to judge that the laboring man of the working classes in the cities and industrial centers is not able to do the amount of work he was formerly capable of doing. His energy and power of production are considerably less, and he becomes fatigued much more easily than usual. Reports from physicians who care for these classes note that there has been marked loss of weight, even among those who are not sick, since 1914; they estimate that about 80 per cent. of the population have lost weight and that the average loss is from 2 to 3 kg., that is, from 4½ to 7 pounds. This they attribute to insufficient nutrition, especially to the low quantity of fat and animal proteins which they are receiving, to mental worry and to the epidemic of grip which was very extensive during last winter and spring.

Likewise, among schoolchildren, one of the reports from a large public school for boys shows that out of 773 boys, for the year 1914-1915, 75 per cent. increased in weight, 15 per cent. diminished, and 10 per cent. remained stationary. In the same school during the year 1915-1916, out of 607 boys, 68 per cent. gained weight, 25 per cent. diminished, and 7 per cent. remained stationary.

DIMINUTION IN MATERNAL NURSING

Another keen index of the subnormal condition of the adults of these special classes may be found in the records of the maternity hospitals frequented by the wives of working men. The reports from maternity hospitals at Antwerp, Brussels and Liége all show that the weights of the babies born at the present time are less than the average of infants before the war. For instance, Dr. Dauve of Antwerp, chief of the maternity hospital of Ste. Anne, states that the new-born are generally debilitated and have the appearance of prematurely born infants whose weight and length are under average; they weigh on an average from 2,000 to 2,500 gm. and measure 47 cm. (19 inches). (The average weight of a new-born infant should be between 3,000 and 3,500 gm. and the average length 20 inches.) The lactation of the mothers leaves much to be desired, and the gain of the new-born, which should be 180 gm. a week on an average, is now only 50 gm. In several maternity hospitals, the incubator rooms, containing from four to twelve incubators, were always found filled, and the statement was made by the chiefs of the services that before the war there were rarely more than one or two underweight or premature infants in these incubators at any one time, and often there would be none for several months, whereas, during the past year these incubators have never been empty. At the St. Pierre Hospital, Brussels, many of the underweight infants have to be kept in improvised incubators.

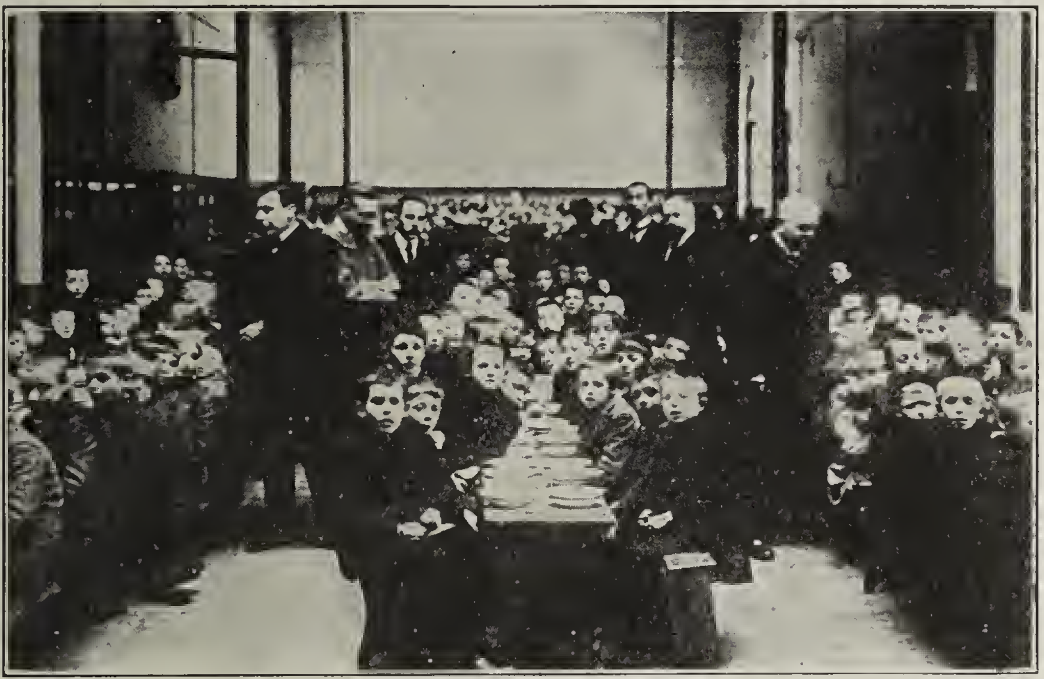

Fig. 4.—School lunch of the type being inaugurated by the commission throughout Belgium as recommended in this report.

Another most significant fact is derived from the maternal canteens for nursing mothers. At the beginning of the war the maternal canteens found that the mothers could nurse their infants for a period of nine months; but now, even with supplementary diets in the form of very substantial daily meals, they are barely able to nurse them for seven months, and this in the face of the fact that during the past year expectant mothers have been receiving meals for a period of two or three months before the arrival of the child. These facts undoubtedly indicate a lower general health and vitality of the mothers of these classes.

DIMINUTION IN BIRTH RATE

As in all warring countries, Belgium has suffered a great diminution in the birth rate. This is so significant that it calls for special attention. Compared with the average birth rate of the first semester of the five year period 1909-1913, the birth rate has fallen in 1916 in the Agglomeration of Brussels, 48 per cent.; in Antwerp, 41 per cent.; in Louvain, 41 per cent.; in Heverle, 41 per cent.; in Namur, 42 per cent.; in Mons, 36 per cent., and in Liége, 41 per cent. Such are the alarming decreases in all parts of Belgium that some explanation must be sought. Probably the lower vitality and mental anxiety have a great deal to do with this lower birth rate. Certainly the depopulation of men from Belgium is not in such a proportionate rate as in the other warring countries and not in such proportion as is the reduction in the birth rate. However, though there is no general mobilization, the absence of thousands of husbands from the working classes must have something to do with the reduction in the birth rate; further, the lower nutrition in these classes and the fear of not being able to provide for their offspring must be strong factors toward a voluntary reduction.

INFANTS AND CHILDREN

I have already covered the condition of children fairly completely in the discussion of tuberculosis. There are certain other facts, however, that are of considerable significance. Rickets, which is entirely a nutritional condition, has increased very markedly, as is shown from the following figures, derived from one of the large children's clinics in Brussels: In the period 1909 to 1913, 4.73 per cent. of the children who attended the clinic had rickets; in 1914, 8 per cent.; in 1915, 11.4 per cent., and in 1916, 21.3 per cent. The diminution in the weight of schoolchildren has already been mentioned.

Not every aspect of the health conditions of the children in Belgium, however, is as gloomy as these facts would indicate. Infant mortality has fallen since the beginning of the war, and deserves special comment. (By infant mortality is meant the deaths of children under 1 year of age on the basis of 1,000 births.) In the Agglomeration of Brussels, for the first trimester of 1904 to 1908, there were 124 deaths of infants, on an average, from 0 to 1 year of age for every thousand births; for the first semester of 1916 the infant mortality rate on the same basis was 94, or a reduction of 19 per cent. In Namur the infant mortality has dropped from 150, for the period 1911 to 1913, to 84 for the first semester of 1916. In Namur, however, the deaths from 1 to 5 years are the same for the first half of 1916 as they were for the whole of 1915. In Antwerp the infant mortality has dropped 8 per cent., while in Mons, one of the largest industrial centers, infant mortality has increased 56 per cent.

In 1915 the deaths from diarrhea in Liége, of children under 2 years of age, were, for the first semester, forty-three; while for the same period of 1916 they were twenty-three, a diminution of 47 per cent. In Antwerp the reduction in cases of diarrhea is also marked. During the period from 1911 to 1913 there was an average death rate of children under 2 years of age of 749, while during the year 1915, there were only 231 deaths from this cause. In the Agglomeration of Brussels we note the same decrease in diarrheal conditions. In 1913, during the first semester, there were 219 deaths from diarrhea; in 1914, for the same period, 256; for 1915, 156, and for 1916, 81.

PRESENT INSTITUTIONS DIRECTLY FEEDING CHILDREN

It is generally evident that infant conditions are on the whole better than normal, that class having been the object of great solicitude since the beginning of the war. A great many institutions have been created during the war to care for the children. The organization of the work for the children has been divided into canteens:

1. Canteens for nursing and expectant mothers, which, as already stated, furnish a substantial supplementary meal. There are over 13,000 nursing and expectant mothers receiving these dinners.

2. Canteens, often in conjunction with maternal canteens, have been instituted for infants under 3 years of age, in which there are over 52,000 infants receiving milk and cereals. Both these types of canteens have undoubtedly had a great influence on the reduction of infant mortality in Belgium. There is no question that today, in Belgium, more is being done for the mother and the child than was ever done before. Previous to the war there were only two maternal canteens in the whole of Belgium; today there are over 329 canteens for infants. These canteens, in connection with the educational work, the medical supervision which all the canteens have, and the careful regulation of the dietary, both in the canteens and, by an extensive system of visiting nurses, in the homes, have undobutedly had a marked effect on this great reduction in infant mortality. This phase of the child welfare work in Belgium is one of the best examples of the efficiency and result of the extensive and carefully planned preventive measures which have been instituted throughout Belgium by the relief organization.

Besides these canteens for mothers and infants, special canteens have been started to give food, supplemental to the ordinary ration, to debilitated children from 3 to 17 years of age. These children are chosen from the poorer sections, after a medical examination, and receive a supplementary dinner. Each canteen is under the direct supervision of a medical staff, which not only prescribes the proper dietary but also looks after special health problems. A health card is made out for each patient on which the weight is entered from month to month. A review of several hundreds of these cards brings out some interesting facts. It is generally noted that on admission and for the first two or three months afterward, a large proportion of these debilitated children gain in weight. They then reach a stationary period, which lasts for a month or two, and then either stop gaining entirely or lose slightly, so that the average amount gained for a period of a year is considerably below the average amount which children of their respective ages should gain. In these canteens over 25,000 children are being fed at the present time. Up to July 1, 1916, the age limit was 14 years; since July 1, however, this age limit has been increased to 17 years to make room for the thousands of debilitated, adolescent children who, during this period of rapid growth, a period which requires a larger proportional amount of nutrition than any other period of life, require a supplementary diet. It is during this adolescent period that a marked increase in tuberculosis has been noted. As is well known, the most fulminating types of tuberculosis are likely to appear during the adolescent period.

CONCLUSIONS

It may be said that the present general health situation in Belgium is not a gloomy one, considering the circumstances. The well-to-do and agricultural classes are fully up to the normal. In the industrial and minor commercial classes, while there is great privation, as the result of relief organization, the adult population is in a position to quickly recover its normal condition; general solicitude for the children has resulted in an actual improvement in infant conditions to a point above the normal, and the measures now being taken to reinforce the care of adolescent children by a further meal in the schools should quickly bring this class up to a state approaching normality. With the exception of the increase in tuberculosis, the population has been singularly free from epidemics or contagious diseases; for instance, typhoid fever and the children's contagious diseases have been markedly diminished and, except for the epidemic of grip, which was prevalent last winter and spring, there have been no serious epidemics since the occupation. The high degree of skill of the Belgian medical profession, its devotion to the people, and the watchful eye of the army of occupation in the protection of its own interests, with the military restriction of movement of the population, have probably all contributed to this end.

The general solicitude of the whole relief organization over the question of health and nutrition has been insistent since its inception, and the magnificent work which has been performed by the women of Belgium, in the care of the child, is beyond praise. The maintenance of these measures, both as to nutrition and welfare, by the relief organization, is an absolute and daily necessity to the population. The cessation of the commission for relief in its labors, for a single month, would unquestionably bring a physical disaster to the industrial and lower commercial classes.

Poor Milk.—If poor milk as a commodity of commerce commands the same price as good milk, and is cheaper to produce, we may expect the milk supply to tend to approximate the poorest quality which health officials will allow to be sold.—Hon. E. S. Brigham, *Bulletin,* Vermont State Board of Health, Dec. 1, 1916.

AURAL TYPHOID CARRIERS: A REPORT OF TWO CASES

A. B. BENNETT, M.D., WASHINGTON, D. C.

The usual understanding or definition of typhoid carrier is a person who, though apparently well, has the bacilli of typhoid fever in the stools or urine. There have not been many reports of cases in which the typhoid organism has been cultured from other discharges in persons otherwise apparently well. Therefore I believe it worth while to report the following cases:

CASE 1.—B. S. N., man, white, aged 34, with negative family history, in 1898, while serving in the U. S. Volunteers in Porto Rico, suffered a severe attack of typhoid fever. Ever since then there has been a chronic purulent discharge from the left ear with an occasional acute exacerbation. When I saw him, the temperature was 100, the mastoid was tender, there was a free flow of creamy pus from the left external meatus, the inferior posterior half of the left membrana tympani was destroyed, and the patient complained of severe earache and painful mastoid, which were much worse at night.

Under simple local treatment the temperature subsided and the pain and tenderness disappeared. A culture was taken from the ear, and about ten organisms developed, one of which was culturally typhoid. A second culture was made which showed much fewer organisms and the same typhoid organism. This germ was tested in the laboratory of the U. S. Naval Hospital and proved to be typhoid. It agglutinated in the presence of the patient's blood, and his opsonic index was zero.

I thoroughly cleansed and dried out the ear, and gave the patient five doses of typhoid vaccine. There was a decided improvement in his general health and the aural discharge was very slight. He then left the city and I have been unable to learn anything of him since.

CASE 2.—M. W., girl, white, single, aged 15, with negative family history, had been "born with heart trouble." At 3 years of age she had diphtheria, at 6 measles, at 7 she had the tonsils and adenoids removed, at 10 she had chickenpox, at 11 scarlatina, and at 12 what her mother told me was typhoid pneumonia, which was probably a frank pneumonia. The present illness began one month prior to consulting me, when she had an attack of acute purulent otitis media (left) with considerable pain and discharge. The discharge continued, and on examination I found the left auditory canal filled with pus. There was a perforation of the membrana tympani in the center of the anterior half, and through it projected a small polyp which bled profusely on the slightest manipulation, making the use of a snare or forceps almost impossible. Several applications of trichloracetic acid reduced the polyp to within the perforation, and the discharge lessened but would not cease. A smear from the ear showed a great number of diphtheroid bacilli, gram-negative bacilli, a few *Micrococci catarrhales,* and staphylococci. A culture from the ear developed diphtheroid and gram-negative bacilli. A vaccine was made and seven doses given, increasing from 50 million to 1,000 million, which resulted in an entire cessation of discharge after the seventh dose. The culture was grown and vaccine made by the National Vaccine Laboratory, which reported later to me that the gram-negative bacilli proved to be typhoid bacilli.

Neither of these patients was under my care very long. I was unable to learn of any cases of typhoid that could be traced to contact with these persons, nor was I able to ascertain if they were carriers of typhoid in their urine or stools. However, I believe that the isolation of the typhoid bacillus from the middle ear discharge of two patients is worthy of report.

The Unvaccinated.—People have smallpox because they prefer it to vaccination. . . . The whole population pays for the privilege of having smallpox monopolized by the unvaccinated.—*Bulletin,* Minnesota State Board of Health, December, 1916.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 2017*)

FAT (LIPURIA)

A minute amount of fat (0.02 gm.) is excreted daily. This amount may be increased to 34 mg. by eating large amounts of fat, according to Sakaguchi.[55] He investigated the urinary fat output in various chronic diseases, and found no disturbance of this minute urinary excretion. The fat of the urine may, however, be increased in chronic nephritis when there is fatty degeneration of the kidneys, and is probably usually increased in phosphorus poisoning.

CHYLURIA

This is a rare condition in which a milky urine is due to chyle entering the urinary canals directly from the thoracic duct. Such a condition is generally caused by the burrowing of parasites called filariae. An unexplained chyluria has rarely occurred.

CYSTINURIA

Cystin rarely appears in the urine. Its appearance is due to improper metabolism in the body. Cystin is an amino acid derived from protein, and is normally transformed in the body, its sulphur appearing in the urine as a sulphate. Infrequently cystinuria causes deposits in the pelvis of the kidney or in the bladder. This condition should be treated by a reduction of the amount of protein consumed and by the administration of alkalies. Cystin may be produced by the body proteins, and an endogenous cystinuria may sometimes occur.

ALBUMOSURIA

Excretion of proteoses in the urine constitutes the condition called albumosuria. It may occur in suppurative conditions or processes such as that which takes place during the resolution of a serious pneumonia in which a considerable portion of lung has been involved. It has occasionally been found in leukemia.

BENCE-JONES PROTEIN

The abnormal protein substance termed Bence-Jones protein is probably of endogenous origin. It is generally combined with anemia and does not seem to be a decided symptom of anything, but multiple myeloma or some form of bone-marrow disease. The prognosis for this condition is unfavorable.

UROBILINURIA

Bilirubin is converted in the intestines by bacterial action into urobilinogen and urobilin, which are absorbed by the blood and converted into bilirubin in the liver. Traces are usually found in the urine. When an increased amount appears in the urine, the condition is termed urobilinuria.

BILIRUBINURIA

Any obstruction of the biliary ducts will cause absorption of bilirubin into the blood, resulting in jaundice, and bilirubinuria. The urine becomes brown, and when shaken shows a yellow froth.

If bilirubin appears in an increased amount in the urine it denotes a more or less serious liver disturbance. If a small amount of this bile substance passes off in the urine it is not harmful to the kidneys; but if a large amount is excreted during an extended period of time, renal irritations, possibly accompanied by albuminuria, may occur.

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[55] Sakaguchi: Biochem. Ztschr., 1913, **48,** 1.

ALBUMINURIA

Albuminuria may be classed as follows:

1. A symptom of nephritis.
2. Accidental albuminuria causes:
   - (*a*) Dietary (alimentary).
   - (*b*) Chilling of the body.
   - (*c*) Unexplained (frequently due to focal infection).
3. Incidental albuminuria causes:
   - (*a*) Cold baths.
   - (*b*) Menstruation.
   - (*c*) Athletics or other physical strain.
   - (*d*) Cardiac weakness.
   - (*e*) Irritation in some part of the urinary tract.
   - (*f*) Hypertension.
   - (*g*) Ether or other anesthesia.
4. Orthostatic (lordotic, cyclic, adolescent).

The term "albuminuria" refers to the presence of serum-albumin in the urine. Nucleo-albumin may be present occasionally in a patient who is in perfect health. Frequently nucleo-albumin and serum-albumin are both present, particularly in acute or subacute nephritis. Nucleo-albumin is rarely present in chronic nephritis. The presence of this substance alone does not ordinarily mean that there is a kidney lesion. Albumin in the urine is either excreted by the kidneys or comes from some part of the urinary passages. If it results from some localized irritation, inflammation or hemorrhage, there are more white cells present in the urinary sediment than in ordinary albuminuria. If there is hemorrhage, there are, of course, red cells. A small amount of albumin is found in cystitis, and a somewhat larger amount in pyelitis. The amount, however, is always small unless it comes directly from the kidney secreting substance. Urine containing a small quantity of sodium chlorid or other salts may show just a trace of serum-albumin, but if sodium chlorid is added to such urine, a larger deposit will be obtained. Frequently urine in which albumin has previously been found becomes free from this substance because the patient is passing a larger total amount of urine; in other words, if he has been given a diuretic or a large amount of water, albumin may not be found, while the same condition which caused the albuminuria still exists. Circulatory tonics, such as digitalis, provided the blood pressure is not high, frequently, temporarily at least, may cure an albuminuria.

1. The albuminuria of nephritis will be discussed later under that heading.

2. Accidental albuminuria may occur from several causes. It is sometimes due to exposure to cold; more frequently it is due to some dietary error, such as overloading the system with proteins; or it may be due to some alimentary disturbance. Traces of albumin are often found in the urine in intestinal disturbances, particularly in chronic diarrheal conditions. Albumin is often found in the urine without any assignable cause, probably owing to some focal infection. Mouth and throat infections may cause serious kidney disease; mild irritations, therefore, may cause the appearance of small amounts of albumin in the urine.

3. Incidental albuminuria is frequent. It may be caused by cold baths or cold showers. It may occur with menstruation or when menstruation is delayed. It occurs frequently after severe muscle strain, as in competitive athletics.

Incidental albuminuria as a symptom of an acute disease, and its appearance during the intensity of an acute infection have been proved. Backache and the primary symptoms of most acute infections are probably due to kidney congestion.

Cardiac weakness or insufficiency, low blood pressure, or anything which causes congestion of one or both kidneys may allow leakage of albumin. On the other hand, a small trace of albumin is frequently a symptom of hypertension, and may be the forerunner of actual kidney disease.

Albumin frequently appears in the urine following an operation, and is perhaps chiefly due to the anesthetic. It may, however, be due to some position in which the patient is compelled to sustain himself for an extended period of time, such as the lithotomy position; or sluggishness in the circulation of the kidneys may occur from prolonged lying on the back.

Renal irritations, or irritations in some part of the urinary tract, frequently cause the discharge of small amounts of albumin in the urine. A floating kidney may also be the cause of this condition.

When the cause of albuminuria has been determined, the preventive treatment is self-evident. If it is a part of some diseased condition, it will diminish with any improvement in that condition.

4. Orthostatic albuminuria (lordotic) has also been called the albuminuria of adolescence, because it is apt to occur in developing children. As it occurs only when the individual is active, it was for many years supposed to be entirely due to a change in the blood pressure of the kidney vessels, and was termed orthostatic albuminuria, as in the majority of instances the albumin disappeared from the urine if the child remained in bed. Occasionally the administration of cardiac tonics and vasopressor drugs improved or prevented the condition. This symptom disappeared in many of the children as they grew older, the duration of the condition varying. However, since Jehle published his monograph, in 1909, stating that so-called orthostatic and functional albuminuria was often due to lordosis causing passive hyperemia of the kidneys, the truth of his observations has been acknowledged by many investigators. It seems probable that some inherent weakness of the kidney circulation must also be a factor, though general vasomotor disturbances and low blood pressure have not been constantly present. Not every lordotic person is afflicted with albuminuria; nor is every orthostatic albuminuric lordotic. However, lordosis is apparently a frequent cause of albumin in the urine in an active patient.

Albuminuria due to lordosis may come from only one kidney, as has often been proved by ureteral catheterization. In schoolchildren it may be the result of sitting for some time daily with the hands folded behind the back.[56] Albuminuria may also be caused by a movable kidney, due to venous or passive congestion.

The term "orthostatic albuminuria" should be limited to that albuminuria without casts which occurs after standing or moving about, and which disappears with a reclining position. If casts and blood cells are associated with this condition, the patient may be suffering with nephritis. Hence position may be the final cause of sufficient passive congestion for the excretion of albumin, casts and blood cells. The necessity for complete rest, in even slight kidney congestion, is therefore obvious.

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[56] Piesen: Wien. klin. Wchnschr., Jan. 5, 1911.

Orthostatic albuminuria may be due not only to lordosis, which produces a passive congestion of otherwise normal kidneys, but also to an insufficiency of the kidney circulation, possibly congenital, with or without lordosis. This condition may also be caused by kidneys of insufficient size for the individual. Orthostatic albuminuria may also be caused by certain positions or labors which cause a profusion of blood to course to the kidneys, resulting in passive congestion and leakage of albumin. Sometimes in rapidly growing youths the kidneys may be insufficient, just as we find hearts insufficient. Later the kidneys grow to the body size.

Lordotic albuminuria or albuminuria due to disturbed circulation in otherwise normal kidneys usually occurs between the ages of 10 and 15. Scoliosis may also be a factor in causing albuminuria. Tall, thin children with poor circulation are most frequently affected. This insufficiency of circulation is evidenced by cold hands and feet, and general weariness after exercise. Functional or orthostatic albuminuria, or albuminuria occurring after hard exercise, may be due to a kidney which has imperfectly recovered from a previous inflammation. This kidney may be insufficient for years and become a predisposing cause of chronic nephritis.

The prognosis of this albuminuria of adolescence is generally favorable, although it usually shows a lack of kidney tone or imperfect function, and may indicate that the surrounding circulation is not perfect. Hence there is danger of serious disturbance later, particularly with any added strain on the kidneys.

In intermittent albuminuria, although casts may be absent, there is always the possibility of development into a condition of nephritis; consequently insurance companies look on these cases with suspicion. However, patients with intermittent, lordotic or orthostatic albuminuria not infrequently recover completely and permanently.

Before an albuminuria is considered a simple albumin leak, all suspicion of more serious conditions of the kidneys must be eliminated by examinations of the urine under varying conditions. Casts must be absent, and there must be no cardiac hypertrophy or other symptoms which would show that the kidneys are suffering from localized or general inflammation. If granular casts are found, the prognosis is not good, but may not be very bad. Determination of the absence of any focal infection, tests of function, blood examinations, and, if advisable, the passage of ureteral catheters to show whether both or only one kidney is at fault will make the prognosis clear.

The results of urine examined on first rising in the morning, and again in the latter part of the afternoon will quickly show whether the condition is an orthostatic albuminuria. Also, tests of diet and exercise will show the limitations of the kidneys and their ability to sustain effort without leaking albumin.

Temperature tests should be made, as it is not unusual to find that so-called functional or orthostatic albuminuria is due to the fact that a tuberculous kidney is developing. Such a condition may be discovered before pus or blood appears in the urine. The localization of an albumin leak in one kidney, with some rise of temperature in the evening, should cause not only the centrifuged sedimented urine to be examined for tubercle bacilli, but also the guinea-pig test to be made.

The spine should of course be examined for scoliosis and lordosis, and proper orthopedic treatment should be instituted if either of these conditions is found. Also, any faulty position assumed by the child while studying in school or at home, or such as results from lying in a hammock or sleeping in a bed with too weak springs, should be corrected.

Disturbed menstrual function in young girls is at times a factor in causing leakage of albumin. When normal menstruation occurs spontaneously or as the result of appropriate treatment, such albuminuria ceases.

That hard physical exercise may cause albumin and casts to appear in the urine is now too well known to require proof or discussion. That a repetition of this condition in athletes may cause no future harm will not be so readily accepted, though Jundell and Fries,[57] after repeatedly examining the urine of 163 athletes after exercise of various kinds, concluded that the kidneys are never permanently injured. They did not, however, take into consideration the more or less permanently increased blood pressure caused by such exercise. It would seem only logical to believe that albuminuria caused by athletics represents kidney tire or kidney strain, making these organs more susceptible to irritation, and must be as harmful as over-indulgence in improper food, frequent diarrhea, repeated attacks of rapid heart from coffee or other cause, periods of insomnia, etc.

In the treatment of such recurrent albuminuria or in the treatment of lordotic albuminuria, strenuous exercise should be forbidden, and all functions of the body should be made as perfect as possible. The diet should be properly arranged; a great deal of rest taken; muscle exercises to increase the strength of the back muscles advised; anemia treated by the administration of iron; a weak heart aided by cardiac tonics; constipation relieved; plenty of fresh air prescribed; and sea bathing and cold bathing usually prohibited—every means being used to improve the general condition of the patient.

Of course it should be recognized that traces of albumin may be caused by renal concretions. A growing child or youth with traces of albumin in the urine, and with low blood pressure may develop pulmonary tuberculosis.

(To be continued)

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. Puckner, Secretary.

FORMIN (See N. N. R., 1916, p. 138).

The following dosage forms have been accepted:

Formin Tablets, 5 grains.—Each tablet contains formin 5 grains.

Formin Tablets, 7½ grains.—Each tablet contains formin 7½ grains.

VERONAL (See N. N. R., 1916, p. 92).

The following dosage form has been accepted:

Veronal Tablets, 5 grains.—Each tablet contains veronal 5 grains.

Prepared by E. Merck, Darmstadt, Germany (Merck and Co., New York).

A Comparison.—If consumption was as unpopular as the diseases of pigs or the bollworm, it would soon be eradicated—but as long as the price of humanity is so low and pork and cotton so high, we will have to do the best we may.—*Bulletin*, Newark (N. J.) Department of Health.

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[57] Jundell and Fries: Nord. med. Ark., 1911, **44**, Internal Medicine, No. 1.

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A STUDY OF CROSSED TOLERANCE FOR DRUGS

The expression "crossed tolerance" has been employed to designate the altered susceptibility which subjects that have acquired a considerable degree of tolerance for one drug or poison may thereafter exhibit toward another potent substance. In certain instances this phenomenon is well recognized. A habitual drunkard, tolerant to large doses of alcohol, usually is noticeably resistant to the general anesthetics. It is not difficult to understand the occurrence of crossed tolerance in the case of drugs very closely related which act in essentially similar ways on the organism; but as the mechanism of habituation and increased resistance to drugs is little understood in all but a few instances, the more extreme alleged types of crossed tolerance that have been reported have not been subjected to critical consideration. To what extent, aside from a few familiar examples, functional habituation, acquired for a particular drug, may also hold for other drugs of somewhat similar action has remained to be determined.

Dr. H. B. Myers,[1] the pharmacologist of the Medical School of the University of Oregon, thus indicates some of the problems in this field: The pharmacologic action of ether on the central nervous system may be considered to be similar to that of alcohol, since the two act on the same nerve cells in the same direction, and neither has a selective action not shared by the other. The pharmacologic similarity, together with the close chemical relationship, would lead one to assume, even in the absence of known facts, that the toleration of alcohol and ether was mutual. Similarly a crossed tolerance between chloroform and the closely related chloral hydrate might be assumed. With other drugs, however, which may be grouped together because of some ultimate general effect produced, as, for example, sleep, the assumption of a cross tolerance is not so well warranted, nor are facts available to show whether such cross tolerance does occur.

Myers[1] has attempted to ascertain whether crossed toleration can be established, first, between such closely related drugs as morphin and methyl and diacetyl morphin, and second, between morphin and other less related depressants of the central nervous system to which the cells become tolerant, as cannabis indica and chloral hydrate. Cannabis indica represents drugs not chemically related but sharing in some of the selective actions of morphin; chloral hydrate such depressants as have neither chemical relationship nor selective actions in common.

The outcome of these new experiments indicates that a marked crossed tolerance exists to codein and to heroin in dogs habituated to morphin, so far as effects on the respiratory center are concerned. A slight crossed tolerance exists between codein and morphin, and between heroin and morphin in regard to their actions on the tissues governing equilibrium. No evidence of crossed toleration to cannabis indica or to chloral hydrate exists in dogs tolerant to large amounts of morphin.

It thus appears that a crossed tolerance may exist between closely related drugs, but that this tolerance is evidenced only on those functions in which the drugs have a common selective action. The results are in harmony with the older belief in the increased resistance of chronic drunkards, in comparison with ordinary persons, to chloroform. Alcohol and chloroform act on the same nerve cells in a similar way, and probably induce the same changes in the protoplasm. From Myers' study we may conclude that a crossed tolerance involves only those structures on which the drugs exert effects mutually alike.

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[1] Myers, H. B.: Cross Tolerance: Altered Susceptibility to Codein, Heroin, Cannabis-Indica and Chloral-Hydrate in Dogs Having an Acquired Tolerance for Morphine, Jour. Pharmacol. and Exper. Therap., 1916, 8, 417.

COLD AIR AND PNEUMONIA IN CHILDHOOD

In a presidential address before the American Pediatric Society at Washington a few months ago, Freeman said:

> In all the acute infectious diseases I think there is now a general acceptance of the advantage of fresh air, excepting perhaps in measles and scarlet fever. In tuberculosis there is now no question of its advantage. In pneumonia the results from this treatment have exceeded those from any other method of treatment, including specific treatment with serums and vaccines. There are still many men, however, who, while allowing that fresh air is beneficial in an inflammation of the lung, doubt its efficacy in bronchitis, pharyngitis, laryngitis, rhinitis and otitis. The only reason why such men doubt its efficacy is because they have not sufficiently tried it. I have used it in all these conditions and I believe that it is of direct benefit and that it diminishes materially the mortality.[1]

Freeman remarks that the supposed production of catarrhal inflammations in adults by exposure to cold air, if it really exists, exists only on account of suggestion. The persons affected have been brought up in such fear of fresh air that every infection of the upper air passages to which they succumb is attributed to it. Nevertheless, several recent investigations have indicated that we cannot be entirely indifferent to the possible effects of chilling on the organism. Studies of the New York State Commission on Ventilation have indicated that respiratory infections of rabbits with *Bacillus bovisepticum* (snuffles) are favored by the chilling of such animals after they have been accustomed to heat, and some of the results indicate that a change from a low to a high external temperature also predisposes to similar infection. Although Chodounsky[2] obtained only negative results, the weight of recent experimental evidence favors the view that exposure of the body to cold is favorable to the incidence of acute respiratory disease, and it seems not improbable that the primary seat of this deleterious influence is in the mucous membrane of the upper air passages.[3]

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[1] Freeman, R. G.: Fresh Air in Pediatric Practice, Am. Jour. Dis. Child., December, 1916, p. 590.

Considerations of the foregoing sort throw a greater burden of proof on the advocates of any extreme cold air therapy. It would be unjust to the commendable advocacy of outdoor life to identify this with chilling from undue exposure. Nevertheless, open air treatment always harbors possibilities of even unintentional exposure, which becomes particularly serious to those who, like infants, are least able to make known any undue discomfort produced by their environment. The cold air treatment of pneumonias in childhood, endorsed by Northrup about ten years ago,[4] was given a scientific basis by the contentions of Howland and Hoobler.[5] They asserted that children seriously ill with pneumonia might have a blood pressure somewhat below that expected at their age; and that the symptoms accompanying fatality in this disease were those of vasomotor failure. They found that the effect of cold fresh air on patients with active pneumonia was the production of a rise in blood pressure; removal to a warm (65 F.) room produced a fall in blood pressure. The results were absent or much less striking in convalescents. No results were obtained by placing children outdoors in warm weather. They concluded, therefore, that the all important factor in the outdoor treatment was cold, and that the rise in blood pressure was brought about by a reflex stimulation of the vasomotor center through the action of the cold air on the skin. They also stated that a constant and continuous increase in an abnormally low blood pressure, brought about without exhaustion or bad effects, is of the greatest value. This explanation of the beneficial effects of the outdoor treatment was generally accepted.

It has been pointed out recently in THE JOURNAL[6] that, contrary to the usual belief, the blood pressure and the vasoreflex are not as a rule seriously impaired in pneumonia. Morse and Hassman[7] have made a special study of the effect of cold outdoor air on the blood pressure in pneumonia in childhood at the Children's Hospital in Boston. From their statistics there appears to be no constant relation between the systolic pressure, the diastolic pressure or the pressure pulse and the severity of the pneumonia or the temperature of the surrounding air, as the rates of both the pulse and the respiration show a tendency to vary directly with the temperature of the surrounding air.

We are apparently not justified at present in formulating conclusions as to the effect of the cold air treatment on the mortality of pneumonia in childhood. Patients, however, symptomatically seem more comfortable when they are outdoors than when they are in the house. At any rate, the impression of those constantly with the patients was that, in general, the children were more comfortable outdoors than in the ward; they coughed less, were quieter, had a better color, and had better appetites outdoors than indoors. These were merely impressions, however, and, as Morse and Hassman admit, are of little or no scientific value.

DEATHS OF PHYSICIANS IN 1916

During 1916 the deaths of 2,196 physicians in the United States and Canada were noted in THE JOURNAL. On an estimate of 158,000 physicians, this is equivalent to an annual death rate of 14.08 per thousand. For the fourteen previous years the mortality rates were: 1915, 15.71; 1914, 14.41; 1913, 14.64; 1912, 14.13; 1911, 15.32; 1910, 16.96; 1909, 16.26; 1908, 17.39; 1907, 16.01; 1906, 17.20; 1905, 16.36; 1904, 17.14; 1903, 13.73, and 1902, 14.74. The average annual mortality for the period from 1902 to 1916, inclusive, was, therefore, 15.61 per thousand.

The chief death causes in the order named were senility, heart disease, pneumonia, cerebral hemorrhage, accident, surgical operations and nephritis. The age at death varied from 23 to 99, with an average of 59 years, 11 months, 5 days. The general average of age at death since 1904 is 59 years, 8 months and 13 days. The number of years of practice varied from 1 to 77 years, the average being 33 years, 2 months and 21 days. The average for the past thirteen years is 31 years and 29 days.

Causes of Death.—There were 225 deaths assigned to general diseases; 261 to diseases of the nervous system; 324 to diseases of the circulatory system; 231 to diseases of the respiratory system; 129 to diseases of the digestive system; 105 to diseases of the genito-urinary system; 337 to senility; 39 to suicide; 112 to accident; 15 to homicide, and 98 after surgical operations. Among the principal assigned causes of death are senility, 337; heart disease, 215; pneumonia, 208; cerebral hemorrhage, 204; accident, 112; operations, 98; nephritis, 72; tuberculosis, 62; carcinoma, 49; appendicitis, 40; suicide, 39; arteriosclerosis, 36; diabetes, 29; angina pectoris, 26; septicemia, 21; uremia, 17; myocarditis, 16; homicide, 15; endocarditis, 14; gastritis and cirrhosis of the liver, each 13; influenza, anemia and cholecystitis, each 12; typhoid fever, 11; gastric ulcer, 10; general paralysis of the insane and paresis, each 9; paralysis, 8; dilatation of the heart, intestinal obstruction and peritonitis, each 7; erysipelas and meningitis, each 6; embolism and disease of the prostate, each 5; typhus fever, sarcoma, pleurisy, asthma and ptomain poisoning, each 4; diphtheria, pericarditis and bronchitis, each 3; malaria, drug addiction, neuritis, anterior poliomyelitis, mastoid disease, duodenal ulcer and dropsy, each 2, and scarlet fever, bubonic plague, yellow fever, epithelioma, Addison's disease, leukemia, alcoholism, tabes dorsalis, Hodgkin's disease, paralysis agitans, Pott's disease, paratyphoid fever, trypanosomiasis, pancreatitis and tumor of the esophagus, each 1. One physician died in prison. Ten medical officers lost their lives from wounds received in the European, Asiatic and colonial war zones.

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[2] Chodounsky: Erkältung und Erkältungskrankheiten, Vienna, 1907.

[3] Lee, F. S.: Recent Progress in Our Knowledge of the Physiological Action of Atmospheric Conditions, Science, 1916, **44**, 183.

[4] Northrup, W. P.: Med. News, 1904, **84**, 823; Chicago Med. Recorder, 1904, **26**, 628; Med. Rec., New York, 1905, **67**, 253; Boston Med. and Surg. Jour., 1906, **154**, 216; THE JOURNAL A. M. A., Oct. 13, 1906, p. 1182; Med. Jour., New York, 1907, **86**, 12.

[5] Howland, John, and Hoobler, B. R.: The Effect of Cold Fresh Air on the Blood Pressure in Pneumonia of Children, Am. Jour. Dis. Child., May, 1912, p. 294.

[6] The Blood Pressure in Pneumonia, Current Comment, THE JOURNAL A. M. A., Oct. 14, 1916, p. 1168; The Respiratory Mechanism in Pneumonia, Dec. 2, 1916, p. 1678.

[7] Morse, J. L., and Hassman, D. M.: The Effect of Cold Air on the Blood Pressure in Pneumonia in Childhood, Am. Jour. Dis. Child., November, 1916, p. 445.

The causes assigned for the 112 deaths from accidents were: automobile, 28; falls, 18; railway-automobile (grade crossing), 17; railway, 11; drowning, 11; firearms, 7; poisons and burns, each 5; sunstroke, starvation and exposure, and explosions, each 2, and Roentgen-ray burns, crushing and street railway, each 1. The 59 physicians who ended their lives by suicide selected the following methods: firearms, 24; poison, 7; hanging, 3; cutting instruments, 2, and other means, 3. Of the 15 homicides, 13 were due to firearms; 1 to cutting instruments, and in 1 the method was not reported.

Ages.—Of the decedents, 62 were between the ages of 21 and 30; 194 between the ages of 31 and 40; 343 between 41 and 50; 438 between 51 and 60; 499 between 61 and 70; 386 between 71 and 80; 159 between 81 and 90, and 19 between 91 and 99. The greatest mortality occurred at the age of 64, when 68 deaths were recorded.

Military Service.—During the year 221 physicians died who had served in the Civil War, and of these 54 had followed the fortunes of the Confederacy; 45 had been medical officers of United States Volunteers. The Medical Corps of the Army lost 8 officers; 7 had been members of the Medical Reserve Corps, and 17 had been contract or acting assistant surgeons. The Navy lost 13 medical officers; the Public Health Service 10 officers; the Indian service 3 physicians, and the organized militia 45 medical officers, of whom 6 had attained the grade of surgeon general.

Civil Positions.—Of those who died, two had been United States senators; one a member of Congress; one, governor of a state; 6, United States consuls; 13, members of state senates; 32, members of the lower houses of legislatures; 28 had been mayors; 33, aldermen; 33 had served as justices of the peace, as clerks in the government service or in various other civil positions; 7 had been postmasters; 16, editors of medical or lay journals; 27 had also been clergymen, of whom ten were foreign missionaries; 4 had been attorneys; 92, druggists; 40, bankers; 15, medical directors of life insurance companies; 5, dentists; 1, a president of a railway company; 1, a botanist; 1, a musician; 1, a toxicologist, and 8, chemists.

Association Fellowship.—Of the 596 Fellows of the American Medical Association who died during 1916, seven had been members of the House of Delegates; one, Dr. H. L. E. Johnson, had been a member of the Committee on National Legislation; one, Dr. Henry B. Favill, was chairman of the Council on Health and Public Instruction; five, Drs. Wisner E. Townsend, Frank J. Lutz, William L. Rodman, Philip Mills Jones and H. L. E. Johnson, had been members of the Board of Trustees, and two, Drs. William L. Rodman and John B. Murphy, had served as President of the Association.

THE REFINEMENT AND CONCENTRATION OF DIPHTHERIA ANTITOXIC SERUMS

The introduction of a practical method for the concentration and refinement of diphtheria antitoxin, devised by Gibson[1] in 1905, marked an important step in advance from a therapeutic standpoint. It represented the applications of the experiences of protein chemistry to a problem which is essentially of a biochemical character. It consisted in removing a globulin fraction from the serum or plasma and subjecting it to purification by precipitation, solution and dialysis. The antitoxic properties of horse serum followed the globulin at every step. The expression "antitoxic globulins" thus came into prominence.

It had previously been maintained that the artificial concentration of antitoxin is superfluous because it is possible to immunize animals to such a high degree that any further procedure is unnecessary. The production of such highly potent serums, however, is attended with much uncertainty and is sometimes exceedingly expensive. With the introduction of concentration schemes, citrated plasma could be used instead of serum in the preparation of antitoxic fluids. Coagulation is prevented by the citrate — the corpuscles sediment — and the yield of productive plasma is often 50 per cent. greater than that of serum obtained by spontaneous clotting of blood. Not only has the plan of "concentrating" antitoxin by the methods of protein fractionation permitted the satisfactory use of low grade serum or plasma which would otherwise have been of little value, but it has also established the possibility of eliminating some of the undesirable effects; for example, serum rashes, attending serum injections, by removing by-products presumably responsible for them. Finally, a smaller volume of fluid is required for injection.

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[1] Gibson, R. B.: The Concentration of Antitoxin for Therapeutic Use, Jour. Biol. Chem., 1905-1906, 1, 161.

From time to time improvements have been made in the preparation of antitoxic protein fractions of the blood of immunized animals, usually based on the separation of the blood proteins in accord with the principles just discussed. Urticaria has been reduced in frequency but by no means completely excluded. The most recent process was planned by Heinemann[2] at the Serum Division of the Memorial Institute for Infectious Diseases, Chicago. It involves a combination of well known methods of precipitation and heating protein solutions, with a persistent repetition of certain details, until the desired results are obtained. The precise directions, recently published, show that 2,000-unit serum may be produced from plasma testing less than 300 units. The apparent stability of the new serum renders it of especial economic value, and a concentrated fluid containing from 18 to 20 per cent. of active solids can readily be prepared. The higher concentration attainable in comparison with earlier methods is attributed to the more successful removal of nonantitoxic blood proteins. The serum disease reactions are reported to be greatly reduced by the use of this new-process antitoxin.

We ought to derive a peculiar satisfaction from such reports of progress. Not only does this process represent an advance of direct applicability in clinical medicine — it exemplifies the best spirit of scientific endeavor. There have been no "secrets" and no veiling of the truth, no patents asked for, and no commercialization in the evolution of the essential methods for producing better antitoxin to combat diphtheria. The researches have been published clearly as a gift to all who would use the findings. We hear all too little about beneficent scientific philanthropy of this character.

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[2] Heinemann, P. G.: The Refinement and Concentration of Antitoxins, Jour. Infect. Dis., 1916, **19**, 433.

The Medical Curriculum.—With the best possible preparation the medical student finds his daily task quite as much as the strong can carry, and altogether too heavy for the weakling. There has been some discussion among medical educators concerning the curriculum, some contending that it is too heavy for the average student. This depends on what is meant by the "average student." If the standard set in college work is applied, I am of the opinion that medicine does not want such "average students." I am convinced that a strong student, of high average, can carry the medical work as now imposed, and that the imposition of a heavy task succeeds in weeding out the unfit and is therefore desirable. We do not develop muscles by lifting feather weights, nor do we strengthen brain activity without earnest effort. The aim of medical education is to develop strong men, and in order to do so difficult tasks must be imposed in the training.—Victor C. Vaughan, M.D., *Science*, Dec. 8, 1916.

Current Comment

TUMOR CHEMISTRY

From time to time attempts have been made to discover possible chemical differences between the cells of tumors and those of corresponding normal tissues. A review of the literature on the subject leaves the impression that if any differences exist they are not sufficiently marked to deserve emphasis.[1] Not long ago, however, analyses of malignant tumor tissue by Kocher[2] indicated that this yields a larger proportion of the familiar diamino acid derivatives of the proteins than is found in normal tissues. Taken in connection with the demonstrated rôle of some of the diamino acids, notably lysin, in growth,[3] these facts seemed to offer a new approach to the cancer problem. The high content of the diamino acids in the tumors might be looked on as in some way responsible for the abnormal rate of growth of these tissues. Drummond,[4] of the Cancer Hospital Research Institute, London, has made new analyses of neoplasms which could be controlled experimentally. These furnish a different interpretation to the findings just mentioned. The distribution of nitrogen in a large number of the proteins of human and chicken tumors and normal tissues has been examined. A higher proportion of the diamino acids generally exists in the case of the tumor proteins. It has been shown that in all probability the diamino acid content of a tissue varies directly with the amount of nuclear material present. The more rapidly growing and cellular tumors, therefore, show a higher percentage of these substances than do the slowly growing ones. As Drummond contends, all the evidence points to the conclusion that the higher percentage of diamino acids which is often present in the proteins of malignant growths is due to the greater proportion of nuclear material which they contain; for similarly high figures for this fraction of the protein molecule are found in the analysis of those normal tissues which possess cells rich in nucleoprotein, as, for example, normal human pancreas and spleen. A different explanation of the increased rate of cell division must still be sought.

IS PELLAGRA TRANSMISSIBLE?

After reviewing the available evidence of the Robert M. Thompson Pellagra Commission regarding the nature of the etiologic factor in pellagra, Vedder[5] wrote in 1914:

> I regard the question as to whether pellagra is an infection or a deficiency disease to be entirely open. It does not appear to me that any evidence that can be regarded as proof of either hypothesis has yet been presented. It is rather a question of weighing the evidence and determining toward which hypothesis the bulk of the evidence points.

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[1] Wells, H. G.: Chemical Pathology, 1914, p. 449.

[2] Kocher, R. A.: The Hexone Bases of Malignant Tumors, Jour. Biol. Chem., 1915, **22**, 295.

[3] Compare Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1912, **12**, 473; **13**, 233; 1914, **17**, 325.

[4] Drummond, J. C.: A Study of the Distribution of Nitrogen in the Proteins of Tumours and Normal Tissues, Biochem. Jour., 1916, **10**, 473.

[5] Vedder, E. B.: Dietary Deficiency as the Etiological Factor in Pellagra, Arch. Int. Med., August, 1916, p. 137.

The commission has been inclined to believe rather strongly that it points to the infectious origin of the disease. It seems to me that so far as I have examined it the evidence points at least as strongly toward a dietary deficiency.

Vedder's conclusions were evidently dictated by the similarity between pellagra and other known deficiency diseases, notably beriberi and scurvy. Much of the evidence that has been presented as proof of the infectious nature of pellagra can be reasonably explained in accordance with a deficiency hypothesis. Since then, Goldberger's studies on the causation and mode of preventing pellagra have added evidence to the belief that this disease rests on some dietary defect, and that relief can be brought about by changing the food of the patients.[6] His work is in harmony with the earlier failure of Lavinder and Francis[7] and others of the U. S. Public Health Service to transmit pellagra to monkeys by inoculation of material from pellagrous lesions. To this may now be added the recently reported experimental attempts at transmission of pellagra to the human subject.[8] Sixteen volunteers, mostly members of the Public Health Service, were subjected to procedures intended to afford evidence of the communicability of pellagra, in case this was of an infectious nature. The materials used were blood, nasopharyngeal secretions, epidermal scales from pellagrous lesions, urine and feces. Blood was administered by intramuscular or subcutaneous injection; secretions by application to the mucosa of the nose and nasopharynx; scales and excreta by mouth. Both urine and feces were ingested by fifteen of the volunteers, five of whom also took blood, secretions and scales. The experiments were performed at four widely separated localities (Washington, D. C.; Columbia, S. C., Spartanburg, S. C., and New Orleans), at which different groups of the volunteers were assembled. As none of the subjects, during a period of between five and seven months, have developed evidence justifying a diagnosis of pellagra, no support is lent to the belief, still widely held, that pellagra is a communicable disease. The epidemiologic features are not incompatible with either hypothesis as to etiology.

THE EFFECT OF CHRONIC LEAD POISONING IN THE GERM CELLS OF THE MALE

The effect on the offspring of lead poisoning in the father has long been suspected from statistics on the probability of harmful effects from paternal plumbism in man on the germ cells.[9] The suspicions have been justified by the experimental studies of Cole and Bachhuber[10] at the University of Wisconsin, and of Weller[11] at the University of Michigan. The results of paternal lead poisoning are not manifested in sterility or stillbirths, but they are exhibited in the offspring by a reduction of approximately 20 per cent. in the average birth weight, by an increased number of deaths in the first week of life, and by a general retardation in development such that the offspring of lead-poisoned males often remain permanently underweight. One naturally inquires whether the spermatozoa of lead-poisoned males show any detectable changes associated with lead blastophthoria. The testes of such individuals have now been examined in sufficient numbers by Weller[12] to permit the statement that in the majority of cases no histologic differences can be detected between the testes of lead-poisoned subjects and those of normal controls. Spermatogenesis appears to take place along normal lines and at a rate which seems not unlike that in normal individuals. This observation is in no degree incompatible with a state of true blastophthoria, since it is to be expected that, if fertilization takes place at all, the spermatozoa will show no great variation from the normal as far as their appearance is concerned. The reason for the inferiority of the offspring is to be sought rather in qualitative changes in the germ plasm. In a limited group of instances, in which the male animal became sterile during the administration of lead, histologic examination of the testes showed complete aspermatogenesis with marked atrophy and vacuolar degeneration of the germinal epithelium.

THE SEARCH FOR THE IDEAL ANTISEPTIC

The ideal antiseptic procedure obviously would be one which would destroy the infecting micro-organisms but leave undamaged the body cells with which it might come into contact. The quest for such a substance has continued with enthusiasm almost since the time of Koch's fundamental researches on chemical disinfectants published thirty-five years ago. The substances proposed during this period have been legion. They represent the most diverse types of chemical compounds, acting by a variety of reactions, but all resulting in a damage to the bacterial body, whether it be by rapid oxidation, by coagulation of the protoplasm, by dehydration, by chemical combination or by some more subtle process. The living body is a structure of living cells comparable in many respects with the inimical micro-organisms. The tissue cells, therefore, are likely to experience as much damage from efficient antiseptics as do the invading bacteria. Experience teaches what considerations of comparative biology lead one to expect, that in infected wounds, for example, the antiseptic must often be applied in such strength that body cells as well as bacteria are injured or destroyed. Nevertheless the search for the ideal has continued in the hope, often seemingly useless and unjustified, of ultimately finding some discriminating agent suitable for bacterial destruction. After all, the tissue cells are not identical with the lowest forms of microbiotic structure, or entirely analogous to them. One technical difficulty in the planning of investigations has been the lack of suitable isolated body cells which could be observed with respect to the possible effects of antiseptics. This has been overcome, however, by the use of so-called tissue cultures in which the growth of isolated connective tissue cells can now easily be watched in the laboratory. In this way R. A. Lambert[1] has followed the effect of the same chemical agents on bacteria and tissue cells growing together in vitro. Some estimate of the comparative resistance of body tissues to various antiseptic chemicals should thus be gained. It is apparent from his study that in the case of the chemical substances tested, such as potassium cyanid, phenol (carbolic acid), tricresol, hydrogen dioxid and alcohol, tissue cells were definitely more easily killed than were bacteria. With certain other disinfectants the difference was not so striking. Iodin stands out as the one chemical tested to which cells were found more resistant than were staphylococci. A good growth of cells was seen after exposure to a 1:2,000 solution of iodin for an hour, a strength sufficient to sterilize the tissue completely in most instances. Lambert points to his experiments as further evidence of the widely accepted value of iodin as an antiseptic. They indicate that, at least in weak aqueous solution, it should not, as is often stated, injure or irritate the tissues. Lambert is careful to point out, however, that iodin has the power of rapidly dissolving fibrin. Ordinarily the union of wound surfaces by the fibrin facilitates healing. The use of fibrin-dissolving, but tissue-conserving solutions raises a debatable theoretical question which application in practice can perhaps best decide.

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[6] Goldberger, Joseph: Pellagra: Causation and a Method of Prevention, The Journal A. M. A., Feb. 12, 1916, p. 471; Goldberger, Joseph, and Wheeler, G. A.: Experimental Pellagra in the Human Subject, Pub. Health Rep., Nov. 12, 1915. Observations on the Chemical Symptoms of Pellagra, editorial, The Journal A. M. A., April 22, 1916, p. 1311; Pellagra in Nashville, May 27, 1916, p. 1704.

[7] Lavinder, C. H.; Francis, Edward; Grim, R. M., and Lorenz, W. F.: Attempts to Transmit Pellagra to Monkeys, The Journal A. M. A., Sept. 26, 1914, p. 1093.

[8] Goldberger, Joseph: The Transmissibility of Pellagra, Pub. Health Rep., 1916, **31**, 3159.

[9] The Effect on the Offspring of Lead Poisoning in the Father, editorial, The Journal A. M. A., Dec. 25, 1915, p. 2242.

[10] Cole and Bachhuber: Proc. Soc. Exper. and Med., 1914, **12**, 24.

[11] Weller, C. V.: Jour. Med. Research, 1915, **33**, 271.

[12] Weller, C. V.: Histological Study of the Testes of Guinea-Pigs Showing Lead Blastophthoria, Proc. Soc. Exper. Biol. and Med., 1916, **14**, 14

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Drs. Dee C. Lee, Rolland F. Darnall and Patrick Murphy have resigned as members of the staff of the State Hospital for Nervous Diseases, Little Rock.——Dr. Robert B. Corney, Little Rock, has been appointed physician to the Tucker Convict Farm.

Hospital Activities.—The executive committee of the campaign for raising funds for the proposed new City Hospital, Little Rock, announces that it will start a campaign to raise $50,000, which will bring the fund to the desired figure of $200,000.——The legislature will be asked to appropriate $187,000 for the work against tuberculosis and for the maintenance of the State Tuberculosis Sanatorium, Booneville, during the next biennium. One of the principal improvements suggested is the erection of a building for negroes suffering from tuberculosis, and $5,000 for a children's building.

CALIFORNIA

Personal.—The resignation of Dr. Joseph Henry Catton, San Francisco, as assistant in medicine on the faculty of the University of California, was accepted by the regents at their last meeting.

Supreme Court to Decide.—It is reported that P. L. Crane, a chiropractor, is attempting to have the California medical law declared unconstitutional on the grounds that it exempts one group of practitioners—Christian Scientists—but requires chiropractors to pass an examination. The case has been appealed to the United States Supreme Court after having been suspended three different times by the United States District Court.

Lectures at Stanford Medical School.—A course of popular medical lectures will be given at the Stanford University Medical School, San Francisco, during January, February and March. The program for January is as follows:

January 12, "What Every One Should Know About Cancer." Dr. Harry M. Sherman, representing the American Society for the Control of Cancer.

January 26, "Modern Efforts to Secure Painless Childbirth." Dr. Frank W. Lynch, Professor of Obstetrics and Gynecology, University of California.

CONNECTICUT

Smallpox.—Waterbury had reported 104 cases of smallpox up to December 19. Compulsory vaccination is being enforced. Dr. John T. Black, secretary of the state board of health, is in Waterbury, and has assumed active charge of the situation.

State Health Association Organized.—At a largely attended meeting of the health officers, medical men and others interested in public health, held at the Chamber of Commerce in New Haven, December 6, the Connecticut Public Health Association was organized, and Dr. Stephen J. Maher, New Haven, was elected president.

Personal.—Dr. John W. Churchman, New Haven, who has been on duty at Bar le Duc, France, for several months, has arrived home, and expects to return to his work on the Western war front in March.——Dr. Walter H. Brown has been placed in charge of the health department of Bridgeport. He will reorganize the department and establish a department of vital statistics.——Dr. James E. Hair, Bridgeport, has been injured in an automobile accident.

DISTRICT OF COLUMBIA

Medical Society Elects Officers.—Officers for 1917 have been elected by the Medical Society of the District of Columbia as follows: president, Dr. G. Wythe Cook; vice presidents, Drs. Charles M. Beall and Milton H. Prosperi; recording secretary, Dr. Henry C. Macatee; corresponding secretary, Dr. J. Lawn Thompson, and treasurer, Dr. Charles W. Franzoni.

Medical Committee for Inauguration Day.—To safeguard the crowds that will be in Washington to view the parade and take part in other ceremonies attendant on the inauguration of President Wilson on March 5, next, 140 of the city's physicians have been organized into a medical committee, of which Dr. Phillip S. Roy is chairman, and Dr. William P. Carr, vice chairman.

Novel Suit for Damages.—A Washington physician and a hospital are named as defendants in a novel suit recently filed. The basis of the suit is the quarantining of a rooming house kept by the plaintiffs, in August last, on account of smallpox. A roomer, it is alleged, was taken sick and by direction of the physician was taken to the hospital for treatment. After remaining in the hospital four or five days the patient was returned to the rooming house and the case reported to the health officer as possibly smallpox. Investigation confirmed the physician's suspicions, and the patient was taken to the smallpox hospital and the rooming house quarantined. The plaintiffs allege that the physician and the proper authorities at the hospital should have known that the patient had smallpox, that the patient was returned to their rooming house without notice to them of the probable nature of his disease, and that they have suffered damage as the result.

GEORGIA

New Medical Societies Organized.—Physicians of the second district met in Thomasville, December 14, and organized the Second District Medical Association, electing Dr. Everett Daniel, Moultrie, president; Dr. William J. Jennings, Thomasville, vice president, and Dr. Erie J. Newsom, Camilla, secretary-treasurer. The first regular meeting of the association will be held in Moultrie, in February.——Physicians of Colquitt County met at Moultrie, December 21, and organized the Colquitt County Medical Society, electing Dr. William L. Jerkins, president; Dr. J. A. Summerlin, Hartsfield, vice president, and Dr. William W. Massey, Moultrie, secretary-treasurer. The first regular meeting will be held at Moultrie, February 12.

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[1] Lambert, R. A.: The Comparative Resistance of Bacteria and Human Tissue Cells to Certain Common Antiseptics, Jour. Exper. Med., 1916, **24**, 683.

New Officers.—Georgia Medical Society, of Savannah, December 12: president, Dr. Antonio J. Waring; vice president, Dr. James O. Baker, and secretary-treasurer, Dr. William H. Myers, all of Savannah.——Eleventh District Medical Society, at Valdosta: president, Dr. Quitman Holton, Douglas; vice president, Dr. John W. Simmons, Brunswick; secretary-treasurer, Dr. Frank Bird, Valdosta; and councilors, Drs. Robert C. Woodward, Adel, and Henry C. Welchel, Douglas. Waycross was selected as the next meeting place.——Third District Medical Association, at its semiannual meeting, at Cordele: president, Dr. Thomas J. McArthur, Cordele; vice president, Dr. Joseph T. Stukes, Americus, and secretary, Dr. Charles A. Greer, Oglethorpe. Americus was selected as the next place of meeting.

ILLINOIS

Paris Protects Against Smallpox.—Mayor Hoff of Paris issued an order, December 26, that every one coming into Paris from Terre Haute, Ind., where smallpox exists, should be vaccinated.

Sanitary Survey of Quincy.—The city council of Quincy has invited the U. S. Public Health Service to conduct a sanitary survey of Quincy in cooperation with the state board of health.

Vote on Sanatorium Declared Illegal.—Attorney General Lucey is said to have decided that the special election held in Aurora last month, in which the supervisoors of Kane County were authorized to appropriate money for a tuberculosis sanatorium, was illegal, because of incorrect wording of the ballot.

Personal.—Dr. Marguerite D. Mitchell Macdougall, Aurora, was found semiconscious, almost frozen, and seriously injured in the rear of her home, in Aurora, December 31. She states that she slipped and fell from the window, but her husband is reported to be in jail in Aurora charged with assault with intent to kill.

Health News.—The November number of *Health News*, the official monthly bulletin of the Illinois State Board of Health, is devoted chiefly to poliomyelitis, one paper being on the orthopedic after-care of paralysis victims, another on the diagnosis, which is a thorough presentation of the subject, and a third on recent developments in poliomyelitis, which presents some general considerations of the subject in an interesting manner.

Vaccination Ruling Upheld.—The campaign of the Illinois State Board of Health to exclude unvaccinated children from schools, during an epidemic of smallpox, has been upheld by a decision of Master in Chancery E. H. Marsh of Rockford. An injunction had been asked against the Rockford Board of Education, which had directed the exclusion from schools of unvaccinated children, as required by the ordinance. The master in chancery held that the ordinance was valid and refused to grant the injunction.

Contagious Disease Hospital.—The city council finance committee, on December 29, authorized Health Commissioner Robertson to make habitable the new contagious disease hospital and appropriated $10,000 for this purpose. The building has been completed since November 28, but no appropriation had been available for its equipment. It is reported that the hospital will be ready to receive patients, January 8. It is probable that the hospital will be known as the Alfred C. Cotton Hospital.——At a meeting of the Chicago Woman's Club, December 31, addresses were made by Health Commissioner Robertson, Drs. Willis O. Nance, William R. Cubbins, William K. Murray, Daniel A. K. Steele, William A. Noble and A. Augustus O'Neil, and it was voted to cooperate with the health department in protecting the children of the city from contagious diseases.

Venereal Disease Prevention.—At a meeting held December 14, at the City Club, under the auspices of the American Social Hygiene Association, a movement was inaugurated to rid Chicago of social disease. The crusade is to be based purely on scientific principles and will be begun when a committee of volunteer social workers and physicians has been formed. Clinics will be established in various sections of Chicago.——Favorable action on an ordinance providing for reporting of venereal diseases without the name of the patient being disclosed was advocated before the city council committee on health, December 26, by Rev. John P. Brushingham, secretary of the morals committee. Addresses in favor of the ordinance were made by Drs. Roy R. Ferguson, Hugo E. Betz, James A. Clark, Eugene H. Wunderlich and Prof. Herbert L. Willett.

Chicago

Hospital to Be Reopened.—A meeting to consider plans for the reopening of Maimonides Hospital was held at the Hebrew Institute, December 12, and Drs. Jacob Frank, Victor L. Schrager and others delivered addresses. Funds are being raised rapidly to meet the mortgage on this building, which will enable it to be reopened.

Sister Mary Raphael Dies.—Sister Mary Raphael McGill, for thirty-five years on duty at Mercy Hospital, and known to thousands of medical students and practitioners of the city, died December 24. At the funeral services, interns of the hospital were active pallbearers, and members of the staff served as honorary pallbearers.

Personal.—Dr. Conrad G. Appelle, an intern in the Cook County Hospital, is reported to be seriously ill with typhoid fever.——Dr. Charles F. Yerger, Cicero, who has been seriously ill for two months from septicemia, secondary to a tonsillar infection, is convalescent.——Major Daniel W. Rogers, M. C., Ill. N. G., assigned Seventh Infantry, has resigned, and has been succeeded by Major Eugene G. Clancey.

Defective Children.—The special committee appointed to consider means for providing for physically defective children held a meeting, December 17, at which Health Commissioner Robertson stated that 86,000 children had been examined; that of these 12,000 had defective vision; 1,800, defective hearing; 6,215, diseased nasal organs; 29,642, enlarged tonsils; 14,652, adenoids, and 14,044 children had both enlarged tonsils and adenoids.

KENTUCKY

Trachoma.—Thirty-one mild cases of trachoma were discovered at Bowling Green in three schools comprising 870 pupils. This is said to be a smaller percentage of cases than in the schools of other towns of equal size in the state. The examinations were made by Dr. John McMullen, Lexington, government trachoma expert.

Louisville Physicians Elect Officers.—At the annual meeting of the Jefferson County Medical Society held in Louisville, December 18, the following officers were elected: president, Dr. Granville S. Hanes; vice presidents, Drs. Elmer L. Henderson and Joshua B. Lukins; secretary, Dr. W. Hamilton Long, and treasurer, Dr. Frank H. Ritter.

Health Officers' School.—The school of county and city health officers of Kentucky held a three-day session in Louisville, December 13 to 16, under the auspices of the state board of health. Asst. Surg. Gen. John W. Trask, U. S. P. H. S., spoke on birth and death reports, and Dr. John F. Anderson, formerly U. S. P. H. S., and Asst. Surg. Lewis R. Thompson, U. S. P. H. S., spoke on various phases of the anterior poliomyelitis situation. Dr. John G. South, Frankfort, presided over the conference.

Personal.—Dr. Luther D. Nichols, Hickman, was injured in an automobile accident, recently.——Dr. J. C. Sullivan, Dublin, has been appointed first assistant physician at the Eastern State Hospital, Lexington, to fill the vacancy caused by the appointment of Dr. Squire L. Helm as superintendent of the Institute for the Care of Feebleminded Children, Lexington.——Dr. Eldridge L. Bushby, Henderson, has been appointed second assistant physician to the Eastern State Hospital, Lexington.

Decision on Pollution of Streams.—At Princeton, suit was brought against the city for damages on account of pollution of a stream by city sewage, and also asking an injunction against the city enjoining it from discharging sewage into the stream. The circuit court granted the injunction and awarded $2,500 damages. The court of appeals affirmed the judgment for damages but dismissed the injunction on the ground that the evidence showed that the sewage could be discharged into the stream in such a way as not seriously to injure property owners below the sewer outlet.

LOUISIANA

New Armory Opened.—The Medical Department of the Louisiana National Guard formally opened its new armory in New Orleans, December 7.

New Officers.—At the annual meeting of the Orleans Parish Medical Society, in New Orleans, December 19, the following officers were elected: Dr. Paul J. Gelpi, president; Drs. Frank J. Chalaran, J. George Dempsey and Hector E. Bernadas, vice presidents, and Dr. Henry W. E. Walther, treasurer.

Personal.—Charles J. Ball, special inspector for the New Orleans Board of Health, has been appointed superintendent of the Hospital for Contagious Diseases, recently opened in that city.——Dr. John A. Devron, New Orleans, has been elected major in the Medical Corps of the Louisiana National Guard.——Dr. William T. O'Reilly has been reappointed health commissioner of New Orleans, and Dr. William H. Robin, secretary of the City Board of Health.

Adopts Higher Requirement.—At the meeting of the Louisiana State Board of Medical Examiners, Dec. 1, 1916, a resolution was adopted providing that beginning with the session of 1918-1919 no medical school or college will be considered in good standing that does not require for admission at least two years of work in an approved college of arts and sciences. This makes seventeen states in which the licensing boards have adopted the two-year standard.

Ragweed and Hay-Fever.—The New Orleans directorate of the American Hay-Fever Association will ask the legislature at its coming session for legislation for the eradication of ragweed near the city, believed to be the cause of the fall epidemic of hay-fever. Enforcement of ordinances of the city concerning weeds has practically eliminated the spring epidemic. Examinations of the air on windy days made by the association during the early fall disclosed much ragweed pollen, which was traced to its source outside the city.

MARYLAND

Books Left to College.—By the will of Dr. Holliday Hicks Hayden, Baltimore, his medical library is left to the College of Physicians and Surgeons.

Personal.—Dr. John F. Hogan, superintendent of Sydenham Hospital, has been appointed second assistant commissioner of health of Baltimore. He will have charge of the Division of Communicable Diseases which will include the work of the health wardens and the department nurses.——Dr. William R. Geraghty, St. Joseph's Hospital, Baltimore, has been appointed by the police board department examiner of women and female children to succeed Dr. Henry J. Walton, Baltimore, resigned.——Health Commissioner Blake has announced the appointment of Dr. Chester P. Woodward as inspector of pasteurization, created by the ordinance of estimates for 1917 in anticipation of the passage of the pure milk ordinance now before the city council.——Dr. George H. Hocking, Govans, a member of the State Lunacy Commission, was shot recently and seriously injured by a patient who had suddenly become violently insane.

Free Water for Hospitals.—The Baltimore Hospital Conference Association has taken up the question of the city supplying the hospitals with free water and removing ashes. Water bills vary from $693 for the University Hospital to $3,504 for the Johns Hopkins Hospital. In the case of the Hebrew Hospital, exemption from these charges would give $1,300 more annual income. In the case of the University Hospital, it would be equivalent to an addition of about $1,000 to their annual income. In the case of the Johns Hopkins Hospital it would probably mean between $4,000 and $5,000 a year added to their funds. Each of these institutions treats a large number of persons without charge—31 per cent. of all the patients at the University Hospital, 50 per cent. at the Hebrew Hospital, 64 per cent. at St. Joseph's Hospital. There are 225,000 patients treated free each year in the dispensaries of the hospitals forming the association. The association feels that if hospitals are big enough to do this great public work, the city should do its share by furnishing free water and removing ashes.

MASSACHUSETTS

Osteopaths' Offer Declined.—Osteopaths recently offered to establish a clinic for infantile paralysis patients in connection with the Boston City Hospital. The hospital trustees declined the offer and Superintendent Dowling stated that "the hospital was already prepared to do all that could be done for infantile paralysis patients."

Harvard Medical Lectures.—The faculty of medicine of Harvard University offers this year, as usual, a course of free public lectures to be given at the Medical School, Longwood Avenue, on Sunday afternoons, at 4 o'clock, from January 7 to April 22 inclusive. The program for January is as follows:

January 7—Rev. Dr. Francis G. Peabody, "Alcohol and Efficiency."

January 14—Dr. Hugh Cabot, "The Care of the Wounded with the British Expeditionary Force in France."

January 21—Dr. E. W. Taylor, "Infantile Paralysis; Precautions Necessary and Unnecessary."

January 28—Dr. W. T. Porter, "'Shock' in the Trenches."

Personal.—Dr. Frankwood E. Williams has resigned as chairman of the Massachusetts Advisory Prison Board and executive secretary of the Massachusetts Society of Mental Hygiene, to accept an appointment as associate medical director for the National Committee for Mental Hygiene and editor of the new quarterly magazine which will deal with mental health. He will also be in charge of the educational work of mental hygiene throughout the country.——Drs. Hermon C. Bumpus, Frank C. Richardson, F. W. Anthony, Allen J. McLaughlin, Milton J. Rosenau, Walter E. Fernald and George M. Kline have been elected directors of the Massachusetts Society for Mental Hygiene.——Dr. Henry S. Rowen, Brighton, has succeeded Dr. Francis J. Keany, deceased, as a trustee of the Boston State Hospital.——Dr. Hiram Amrial has been appointed assistant physician of the Boston City Hospital.

MINNESOTA

Hospital News.—St. Elizabeth's Hospital, Wabasha, is to be enlarged by the building of an "L" of the same height as the main building.——The Martha G. Ripley Memorial Hospital, adjoining the Maternity Hospital, Minneapolis, was dedicated, December 9. The dedicatory address was delivered by Rev. Franklin W. Sweet.

Sanatorium Notes.—The Wabasha County Tuberculosis Sanatorium, Buena Vista, was formally opened, December 19.——Clay-Becker Counties Sanatorium, Lake Park, was opened with elaborate ceremony, December 3. The institution, which has been constructed at a cost of $20,000, will accommodate thirty-two patients.

The Study of Health Problems.—A combination of all the health activities of Minneapolis under one nonpolitical board was discussed, December 18, at a meeting of the committee organized in April by the city council. The medical members of this committee are Dr. Arthur E. Benjamin, as representative of the Board of Charities and Correction, and Drs. Charles F. Dight and Jonas M. Kistler, representing the city council.

Personal.—Dr. Francis H. Gambell, mayor of Thief River Falls, has been appointed chairman of the Committee on Public Health of the Minnesota League of Municipalities.——Dr. Wilhelm S. Anderson, Thief River Falls, has resigned as president of the Tri-County Tuberculosis Sanatorium Commission.——Dr. John Sinclair, Redwood Falls, is said to be under treatment in the Redwood Falls Hospital.——Drs. John G. Cross and Thomas B. Hartzell are the members of the committee to draft an ordinance for the reorganization of the Minneapolis Health Department.——Dr. Ralph M. Thurlow has resigned as a member of the staff of the Fergus Falls State Hospital.

MONTANA

Personal.—Dr. Frederick M. Poindexter, Dillon, sailed from New York, December 9, to enter the Red Cross Service in France.——Dr. and Mrs. James E. Elliott, Bozeman, have moved to Polson.

New Hospitals.—Deer Lodge is to have a new hospital to cost $85,000 and to be managed by Catholic sisters.——The work on the new Sister's Hospital, Miles City, is almost completed and it is expected that the hospital will be opened early in the year.

New Officers.—At the annual meeting of the Silver Bow Medical Society, held at Butte, December 12, the following officers were elected: president, Dr. Arthur C. Jones; vice president, Dr. Joseph F. Borghoff; secretary, Dr. Spies V. Wilking, and treasurer, Dr. Harold Schwartz, all of Butte.

NEW MEXICO

Sanatoriums Consolidated.—The Cipes Tuberculosis Sanatorium and the Methodist Deaconess Hospital, Albuquerque, have been consolidated under the name of the Methodist Sanatorium. The institution has a capacity of fifty patients, and is under the control of the Home Missionary Society of the Methodist Episcopal Church.

New Officers.—At the annual meeting of the Bernalillo County Medical Association, held in Albuquerque, December 7, the following officers were elected: president, Dr. Joseph S. Cipes; vice presidents, Drs. Forrest F. Fadely and Oliver T. Hyde; secretary, Dr. Frank E. Tull, and treasurer, Dr. Sylvester G. Von Almen, all of Albuquerque.

NEW YORK

Personal.—Dr. James A. McMorrow, Syracuse, is ill with appendicitis at the Crouse-Irving Hospital.

New York City

Birth Control Rejected.—The Medical Society of the County of New York, at its meeting, December 26, by a vote of 210 to 72, voted against any change in the law which would permit physicians to advise married couples as to methods of birth control.

Fined for Selling Impure Drugs.—A health department inspector recently purchased sodium salicylate from a drug store which on analysis proved to be only 15 per cent. pure. The magistrate in the municipal term court imposed a sentence on the druggist of $500 fine or thirty days in jail.

Harvey Society Lecture.—The next Harvey Society lecture will be given at the New York Academy of Medicine on the evening of Jan. 13, 1917. At this time Prof. E. V. McCollum of the University of Wisconsin will lecture on "The Supplementary Dietary Relationships Among Our Natural Food Stuffs."

Increase in Street Accidents in 1916.—The figures compiled by the Bureau of Records of the Department of Health show that for the first eleven months of 1916 there were nearly 18 per cent. more deaths due to street vehicles and surface cars than in the corresponding period of 1916. In 1915 street vehicles were responsible for 453 deaths; in 1916, for 529. Electric cars were responsible for 77 fatalities in 1915, and for 96 in 1916. Falls on the sidewalks or streets caused 50 deaths during the first eleven months of 1915 against 81 for 1916. Falls from wagons, cars, etc., caused 46 deaths in 1915 and 59 in 1916. That there should be this increase in the number of accidents in view of the large amount of "safety-first" educational work and the improved traffic regulations is regarded as remarkable and as indicating the need of still greater efforts in this direction.

NORTH CAROLINA

District Society Meeting.—At the annual meeting of the Seventh District Medical Society, held in Monroe, December 5, the following officers were elected: president, Dr. Henry D. Stewart, Monroe; vice president, Dr. William F. Mitchell, Shelby, and secretary, Dr. Silas R. Thompson, Charlotte. It was decided to hold the next meeting at Shelby on the second Tuesday of October, 1917.

High Birth Rate.—The official records of the registration of vital statistics for the first eleven months of 1916 show 76,704 births, 31,776 deaths and 7,104 stillbirths. This is equivalent to a death rate of 13.4 and a birth rate of 32.2 per thousand. During the same period thirty convictions were secured for failure to make reports of births, and fines amounting to $115.98 were imposed.

Personal.—Dr. Herbert A. Codington has resigned as superintendent of the James Walker Memorial Hospital, Wilmington, to enter into private practice in that city.——Dr. Joel D. Whitaker, Raleigh, sustained a fracture of the leg in an automobile accident at Indianapolis several weeks ago, and will not be able to resume practice as early as expected, as it has been necessary to refracture the leg.

OHIO

Personal.—Dr. Charles C. Moffett, Elyria, is in a critical condition from cerebral hemorrhage.——Dr. John E. Monger, Greenville, is reported to have accepted the appointment of registrar of vital statistics under the state board of health.

Chiropractor Prosecuted.—Perry D. Parks, a chiropractor of Portsmouth, Ohio, was indicted in October by the Grand Jury of Scioto County on a charge of practicing medicine illegally. He pleaded not guilty and was released on bond.

Sue for Licenses.—Two chiropractors, Calvin C. Rutledge of Bowling Green and Joseph W. Netrefa of Cleveland have filed suits against the State Medical Board to compel the granting of certificates to practice which the board had refused to issue.

Academy Election.—At the annual meeting of the Columbus Academy of Medicine, December 18, Dr. Ernest Scott, Clintonville, was elected president; Dr. Raymond A. Rice, Columbus, vice president, and Dr. Ivor G. Clark, Columbus, secretary-treasurer.

Illegal Practitioner Arrested.—"Dr." Roland O. McFarren of Massillon, Ohio, was arrested recently on the charge of practicing medicine without a license. He is said to prescribe "Dr. McFarren's Vegetable Compound." He pleaded not guilty and was released on bond.

Divine Healer Arrested.—A self-styled "divine healer," Mary A. Rose, also known as Delia Deimling, is reported to have been arrested at Springfield, Ohio, recently, charged with practicing medicine without a license. She pleaded guilty and was released on condition that she leave the state and never return.

Cincinnati

Personal.—Dr. Rufus B. Hall, senior gynecologist at the Cincinnati City Hospital, has resigned after nearly twenty years' service.——Dr. Fletcher Langdon fell down stairs, December 12, sustaining severe injuries to the shoulder and nose.——Dr. J. Edward Pirrung has been appointed assistant police and fire surgeon.

PENNSYLVANIA

Endowment Raised.—The campaign for $200,000 for the endowment fund of the Woman's Medical College, Pennsylvania, has just been successfully completed.

Gift of Portrait.—The Philadelphia County Medical Society is indebted to Richard Y. Cooke, president of the Guarantee Trust and Safe Deposit Company of Philadelphia, for a portrait of William Lambdin Knight, M.D., eighteenth president of the society.

Personal.—Dr. J. Madison Taylor delivered an address before the College of Physicians, Pittsburgh, December 14, on "The Scope of Reconstructive Therapeutics."——Dr. Daniel J. McCarthy has returned after a visit of inspection to the prison camps in Germany.——R. A. Millikan, professor of physics at the University of Chicago, delivered an address on "Radiation from Atoms and Electrons," at the Franklin Institute, January 4.——Dr. Arthur S. Hagan, Uniontown, who was operated on six weeks ago at the Lakeside Hospital, Cleveland, has returned home convalescent.——Dr. George B. Kalb, after eighteen years of practice at Erie, has moved to Los Angeles.——At the one hundred and fourth annual meeting of the Academy of Natural Sciences, held in Philadelphia, December 19, Dr. Samuel G. Dixon, state commissioner of health, was elected president, and Dr. Edward J. Nolan, librarian.

Nurses May Give Anesthetics.—W. H. Keller, first deputy attorney general, has given an opinion to Dr. John M. Baldy, Philadelphia, president of the State Bureau of Medical Education and Licensure, that it is not illegal for a nurse who has been trained in the administration of anesthetics to administer such anesthetic as may be prescribed by a physician under and in accordance with his orders and directions. Mr. Keller says that there is nothing in the law which places the administration of an anesthetic on a different or higher plane than that of any other drug.

Examination of Schoolchildren Approved.—Dr. Samuel G. Dixon, state commissioner of health, has approved the plan adopted in Pittsburgh to examine all schoolchildren before the opening of school and has advised other school districts to adopt it if possible. In Pittsburgh the children come in groups of a dozen or more to the schools to be examined by voluntary physicians and medical inspectors and are given health certificates to show they are free of infantile paralysis, diphtheria, scarlet fever and measles. However, no state order for such examination has been sent out.

Contagious Diseases.—The total number of cases of poliomyelitis in the state from July 1 to Dec. 10, 1916, was 2,003, with 494 deaths. In July there were 110; August, 714; September, 778; October, 364, and November, 35. The state health commissioner has issued a circular calling attention to the law requiring every school in the state to be fumigated twice a month. At Williamsport an epidemic of diphtheria in one of the schools led to an investigation from which the health officer concluded that the bubble fountains were responsible for the spread of the disease. In one of the grades the children were so small that they could not drink from the fountains without the lips coming in contact with the cup or pipe. In this school use of the bubble fountain was discontinued and individual paper drinking cups provided. Eighteen cases of diphtheria had occurred among pupils since the opening of school.

UTAH

New Officers.—At the annual meeting of the Salt Lake County Medical Society, December 14, the following officers were elected: president, Dr. Robert H. Hampton; vice president, Dr. George G. Richards; secretary, Dr. Thomas A. Flood (reelected), and treasurer, Dr. William L. Rich, all of Salt Lake.

Infectious Diseases.—During the first seventeen days of December there were 191 cases of contagious diseases in Ogden, according to the semimonthly report of the health inspector. Of the cases, 21 were scarlet fever, 2 diphtheria, 163 measles and 5 chickenpox. There were three deaths, all attributed to measles, the epidemic of which was then subsiding. In Salt Lake City during the same period it was said that there were about 500 cases of measles.

VERMONT

Licenses Revoked.—The annual report of the Vermont Board states that the license of Dr. John W. Merrow has been revoked because of unprofessional conduct and fraudulent representation. Since the revocation, it is reported that Merrow has been arrested in New York for illegal transactions in the distribution of narcotics.

WASHINGTON

Washington Law Upheld.—The supreme court of Washington rendered a decision, December 5, holding that the Medical Practice Act of that state was constitutional. This decision was the result of a test case brought by Clyde Boreham, an osteopath, who was alleged to have practiced medicine and surgery without a proper certificate, in that he had removed a patient's tonsils. He was licensed to practice osteopathy only, and the court held that he was not entitled to perform the operation on that certificate. The lower court assessed a fine of $1 and costs.

CANADA

Tuberculosis in Canada.—In 1908 there were only 250 beds for the tuberculous available; in 1911, 900; today there are 2,000 in the various special hospitals and sanatoria throughout the Dominion.

Loss of Life in Asylum Fire.—The Asylum for Feeble-Minded Girls at St. Ferdinand de Halifax, near Lake William, Megantic County, Quebec, was destroyed by fire, December 31. In spite of the heroic efforts of the sisters to save the patients, forty-five children died and one of the sisters was also burned to death.

Deaths and Births in Ontario in 1915.—The total number of births registered in the province of Ontario in the year 1915 was 67,032, as against 66,225 in the previous year. The total number of births in the same year was 34,701 males and 32,331 females. The illegitimate births numbered 1,472, three more than in 1914. There were 678 twin births and 12 cases of triplets. Tuberculosis numbered 2,466 deaths, an increase of 122 over the previous year. The deaths from cancer totaled 1,982, an increase of 68 over 1914. The provincial board of health of Ontario is now conducting a campaign of education in respect to cancer and other diseases. In infant mortality the deaths under 5 years totaled 8,632; under 1, 6,838.

Civil Versus International War.—To show what great work lies before the Canadian people in prosecuting a vigorous campaign for the eradication of communicable diseases, the *Health Bulletin,* Toronto, compares the deaths in the Canadian Expeditionary Forces to date, with the deaths from typhoid and tuberculosis in Canada in the two years of war. The deaths from all causes in the Canadian forces in the war, during two and one-quarter years, have totaled 15,766, while from typhoid and tuberculosis in the same time they have totaled 17,350, or 1,584 more deaths from the two latter diseases than have occurred in war. The deaths from the group typhoid, scarlet fever, diphtheria, whooping cough, tuberculosis and measles, in the same time, have been 22,560, an excess over war deaths of 6,794. If Canada could prevent this wholesale destruction of human life in peace times, repopulation could be effected in a few years.

Medical Inspection of Schoolchildren.—January 1 the electors of Toronto voted on the question of placing the medical inspection of schoolchildren under the medical officer of health. Since its inauguration some six years ago, it has been under the control of the board of education, with a chief medical inspector and several assistants and school nurses. Lately, however, it has been found that the work of the school nurses and those of the well-organized department of health was being duplicated; and as there is every evidence of a desire to save on the part of the taxpayer, and as the board of health and the board of education could not arrange terms for amalgamation, which amalgamation has been estimated would save at least $35,000 to the city annually, it was decided to submit the proposition to the electors at the municipal elections. The medical officer of health, Dr. Charles J. Hastings, has issued a bulletin, setting forth the work of the department under his charge, in the form of a chain, which showed one link missing, namely, that of medical inspection of schoolchildren, and showed a continuous chain of health department activity as adopted in New York, Chicago, Philadelphia and other large cities of the United States. The results of the election will be announced in a later issue of The Journal.

GENERAL

Meningitis on the Border.—Army medical officers on the border report that there is no danger of the spread of meningitis among the troops. Among the Georgia troops there had been three deaths, and in a Pennsylvania regiment there were two cases, the patients being on the road to recovery. No new cases had developed in the eight days previous to the report.

Importation of Cassia and Other Spices.—The exportation from Hongkong to the United States of cassia for the first nine months of 1916 amounted, according to *Commerce Reports,* Dec. 28, 1916, to $365,520 gold, as compared with $67,817 in the same period of 1915. The exports of cassia oil were valued at $88,312, as compared with $37,550 for the nine months of 1915. The exports of spices to the United States were valued at a higher sum for the period named than for any whole previous year.

American Congress on Internal Medicine.—This organization held its second meeting and first scientific session in New York, December 27 and 28, at the Hotel Astor. Dr. Reynolds Webb Wilcox, in his presidential address, defined the aims and purposes of the organization and the conditions of membership. The first scientific session was devoted to a discussion of "The Ductless Glands in Cardiovascular Diseases and Dementia Praecox," and the second scientific session to a symposium on "Duodenal Ulcer." The following officers were elected: president, Dr. Reynolds Webb Wilcox, New York; vice president, Dr. Elias H. Bartley, Brooklyn; secretary-general, Dr. Heinrich Stern, New York, and assistant secretary, Dr. Joseph H. Byrne, New York, councilors for five years; Dr. Jacob Kaufmann, New York; Dr. Charles G. Jennings, Detroit; Dr. Judson Daland, Philadelphia; Dr. Francis X. Dorcum, Philadelphia; Dr. Arthur W. Fairbanks, Brookline, Mass. The secretary announced that the organization already had a paid up membership of over 300 and a considerable number of applications for membership.

Seaboard Association Meets.—The twenty-first annual session of the Seaboard Medical Association was held in Washington, N. C., December 19 to 22, under the presidency of Dr. David T. Tayloe, Washington, N. C. A public health session was held which was well attended, and at which addresses were made by Surg. Frederick C. Smith, U. S. P. H. S., and Drs. J. Howell Way, Waynesville; Cyrus Thompson, Jacksonville, and Charles O. Laughinghouse, Greenville, of the state board of health. Norfolk, Va., was selected as the place of meeting for 1917, and the following officers were elected: president, Dr. Kirkland Ruffin, Norfolk, Va.; vice presidents, Drs. Joseph L. Spruill, Columbia, N. C.; Robert L. Payne, Jr., Norfolk, Va.; Ira M. Hardy, Kinston, N. C., and Rufus L. Raiford, Sedley, Va.; secretary, Dr. Clarence Porter Jones, Newport News, Va., and treasurer, Dr. George A. Caton, Newbern, N. C.

Baby Week for 1917.—Stimulated by the success of Baby Week last year, the Children's Bureau, U. S. Department of Labor, is making plans for a bigger and better Baby Week for 1917. The bureau and the General Federation of Women's Clubs have agreed on the week beginning May 1 as the time most generally suited for the event, and urge that this week be adopted wherever local conditions permit. An effort will be made to have the welfare work incident to the week extended so as to cover all children still at home with their mothers and not limit the work to the period of infancy only. Stress is laid on the fact that well-cared-for and healthy mothers are necessary for the health and happiness of babies, and the importance of protecting the mother particularly during pregnancy and the lying-in period will be urged. Caution is given that in communities where infantile paralysis has been epidemic, all features should be omitted that might bring susceptible children together, but attention is called to the fact that Baby Week may well be so planned as to afford an excellent opportunity for giving information as to the proper physical training of children with paralyzed muscles. Persons interested in the planning and management of a Baby

Week can obtain, without cost, a bulletin on the subject, by applying to the Children's Bureau, Washington, D. C.

Bequests and Donations.—The following bequests and donations have recently been announced:

Goshen (N. Y.) Emergency Hospital, $10,000, by the will of Harry W. Van Cortland.

St. Christopher's Hospital for Babies, Brooklyn, N. Y., $87,103, by the will of Harrison Pownal Wallis.

Sanatorium for members of the International Ladies Garment Workers' Union suffering with tuberculosis, property valued at $75,000, donated by Miss Martha Hentschel, Kingston, N. Y.

Pennsylvania Hospital, Philadelphia, $5,000; Society for Organized Charity, $5,000; Bryn Mawr Hospital, Philadelphia Hospital for Women, Frederick Douglass Hospital, Lying-In Hospital, Philadelphia, Children's Aid Society, Friends' Insane Hospital and Oncologic Hospital each $2,000, by the will of Joshua L. Bailey.

Germantown (Pa.) Dispensary and Hospital, $100,000 by the will of Mrs. Mary Warden Harkness.

Long Island College Hospital, Brooklyn, N. Y., bonds of the market value of $50,000, a bequest from Dr. John A. McCorkle.

Public Nurse Association, Peoria, Ill., a donation of $1,000, by Trustees of the Proctor Endowment.

United Hebrew Charities, Montefiore Home, German Hospital and Mount Sinai Hospital, New York, each $1,445, by the will of William Josephy.

The Association for Improving the Condition of the Poor, St. Luke's and the Presbyterian Hospital, New York, each $100,000, by the will of Harris C. Fahnestock. A legacy of $100,000 was also paid to the Post-Graduate Hospital by the decedent just before his death.

Polyclinic Hospital, New York, $47,767; the Association for Improving the Condition of the Poor, the New York Skin and Cancer Hospital and the Laboratory for Surgical Research of New York University, each $25,883, by the will of Mrs. M. P. Draper.

Jewish Foster Home, Philadelphia, United Hebrew Charities, Jewish Hospital, and Philadelphia Jewish Sanatorium for Consumptives, each $500, by the will of Mrs. Bertha Rosshan.

Philadelphia Home for Incurables, Home for Consumptives, Samaritan Hospital, Presbyterian Hospital and Children's Homeopathic Hospital, each $5,000, by the will of John T. Martin, Philadelphia, the bequest payable after the death of his widow.

FOREIGN

Epidemics in Sonora.—At Ures, in the state of Sonora, 160 miles south of the Mexican border, it was reported, December 18, that smallpox in virulent form and a mysterious fever believed to be typhus had caused more than 500 deaths in the previous four weeks. An epidemic was also said to exist in the Alamosa district. Quarantine was said to be in force in the affected districts.

Import Prohibition on Alcohol.—By a decree of Dec. 22, 1916, according to *Commerce Reports*, Dec. 28, 1916, the French government has prohibited the importation of alcohol and certain alcoholic beverages of foreign origin into France and Algiers. The prohibition is not applicable to shipments for government account, for storage and reexport, or for chemical and pharmaceutical purposes.

Conservation of Mineral Springs.—By a decree issued by the president of Peru the exploitation of all mineral springs in that country will be under the direction of the public health department (*Commerce Reports*, Dec. 22, 1916). The department will disseminate information on the curative properties of the native mineral waters, and prevent the misuse of the springs, and will take charge of the baths and depots where the waters are taken.

Plague in India.—Rev. Henry Fairbanks, Ahmednager, India, reports that bubonic plague has been increasing for three months or more and is more severe than has been noticed for several years. Cats and rats were reported to be dying in many parts of the city, and the people fled panic stricken and died elsewhere, spreading the disease. Dr. Ruth P. Hume has started a campaign of inoculation, and with Dr. Lester H. Beals of Satara, has already inoculated 14,000 persons.

Sanitation in Shanghai.—The city of Shanghai is only partially supplied with modern methods of sewage disposal. Only the French section, it is said, is provided with septic vaults and other improvements. The other portions of the city still cling to the old methods on account of the commercial value of waste products. According to *Commerce Reports*, Dec. 27, 1916, the matter of modernizing the disposal of sewage for the whole city is under discussion, due largely to the increased cost of cleaning vaults, which is said to be almost prohibitive.

Chemical Industry in Russia.—The chemical industry in Russia has received great impetus from the war, and, according to *Commerce Reports*, Dec. 23, 1916, a number of works have already been erected and many others are projected. Among them is a formaldehyd factory at Vetluga, and a technical laboratory for the production of lanolin, naphthalene, etc., at Rostov. A large company has been formed at Moscow for the production of coke-benzol products and at Tomsk a chemical factory is projected for the making of medical chemicals. Several new works for making sulphuric acid have been erected in the Volga region, in the Donets basin, in the Caucasus and in the Urals. Mirrors, lenses and other optical instruments, thermometer tubing and chemical glass, formerly imported, are now being made. There is a large demand for microscopes and other scientific apparatus, as well as for articles for medical and surgical use.

LONDON LETTER

London, Dec. 11, 1916.

The State Treatment of Venereal Diseases

This subject has already been described in The Journal. Progress is being made in most parts of the country with the schemes for providing additional facilities for diagnosis and treatment, in accordance with the recommendations of the royal commission, which have been adopted by the government. The Portsmouth scheme has already been described. For East Sussex it is intended to provide further clinics. An early start will probably be made with the new work at Addenbrooke's Hospital at Cambridge. The Norfolk and Norwich Hospital at Norwich is also early in the field, and arrangements for the establishment of a treatment center are being made with the local county councils. In the West Riding of Yorkshire it is proposed to establish in the first instance treatment centers at Sheffield, Leeds and Bradford, and in due course to extend the scheme so as to include some of the smaller hospitals in the county. Negotiations between the municipalities of Birmingham, Liverpool and Manchester, and the large hospitals in those towns are proceeding. In the case of some of the small rural counties it has been found impracticable to arrange for suitable treatment at any institution in the county; arrangements will have to be made with the nearest available hospital outside the county. Thus in the case of Westmorland the county council intends to use the Manchester Royal Infirmary, and patients in need of special treatment will have to undertake the journey to that city.

The London County Council Public Health Committee has prepared a scheme for the metropolitan area. It is to come into operation, January 1, and will extend to the areas bordering on the county. Associated with it are the county councils of Buckingham, Essex, Hertford, Middlesex, Surrey and Kent, and the borough councils of Croydon, East Ham and West Ham. Arrangements for diagnosis and treatment and the provision of laboratory facilities have been made with the principal London hospitals. The services will include the appointment of a committee of the hospital staff to draft a scheme for carrying out the special work at the hospital relating to the diagnosis and treatment of venereal disease, and to organize and superintend the arrangements within the hospitals; the appointment of a competent staff; the provision of beds for the patients; the treatment of outpatients at evening clinics at other suitable times; the supply by the hospital of salvarsan or its substitutes on an approved list; the supply to physicians of apparatus for taking specimens, and the furnishing of them with reports; the examination of specimens sent by physicians; the supply of statistical information of work done; the provision of free instruction for physicians and students; opportunities for physicians to act as clinical assistants at approved rates of remuneration; the employment of women physicians in clinics for women, and the issue of printed instructions for the guidance of patients and physicians. The hospital will receive payments in respect of (*a*) the work of the treatment center, including the supply of salvarsan or approved substitutes and any pathologic examinations of specimens, and (*b*) the pathologic examination of specimens sent to the hospitals by physicians in the areas of the various authorities. These payments will amount in 1917 to $167,000, of which London's share will be $97,750. The cost of the supply of drugs to London physicians during the first year is estimated not to exceed $250,000. To this must be added the cost of supplying salvarsan or its approved substitutes to poor law infirmaries and district and poor law medical officers, amounting to about $37,500, making a total of $137,500. It appears to the committee that any scheme for dealing with the disease would be incomplete unless supplemented by instructional lectures and the publication of information, and it has therefore included a sum for this purpose in the estimate of expediture.

At the London Hospital the scheme will be in full operation, January 1. In consideration of the payment of $15,000 a year by the London County Council, the hospital will provide treatment for all patients with venereal diseases coming from the areas of the participating authorities. The arrangements will consist of two parts: 1. A department for the treatment of genito-urinary diseases; the hospital will provide four sessions a week, two for men and two for women, the sessions for men to remain open until 7 p. m. The hospital will appoint two clinical assistants, one senior and one junior, the latter to be increased if necessary by the appointment as far as possible of local general physicians. 2. A department for the treatment of syphilis, in which, in addition to the ordinary outpatient treatment, salvarsan or approved substitutes will be administered. The hospital will appoint an additional assistant. The hospital will allot fifteen beds for the purpose of treating syphilis, and a certain number of beds for genito-urinary diseases. To insure secrecy the ward system will not be adopted, each patient being provided with a bed in a room occupied solely by him. The hospital will make arrangements for the examination of specimens sent by physicians in the participating areas whose patients do not attend the hospital.

The Work of the Research Committee

The second annual report of the Medical Research Committee appointed under the national health insurance scheme has been issued. A great deal of useful work has been accomplished. The needs of a nation at war have been kept in view. The work in connection with the war began with the help given to the army by the statistical department in compiling army medical statistics. A card index has been made for all military hospitals in the United Kingdom, now numbering over 2,000, and a similar index for stations and hospitals abroad is in progress of construction. This work, when completed, will serve a national purpose of the highest importance, wholly additional to its immediate military and scientific value. For many years after the conclusion of peace, claims for pensions or allowance must be expected to be advanced by men not invalided from the forces during service, or by their kinsmen or relatives. These claims will be based on disabilities alleged to be due to wounds or sickness on active service, and the only means of tracing the accuracy of statements made in support of these future claims will be the card index now being compiled from the hospital records. It is understood that huge financial loss has been sustained by the American government in consequence of the incompleteness of contemporary records during the stages of the Civil War.

Treatment of Wounds

Striking results have attended the study of wound infections and their treatment in the field and hospital. The idea that the dirty and often extensive wounds of warfare can be cleansed as a routine surgical procedure by the direct application of a strong antiseptic has been abandoned. Treatment of wounds is now directed to the facilitation of the physiologic processes of the body, on which Wright laid stress, by surgical methods for securing drainage and by irrigation methods of maintaining it, and of combating the invading organisms. Surgical testimony is still divided on the respective values of Wright's treatment by salt solutions alone without antiseptics, on the one hand, and, on the other, treatment by irrigation with Dakin's hypochlorite solutions, though both methods now are widely applied. The use of salt or of hypochlorite solutions, both of which are very cheap as compared to other antiseptics, has led to a great saving in hospital expenditure. Much work has been done on the properties of many old and new poisonous gases, with a view to improving the means of their ready detection and identification, the methods of protection against them, and of antidotal and other modes of treatment in cases of poisoning. Reference is made to the success of the preventive measures adopted in Egypt against the infection of the troops with bilharziasis. From 80 to 90 per cent. of the natives in the Nile delta are known to be affected by this disease, for which no cure is known when the worm is once established in the blood of its human host. Some idea of the immensity of the national interest in this disease, and in its adequate control at the present time in Egypt, may be gained from the statement that of the men infected with bilharziasis during the South African War, 359 were still receiving "conditional pensions" in 1911 at a cost to the state of about $32,000 per annum, exclusive of those already permanently pensioned.

Clinical Facilities for Women

The subcommittee of the Academic Council on Medical Education of Women in the University of London has just issued a report. On the further provision of clinical facilities for women students in London, it is stated that no anxiety need be felt about teaching men and women together, though the deans of the various schools have supported the idea that the men students would object to the presence of women students. The reasons generally given for this are: (*a*) Women are keener in their work and take the front places at demonstrations and obtain an unfair share of clinical opportunities; (*b*) women are unable to contribute to the athletic life of the school. The committee is of opinion that no valid objection can be maintained against the system of coeducation for men and women medical students, and that this is the only system by which the general policy of the University of London can be effectively carried out. The subcommittee considers that the facilities for the medical education of women would not be adequate in any hospital or medical school unless resident medical and surgical appointments are open to men and women on equal terms; and it hopes that these facilities will be provided in some of the schools of the university at no distant date. In October, 1916, 127 students entered the London School of Medicine for Women, twenty women entered at Charing Cross Hospital Medical School and King's College, making a total of 157 women students in London. Of these, 115 are in their first year.

The Professorial Board of University College, London, has reported on the foregoing report, and while agreeing with it in many respects, differs in others. For example, it is stated that "if women were admitted to only a few schools, there is reason to believe that those schools would lose men students and would become mainly schools for women." The board, therefore, which had been urged to open the anatomy department at University College to women, recommends: "That the question of admitting women to the department of anatomy be deferred until adequate provision of clinical facilities for women students in London has been made and until it is possible to provide suitable accommodation for them."

PARIS LETTER

Paris, Dec. 7, 1916.

The War

PROTECTION OF MATERNITY DURING THE SECOND YEAR OF WAR

Last year Dr. Pinard, formerly professor of clinical obstetrics at the Faculté de médecine de Paris, communicated to the Académie de médecine statistics showing that protection of maternity and of the new-born in Paris had been so well effected during the period 1914-1915 that the mortality under these two heads was actually lower than in the preceding periods, which is the reverse of what previous war time experience would lead us to expect. These happy results were due chiefly to the particular attention paid to the mothers and children by the Assistance publique (The Journal, March 20, 1915, p. 1010). Recently Pinard reported to the Académie results in Paris for the second year of war. Of 26,179 births registered in Paris, 95 per cent. were attended by agents of the Assistance publique. While the measures of protection have remained the same during the past year, the results have been less satisfactory. The number of stillbirths fell from 7.69 to 6.63 per cent.; the number of children nursed by wetnurses from 31 to 13.55 per cent.; mortality of mothers from 0.64 to 0.46 per cent., and desertion of infants from 4.98 to 2.88 per cent. In the second period these figures rose again, being, respectively, for 1916, 7.67, 22, 0.48 and 5.21 per cent. On the other hand, infant mortality has remained practically stationary for the first year of life, but has increased for the second year. The cause of this increase is found in infectious diseases, particularly measles and whooping cough. The increase in the number of abandoned and premature children, the diminution in the average weight of the new-born, and the decrease in the number of meals served by the maternity canteens to nursing mothers have an economic cause which Pinard points out as the presence of pregnant and nursing women in ammunition factories. These women are unaware of the danger to themselves and of the risks to which they expose their children. Pinard therefore demands that employment at these factories should be forbidden every pregnant woman, every woman nursing a child, and every woman who has been confined within six months.

THE URGENT SURGERY OF LUNG WOUNDS

Dr. Pierre Duval, of the Faculté de médecine de Paris and surgeon of the hospitals, recently reported to the Société de chirurgie de Paris fourteen cases of urgent operation for wounds of the lung. All of these operations were performed to arrest a pulmonary hemorrhage threatening the life of the patient, or for the relief of serious asphyxia. They were, therefore, operations of extreme urgency performed on patients in imminent danger. These observations show the value of this intervention, for of the fourteen patients, ten were cured. The technic employed was that devised by Duval: resection of a single rib; wide opening of the pleura; suturing of the wounds by deep hemostatic sutures; drying of the pleura, and suture of the thoracic wall. In such cases the projectile is removed only if easily found.

MEDICAL ASSISTANCE TO DISCHARGED SOLDIERS

The minister of the interior has appointed a commission to study means of securing medical and pharmaceutical assistance or hospital accommodation for soldiers discharged for wounds or illness contracted or aggravated while with the colors.

THE AMERICAN MEDICAL DETACHMENT WITH THE ARMY

A number of Americans who have devoted themselves to the service of our wounded have collected their souvenirs in a volume which has just been published under the name of "Friends of France." The preface of this is written by Mr. A. Piatt Andrew, inspector general of the American medical sections.

ALTERNATING USE OF ANTISEPTICS

Dr. Charles Richet, professor of physiology of the Faculté de médecine de Paris, recommends that surgeons alternate one antiseptic with another in the treatment of infected wounds in order to avoid the possibility of germs becoming habituated to poisons. In a communication to the Académie des sciences, Dr. Richet divides antiseptics into four groups: (1) oxidizing agents (hypochlorites, hypobromites, iodin, chlorin, hydrogen peroxid, ozone, potassium permanganate, etc.); (2) compounds of heavy metals (salts of mercury, silver, copper, zinc, etc.); (3) substances belonging to the aromatic series (phenols, salicylates, thymol, naphthol, creosote, etc.), and (4) miscellaneous products (formic aldehyd, chloroform, chloral, essential oils, fluorids, boric acid, etc.). One may thus employ an antiseptic of the first group on the first day, one of the second group on the second day, and so on. In these conditions the microbes do not have an opportunity to develop immunity to the antiseptic, and the results obtained are much better.

EAR DISEASES AND THE WAR

Affections of the ear are frequent in the army, and take up much of the time of military surgeons. Dr. J. Molinié has made a report on this subject to the Réunion médicale de la 1-ère armée. He groups the cases in three categories: (1) diseases contracted while with the army; (2) lesions caused by "engines of war," and (3) exacerbations or aggravations of chronic affections. Ear diseases contracted in the army constitute 21 per cent. of the whole number. The most common of these is acute otitis media following affections of the upper respiratory passages, fevers and infectious diseases. From 7 to 8 per cent. of these cases are accompanied by mastoiditis. This condition is almost invariably cured in from three to six weeks, and the patient is able to resume his service. The lesions caused by "war engines" constitute about 28 per cent. The external ear is occasionally injured, but it is usually the middle ear which suffers. Unilateral or bilateral perforation of the tympanum is frequent. The ossicles are occasionally dislocated. Traumatic perforation of the tympanum is characterized by the presence of a narrow hemorrhagic border. The treatment is plugging of the external meatus with antiseptic cotton. The loss of hearing is slight, and the patient is soon fit to resume his service. Deafness from shock is less frequent than that due to traumatic perforation. As a rule, it amounts to little more than a kind of auditory "dazzling" which disappears completely with time. True and persistent lesions of the labyrinth are an exception. The most intractable cases of shock deafness are of psychic origin and are not infrequently simulated. The auditory-palpebral reflex is of value in the differential diagnosis of these different conditions. These cases of shock deafness are becoming more and more numerous with the increasing use of heavy artillery. Their numbers are, in a certain sense, an index of the fluctuations in the struggle. It will be possible to reduce these numbers by protecting the ear of the combatant, either by means of a flapped cap worn under the helmet, or by a metallic ear protector attached to the helmet and capable of being lowered or raised at will. Of the ear diseases among soldiers calling for treatment, 51 per cent. are chronic affections either aggravated or exacerbated. This group is practically evenly divided between chronic suppurative otitis media, and chronic deafness. The prevalence of the former has been the occasion of a new regulation to the effect that intermittent suppurations must be treated at the front if the lesions are limited to the middle ear. But these new regulations cannot become effectual, unless the patient can be seen by a specialist who will decide whether his case falls within their scope. Chronic deafness is often attributed by the patient to the noise of the cannon. There is practically never any improvement from treatment in these cases, and the specialist's task is limited to formulating an opinion as to the military fitness of the patient. In forming judgment on this, it is not sufficient to take into consideration an estimate of the acuity of the hearing as tested in the usual way. For this special purpose it is necessary to allow for certain compensations, natural or artificial, of slight deafness. The extent of compensation can be judged only by a careful observation of the patient in the ordinary surroundings of his life. Further, the specialist has to bear in mind that there are occupations in the army for which his patient may be suitable in other respects and which do not require acute hearing.

Turning now to war victims suffering from total bilateral deafness, the method of reeducation by lip reading appears to give excellent results. This system is being generalized in all centers in the interior of the country. With regard to complete deafness, the important problem presents itself of differentiating between pathologic conditions and malingering. It is now well ascertained that in addition to complete deafness dependent on organic lesions, there are other genuine cases in which no morphologic change can be demonstrated. Differential diagnosis acquires especial importance because of the difference in prognosis in the two cases. For this reason it is necessary to employ the most precise scientific methods to eliminate as far as possible every source of error, and, in particular, that which may be due to insincerity of the patient. In this connection it appears likely that investigation of the ocular and vasomotor reflexes under a purely auditory stimulus should offer the surest guarantees. The number of patients suffering from ear discharges is considerable, and constitutes a heavy burden on the specialists. It is the practice at present to retain patients suffering from chronic otorrhea with the army. This is in correlation with the fact that for the most part ear trouble has never interfered with work in civil life. It is, of course, necessary to give these patients treatment for a few days. Such a treatment properly applied occasionally leads to complete cure. In the absence of complications calling for mastoid operation, ear discharge is not considered incompatible with service in the army.

Marriages

Victor Luman Rocho, M.D., Woodburn, Ore., to Miss Ruby Esther Francis of Oregon City, Ore., December 14.

Theodore Livingston Chase, M.D., to Agnes Barr, M.D., both of Philadelphia, in New York, December 6.

Kent Edward Darrow, M.D., Fargo, N. D., to Miss Cora Belle Hodgson of Gardner, N. D., December 2.

Blaine Augustus Young, M.D., Merriman, Neb., to Miss Edith C. Barnes of Cody, Neb., December 24.

James Alphonso Taylor, M.D., to Miss Jessie Craven, both of Montpelier, Ind., December 22.

Charles Edward Scharf, M.D., to Miss Grace Elizabeth Mullin, both of Chicago, November 30.

Edwin Everett Jack, M.D., Boston, to Miss Mary J. Denny of Brookline, Mass., December 11.

William John Gatti, M.D., to Miss Rose Wery, both of Punxsutawney, Pa., November 15.

Stephen Hurt Watts, M.D., University, Va., to Miss Sarah Tilt of Atlanta, Ga., December 21.

Norman Dixon Curry, M.D., to Miss Neal Jelleneoux, both of Chicago, in October.

John McCoy, M.D., to Miss Florence A. Riley, both of New York, December 8.

Deaths

Claude Lamont Wheeler, M.D., New York; McGill University, Montreal, 1889; aged 52; died at his home in Brooklyn, December 30, from pneumonia. Dr. Wheeler was for many years assistant editor of the *New York Medical Journal* under the late Dr. Frank P. Foster, and succeeded the latter in the editorship of the journal.

Holliday H. Hayden, M.D., Baltimore; College of Physicians and Surgeons, Baltimore, 1892; aged 47; a Fellow of the American Medical Association; demonstrator of anatomy and clinical medicine in his alma mater; later associate professor of applied anatomy in the University of Maryland; vaccine physician of Baltimore; died at his home, December 20.

William Francis Skinner, M.D., Chambersburg, Pa.; Jefferson Medical College, 1890; aged 48; a Fellow of the American Medical Association; president of the Cumberland Valley Medical Association in 1913; a member of the staff of the Chambersburg Hospital; coroner of Franklin County; died at his home, December 18.

Richard M. Thomas, M.D., Greensburg, Ind.; Medical College of Ohio, Cincinnati, 1883; aged 58; a member of the Indiana State Medical Association; local surgeon for the Big Four System; died in the Good Samaritan Hospital, Cincinnati, December 17, after a surgical operation.

William F. Smith, M.D., Glenn Springs, S. C.; University of Pennsylvania, Philadelphia, 1861; aged 82; for more than a half century a practitioner of Spartanburg County, S. C.; surgeon in the Confederate service during the Civil War; died at his home, December 3.

J. Thomas Nunnally, M.D., Griffin, Ga.; Memphis Hospital Medical College, Memphis, Tenn., 1894; aged 45; formerly a Fellow of the American Medical Association; a member of the Tennessee State Medical Association; died at his home, December 15, from nephritis.

T. M. Cherry, M.D., Norton, Va.; College of Physicians and Surgeons, Baltimore, 1891; aged 54; a Fellow of the American Medical Association; a well known practitioner of southwest Virginia; died at his home, December 11, from cerebral hemorrhage.

Carter E. Damrell, M.D., Tulsa, Okla.; Central Medical College, St. Joseph, Mo., 1898; aged 42; for eight years health officer of Enid and Garfield County, Okla.; died at the home of his father-in-law in Enid, December 17, from organic heart disease.

George W. Bailey, M.D., Philadelphia; University of Pennsylvania, 1868; aged 76; who gave up his practice twenty-two years ago to devote his time to Sunday school work; died in a sanatorium at Battle Creek, Mich., December 19, from disease of the kidney.

Emory Oliver Onion, M.D., Summum, Ill.; Keokuk (Iowa) Medical College, 1906; aged 38; a Fellow of the American Medical Association; died, December 16, in the Macomb (Ill.) Hospital, where he had been under treatment for tuberculosis.

James Lawrence Sullivan, M.D., Bridgeport, Conn.; College of Physicians and Surgeons, Baltimore, 1901; aged 42; a member of the Connecticut State Medical Society; died in St. Vincent's Hospital, Bridgeport, August 12, from Hodgkin's disease.

Lee B. Harvey, M.D., Colville, Wash.; Marion-Sims College of Medicine, St. Louis, 1900; aged 48; a member of the Washington State Medical Association; mayor of Colville from 1900 to 1909; died at his home, December 16, from acute nephritis.

Milton Oscar Stemmler, M.D., Myrtle Point, Ore.; Marion-Sims College of Medicine, St. Louis, 1900; aged 45; formerly a member of the Oregon State Medical Association; died in Mercy Hospital, North Bend, Ore., December 14, from typhoid fever.

Frederick Frelinghuysen Coleman, M.D., Asbury Park, N. J.; New York University, New York, 1893; aged 52; a graduate in pharmacy; died at a private sanatorium in Stamford, Conn., November 27, from disease of the brain.

Charles Henry Linley, M.D., Atchison, Kan.; Miami Medical College, Cincinnati, 1877; formerly a member of the Kansas Medical Society; a resident of Atchison for half a century; died suddenly in that city, December 20.

Howard Edwin Hiestand, M.D., Kenton, Ohio; Medical College of Ohio, Cincinnati, 1884; aged 58; a member of the Ohio State Medical Association; died in Grant Hospital, Columbus, December 15, from myocarditis.

Richard Biddle Faulkner, M.D., Pittsburgh; College of Physicians and Surgeons in the City of New York, 1875; aged 63; formerly a Fellow of the American Medical Association; died at his home, December 20.

William John Coates, M.D., New York; New York University, New York, 1882; aged 59; dean of the College of Veterinary Surgery of New York University; died at his home, December 19, from diabetes.

Samuel L. Cochran, M.D., Louisville, Ky.; Louisville (Ky.) Medical College, 1893; aged 61; formerly professor of anatomy and physiology in his alma mater; died at his home, December 18, from pneumonia.

James Joseph Walsh, M.D., Olyphant, Pa.; Jefferson Medical College, 1911; aged 29; a member of the Medical Society of the State of Pennsylvania; died at his home in Scranton, recently, from diphtheria.

James Dorland, M.D., Dorland, Ont.; McGill University, Montreal, 1875; aged 64; formerly a practitioner of Milwaukee, Wis., and Chicago; died at his home, December 10, from cerebral hemorrhage.

David C. Knott, M.D., Plymouth, Ind.; Eclectic Medical Institute, Cincinnati, 1882; aged 59; a Fellow of the American Medical Association; died at his home, November 8, from angina pectoris.

James E. Lay, M.D., Hallettsville, Texas; Tulane University, New Orleans, 1868; aged 73; a Fellow of the American Medical Association; a Confederate veteran; died at his home, December 13.

William David Hollmers, M.D., Chicago; College of Physicians and Surgeons, Chicago, 1915; an intern in Cook County Hospital, Chicago; died in that institution, December 23, from typhoid fever.

Josaphat A. Gaucher, M.D., Putnam, Conn.; Baltimore Medical College, 1912; aged 26; a Fellow of the American Medical Association; died at his home, December 17, from lobar pneumonia.

Wesley R. Churchill, M.D., Reedsburg, Wis.; Hahnemann Medical College, Chicago, 1874; aged 71; a specialist on diseases of children; died at his home, December 7, from pneumonia.

Warren Bateman Brown, M.D., Richmond, Calif.; Starling Medical College, Columbus, Ohio, 1888; aged 54; founder of the first newspaper in Richmond; died at his home, December 10.

John Beach Knapp, M.D., New York; College of Physicians and Surgeons in the City of New York, 1875; died in St. Luke's Hospital, December 18, from postoperative pneumonia.

Elery Channing Webster, M.D., Marion, Ind.; Eclectic Medical Institute, Cincinnati, 1868; aged 72; died at his home, December 17, from cerebral hemorrhage.

John Leonidas Murray, M.D., Lexington, Tenn.; Vanderbilt University, Nashville, Tenn., 1874; aged 74; a veteran of the Civil War; died at his home, December 8.

Frederick Haskins, M.D., Neosho, Mo.; Ensworth Medical College, St. Joseph, Mo., 1903; aged 54; died in St. Joseph, Mo., December 17, from pneumonia.

Francis Mason Hayes, M.D., Buffalo; New York University, New York, 1887; aged 63; died in Lewiston, N. Y., December 10, from pneumonia.

Charles E. Bennett, M.D., Cortland, N. Y.; Syracuse, N. Y., University, 1880; aged 58; died in the Cortland Hospital, November 30, from septicemia.

W. L. Hayne, M.D., Mallorysville, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1889; aged 63; died at his home, December 4.

Joseph D. Boggs, M.D., Norborne, Mo.; Kansas City, Mo., Medical College, 1886; aged 82; died at his home, December 3, from nephritis.

Frank W. Le Fevre, M.D., Portland, Ore.; Cleveland University of Medicine and Surgery, 1885; aged 59; died at his home, December 2.

Justin D. Root, M.D., Brandon, Wis.; Hahnemann Medical College, Chicago, 1884; aged 58; died at his home, November 21.

James W. Grisard, M.D., Winchester, Tenn.; University of Nashville, Tenn., 1870; aged 68; died at his home, December 7.

D. Tonjes Krudop, M.D., Los Angeles; Hahnemann Medical College, Chicago, 1888; died recently at his home.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

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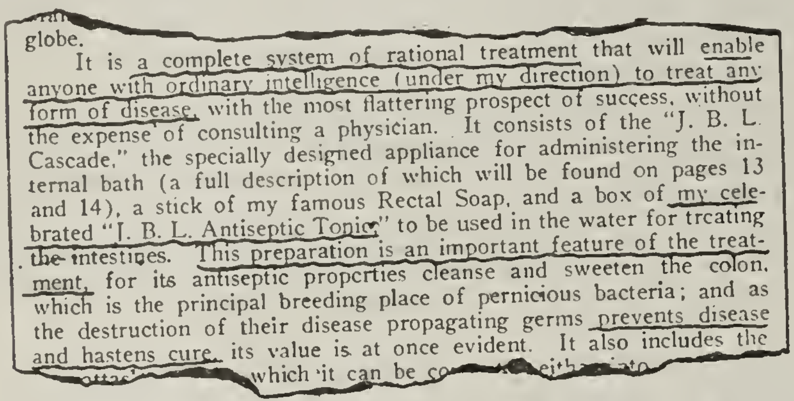
THE J. B. L. CASCADE TREATMENT

The Commercial Possibilities in Rectal Enemas

"The J. B. L. Cascade Treatment" is exploited by one Charles A. Tyrrell of New York City. It consists in the self-administration of rectal enemas—containing a "patent medicine" sold by Tyrrell—by means of a rectal syringe known as the J. B. L. ("Joy-Beauty-Life") Cascade.



globe.
It is a complete system of rational treatment that will enable
anyone with ordinary intelligence (under my direction) to treat any
form of disease, with the most flattering prospect of success, without
the expense of consulting a physician. It consists of the "J. B. L.
Cascade," the specially designed appliance for administering the in-
ternal bath (a full description of which will be found on pages 13
and 14), a stick of my famous Rectal Soap, and a box of my cele-
brated "J. B. L. Antiseptic Tonic," to be used in the water for treating
the intestines. This preparation is an important feature of the treat-
ment, for its antiseptic properties cleanse and sweeten the colon,
which is the principal breeding place of pernicious bacteria; and as
the destruction of their disease propagating germs prevents disease
and hastens cure, its value is at once evident. It also includes the
which it can be

Photographic reproduction (reduced) of a portion of a page of the booklet sent out by Tyrrell to those who answer his advertisements. Imagine a person of "ordinary intelligence" attempting to treat diphtheria, smallpox, cancer, consumption, Bright's disease, etc. ("any form of disease") with Tyrrell's "complete system" consisting of a rectal syringe, a stick of soap and a teaspoonful of salt and borax in water!

Before discussing the J. B. L. Cascade treatment, it is well to give the reader some facts which, while incidental, have a bearing on the subject and will aid in giving a truer perspective of the business under discussion. Tyrrell, according to our records, was born in 1843. He received a diploma from the Eclectic Medical College, New York, in 1900—when he was 57 years old! In addition to the J. B. L. Cascade treatment, Tyrrell was president of the concern that exploited the "Ideal Sight Restorer," sold as a cure for most eye-ills. This has been advertised under such claims as: "cures not only the refractive errors of the eye—nearsight, farsight, oldsight and astigmatism—but also such dreaded diseases as cataract, glaucoma, cross-eye and paralytic blindness." The Ideal Sight Restorer was a piece of tubing with a rubber bulb attached for the purpose of producing a partial vacuum over the eyeballs. The disasters that might result from the indiscriminate use of an appliance of this sort in certain diseased conditions of the eye are more obvious to physicians than to the public. In advertising this "eye cure" the concern sent out what was claimed to be "an unprejudiced journalistic opinion" from the *United States Health Reports.* This publication, which was presumably named so as to mislead the public into believing it was a government bulletin, was, to quote from a government report, "a fraudulent advertising concern which wrote editorial endorsements for any disreputable institution for a cash consideration." In addition to this sort of testimony for the "Ideal Sight Restorer," there were also reports from professional testimonial writers.

Tyrrell has also appeared in the rôle of publisher and "editor-in-chief" of a quasi-medical magazine, *Health,* issued from the same address as the "Ideal Sight Restorer" and the "J. B. L. Cascade." He had for "associate editor" C. S. Carr, the quack, who for years was connected with the Peruna concern, and who also exploited a mail-order medical concern of his own. The advertising pages of *Health,* in addition to giving large space to the "Ideal Sight Restorer," the "J. B. L. Cascade treatment" and Carr's mail-order concern, reeked with frauds. Brinkler, the "Food Expert," the make-you-tall "Cartilage Co.," the Actina eye-and-ear-cure, the Okola eye-cure, the Oxydonor swindle and the notorious New York Institute of Science—all of which have been officially stamped as frauds by the United States authorities and denied the use of the United States mails—found haven in the pages of *Health.* These facts are given that our readers may get some conception of Tyrrell's business ethics and also for the information of those publishers who have opened the advertising pages of their magazines to the Tyrrell "treatment."

THE "J. B. L. CASCADE"

Tyrrell claims to be the inventor of the J. B. L. Cascade. The public is asked to believe that he, "after several years of patient experimenting, succeeded in perfecting the appliance that bears his name." Elsewhere Tyrrell declares: "I have . . . . invented an apparatus, the J. B. L. Cascade." What are the facts? According to the United States patent records, one Henry M. Guild invented the device, which was patented in 1903. Guild also invented and obtained an additional patent on a modified form of the device in 1904. Both of these patents were assigned to the Tyrrell concern, the first by Guild himself and the second by Guild's executor. So much for Tyrrell's claim that he is an inventor!

The J. B. L. Cascade consists essentially of a rubber bag, shaped like a typical, rubber hot-water bottle. A hard rubber injection point is fastened on one of the flat sides. To operate the device the rubber bag is filled with the "J. B. L. Antiseptic Tonic" solution—of which, more later—the point is then inserted in the anus and the weight of the body on the bag forces the liquid into the rectum. In its essentials the device is virtually the same as one that was patented in Canada in 1892 and in the United States in 1894 by one Joseph Lalonde, a British subject who lived in Winnipeg.

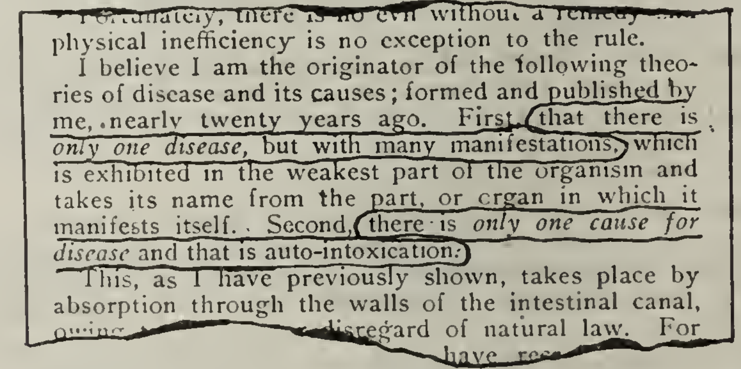
TYRRELL'S KEY-NOTE THEORY

Tyrrell claims to have originated a theory of "disease and its causes." Whether the "theory" was devised as a convenient accessory to his exploitation of the "Cascade" and the "patent medicine" that goes with it, or whether it is merely an indication of stupendous ignorance, makes little difference; it is bizarre and fantastic to the point of silliness. Here it is:

"There is ONLY ONE DISEASE, but with many manifestations."
"There is ONLY ONE CAUSE FOR DISEASE, and that is auto-intoxication."

But Tyrrell's theory is no more preposterous than the claims he has made for his J. B. L. Cascade treatment. For instance:

"It . . . enables any one with ordinary intelligence (under my direction) to treat successfully any form of disease, that is curable, . . ."



Fortunately, there is no evil without a remedy
physical inefficiency is no exception to the rule.
I believe I am the originator of the following theo-
ries of disease and its causes; formed and published by
me, nearly twenty years ago. First, that there is
only one disease, but with many manifestations, which
is exhibited in the weakest part of the organism and
takes its name from the part, or organ in which it
manifests itself. Second, there is *only one cause for*
disease and that is auto-intoxication.
This, as I have previously shown, takes place by
absorption through the walls of the intestinal canal,
owing disregard of natural law. For
have rec

Photographic reproduction (reduced) of part of a page of one of Tyrrell's booklets. Here he gives his theory of "disease and its causes."

"No matter of how long standing your trouble may be, if there is a possibility of cure, this treatment will effect it."

"It is the greatest preservative of health ever known."

". . . a system of treatment that will both cure and prevent disease. . . ."

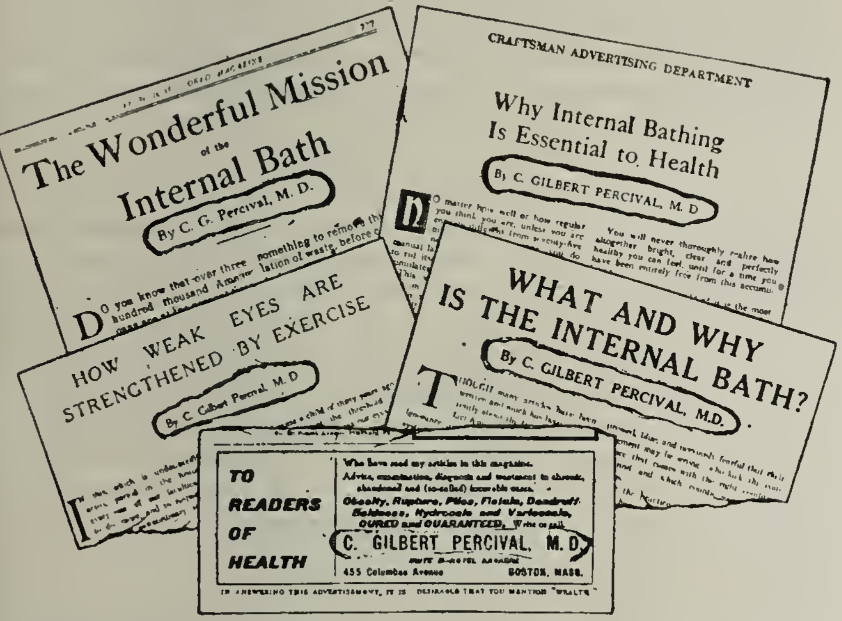
"My system of treatment should be used by every one whether in sickness or health."

These are but a few of the claims that Tyrrell has made at various times for his "treatment."

THE INFERENTIAL UNTRUTH

The Propaganda Department has received scores of inquiries regarding the J. B. L. Cascade treatment. Some of these have come from publishers who make some attempt to censor their advertising pages. The various absurd claims made by Tyrrell have been pointed out to these publishers. Coincidently with these criticsms the Tyrrell advertising has become not more honest but more cautious. To illustrate some of the minor modifications in which the direct has given way to the inferential falsehood, we quote in parallels, italicizing to make the comparison clear:

OLDER CLAIMS	NEWER CLAIM
"I have . . . *cured* thousands. . . ."	"I have . . . *benefited* thousands. . . ."
". . . my method of *curing* and preventing disease. . . ."	". . . my method of *treating* and preventing disease. . ."
"I cleanse the system . . . thereby removing the cause of *all* disease."	"I cleanse the system . . . thereby removing the cause, in my opinion, of *much* disease."
"Typhoid fever and Appendicitis *are* positively *cured* . . . by the J. B. L. Cascade Treatment."	"Typhoid fever and Appendicitis *may* positively be *relieved* . . . by the J. B. L. Cascade Treatment."


The Wonderful Mission of the Internal Bath
By C. G. Percival, M. D.
CRAFTSMAN ADVERTISING DEPARTMENT
Why Internal Bathing Is Essential to Health
By C. GILBERT PERCIVAL, M. D.
HOW WEAK EYES ARE STRENGTHENED BY EXERCISE
By C. Gilbert Percival, M. D.
WHAT AND WHY IS THE INTERNAL BATH?
By C. GILBERT PERCIVAL, M.D.
TO READERS OF HEALTH
Who have read my articles in this magazine.
Advice, examination, diagnosis and treatment in chronic, abandoned and (so-called) incurable cases.
Obesity, Rupture, Piles, Fistula, Dandruff, Baldness, Hydrocele and Varicocele, CURED and GUARANTEED. Write or call
C. GILBERT PERCIVAL, M. D.
455 Columbus Avenue BOSTON, MASS.

Greatly reduced photographic reproductions of part of four full-page advertisements of Tyrrell's "J. B. L. Cascade" and "Ideal Sight Restorer." These consist of dissertations by one "C. Gilbert Percival, M.D." Percival was one of the associate-editors of *Health*, a pseudomedical sheet published by Tyrrell. We also reproduce one of Percival's own advertisements in which he guaranteed a cure of obesity, rupture, piles, hydrocele, etc. Percival has given testimonials also for "Absorbine, Jr.," "Somnos" and "Lignol." Tyrrell used to publish Percival's name among the "prominent physicians" who used and prescribed the J. B. L. Cascade!

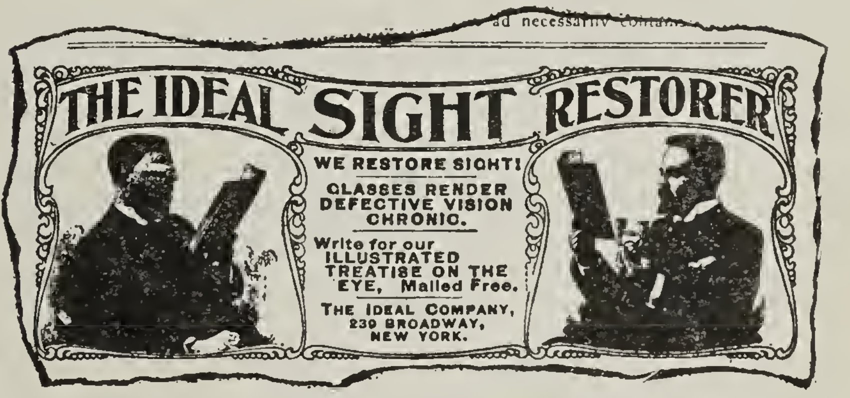
Careful study of the Tyrrell "literature" that has been sent out during the past six or seven years is an education in mail-order quackery. True to type, there is a series of "follow-up" form letters, so prepared as to lead the uninitiated to think that they are individual communications. The first of the series comes "in response to your request" and informs you that the "J. B. L. Cascade Treatment" is, in Tyrrell's judgment, "one of the most common sense and practical methods . . . for preventing and relieving most of the diseases known to the world." Tyrrell emphasizes that those who send money for his "treatment" (which includes a "Cascade," a stick of soap and a box of the marvelous "Antiseptic Tonic") will also be "entitled to unlimited free consultation." Tyrrell modestly adds that as his "reputation is thoroughly established," the purchaser of the "Cascade" secures for himself "the constant service of a New York specialist."

The second letter of the series still further carries out the deception of making its recipient believe it to be a personal communication, by being written on professional rather than business stationery. In this letter Tyrrell declares that he has "taken a personal interest in your case." Of course, most people who receive this letter do not realize that it is a stock letter, sent out as a matter of routine and, in all probability, never seen by Tyrrell, except when the original order was given for the printing. In the third letter of the follow-up series, Tyrrell evinces surprise that the victim has not purchased the "treatment" and incidentally obtained "the advantage of my able advice." This letter makes certain concessions in the price of the treatment and awaits "your valued favors."

With the first of the letters comes a booklet, one of several that Tyrrell sends out to prospective purchasers of his "treatment," containing among other material a number of testimonials. These testimonials are indexed and in the older books the index was said to be "to Diseases Cured by the J. B. L. Cascade Treatment." In the books now being sent, the index is said to be of "Testimonials Showing the Most Astonishing Results Obtained By the Use of the J. B. L. Cascade," etc. The older books alleged that Tyrrell's treatment had cured (*vidè* index of testimonials), among many other diseases, "Brain Fever," Consumption, Change of Life (*sic!*), Dysmenorrhea, Gastritis, "Heart Trouble," Insanity, Paralysis and Scarlet Fever. The more recent books do not contain the testimonials alleging cures of the conditions just listed, but they give a list that is sufficiently alluring for those sick or near-sick who are in search of a panacea. Thus one can go down the list of alleged cures alphabetically from "appendicitis" through "bladder trouble," "delirium tremens" and "epilepsy" to "kidney trouble," "malaria," "obesity," "rheumatism" and "stomach trouble."

TESTIMONIALS

Some of the testimonials have a serio-comic element in them. There is, for instance, a panegyric alleged to have been written by Lewis G. Spooner, state senator from Minnesota, whose picture adorns the page on which it appears. The senator avers that he considers the J. B. L. Cascade "almighty important to any human being past middle age in life," and he considers that possession of the Cascade and "use of the same is almighty important." Lillian Russell, looking out from a bunch of roses, asks "Professor Tyrrell" kindly to send her "two more Cascades and six boxes of the Antiseptic Powder"; she wants to take them to Europe. Eva Davenport, "of the Yankee Consul Co.," smilingly testifies to the indispensability of the J. B. L. Cascade, which she finds, as a vocalist, "invariably cause clearness and purity of tone," besides being of value "in the reduction of obesity." Anna Held roguishly assures "*Mon Cher* Prof. Tyrrell" that she is delighted with the Cascade"; in fact, she considers "*c'est magnifique!*" One of the latest testimonials purports to be a photographic reproduction of a letter from one Rev. Walter W. Kent, Cincinnati. This testimonial, unlike the others mentioned, is not illustrated —which is a pity. The letter-head explains that Rev. Kent is "Chaplain, First Ohio Infantry, U. S. V. R.," and also "Ex-President, Mount Lookout Business Men's Club." Mr. Kent offers his "testamonial" (spelling original) because he would not withhold it from his friends. "I often suffer with nervous headaches from brain fag, like most literary people and thinkers do," says Rev. Kent. A friendly hint to the reverend gentleman: A fulsome testimonial for a quackish device is not likely to enhance one's reputation for being either "literary" or a "thinker."


THE IDEAL SIGHT RESTORER
WE RESTORE SIGHT!
GLASSES RENDER DEFECTIVE VISION CHRONIC.
Write for our ILLUSTRATED TREATISE ON THE EYE, Mailed Free.
THE IDEAL COMPANY, 239 BROADWAY, NEW YORK.

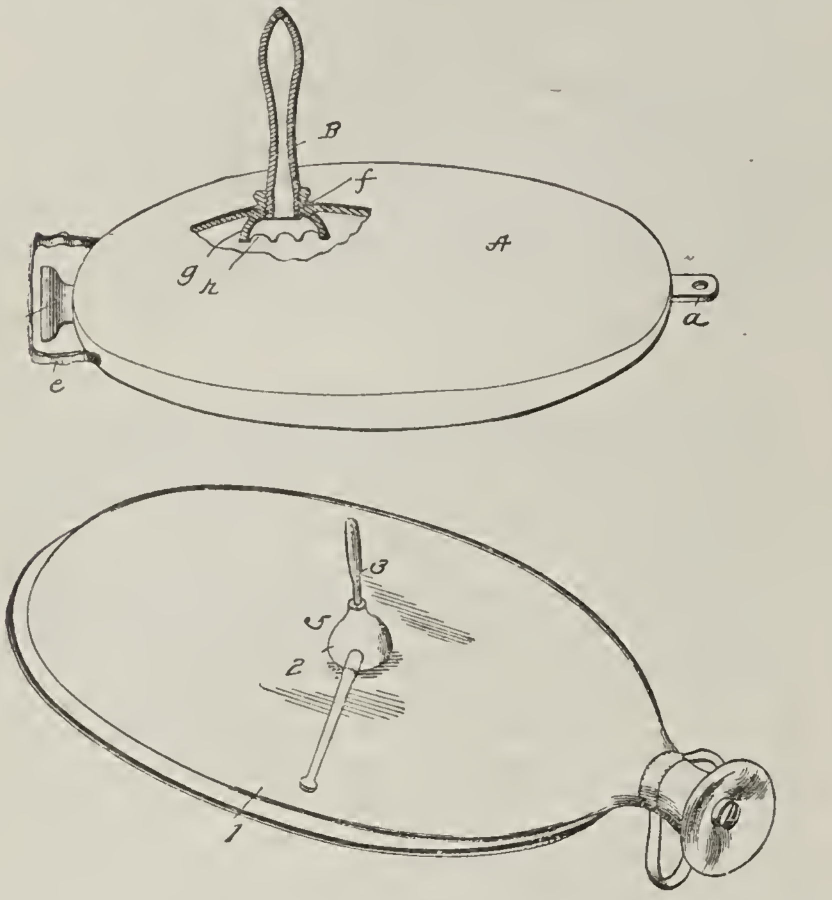
A photographic reproduction (reduced) of an old advertisement of the "Ideal Sight Restorer," another of Tyrrell's devices.

Before leaving the subject of testimonials, reference must be made to a list of physicians published by Tyrrell. These men he classes as "distinguished" and "prominent," and claims that they "both use and prescribe" his "treatment." Investigation shows, as might have been expected, that not one of these men can lay claim to being either "prominent" or "distinguished." Professionally, they are nonentities, or worse. Some of them are dead, some are apparently not physicians at all, at any rate their names are not to be found in the official records of physicians, one is an ex-"patent medicine" maker, one has advertised "Obesity, Rupture, Piles . . . Hydrocele and

Varicocele, CURED and GUARANTEED," while others have been commercially connected with Tyrrell and his so-called institute.

THE "PATENT MEDICINE" ADJUNCT

Most concerns that sell mechanical devices of a pseudo-medical nature have a "patent medicine" as an accessory to the alleged treatment. Tyrrell's is no exception. His complete "treatment" consists in (1) the "J. B. L. Cascade," (2) a stick of his "famous Rectal Soap" and (3) a box of the "Celebrated J. B. L. Antiseptic Tonic." The last is the "repeater" part of the "treatment." Tyrrell says regarding the "Antiseptic Tonic":



Tyrrell claims that the "J. B. L. Cascade" was invented by him. The records of the patent office at Washington show that the device was invented and patented by one H. M. Guild who assigned the patent to the Tyrrell concern. The lower of the two devices illustrated above is the Guild instrument—now sold as the "J. B. L. Cascade"—reproduced from the records of the patent office. Tyrrell claims that the J. B. L. Cascade is "the only thing of the kind ever specially designed for the purpose" for which it is sold, *viz.*, rectal enemas. The upper of the two devices illustrated above was invented by a Canadian who obtained a Canadian patent for the device in 1892 and U. S. patent in 1894.

> "This preparation is one of the most important features of the treatment, for it attacks and destroys the microbes of disease in their principal breeding place and I cannot too strongly urge the importance of its use, for the distruction of these germs prevents disease and hastens a cure."

A woman who had received some of the advertising material sent out by Tyrrell wrote asking why the formula of the "Antiseptic Tonic" was not given. Here is what she was told:

> "Note your comments as to the Antiseptic Tonic and your inquiry as to why we do not give the formula. We cannot see any good reason why we should do anything of this kind, and give it to the public in order that they may secure the tonic from the druggist without any profit to ourselves for all time."

The Journal has repeatedly said that the element of secrecy in the "patent medicine" business is for the purpose of allowing the expoiters of nostrums to make claims that the public would laugh at if it was apprised of the composition of their preparations. Tyrrell's "patent medicine" adjunct has been analyzed by the chemists of the American Medical Association. Here is the laboratory report:

CHEMISTS' REPORT ON THE "ANTISEPTIC TONIC"

J. B. L. Antiseptic Tonic is a dirty white, faintly perfumed powder containing small blue particles. A 4-ounce package retails for 50 cents. Dissolved in water it produces a faintly greenish-blue, turbid solution, having an alkaline reaction to litmus. Qualitative tests indicated the presence of a chlorid, a borate, sodium, small quantities of calcium and of a sulphate and traces of a nitrate. Alkaloids, ammonium salts, free boric acid and salts of copper and zinc were absent.

Quantitative determinations indicated that the composition of the specimen examined is essentially as follows:

Sodium chlorid (common salt)	69.9 per cent.
Borax	29.6 per cent.
Calcium sulphate, hydrous (gypsum)	0.5 per cent.
Color and perfume	traces

It seems probable that the gypsum found is not an intentionally added constituent, but that it occurs as an impurity or an adulterant in a cheap grade of borax used in preparing the mixture. The insolubility of the gypsum is responsible for the turbidity of the solution.

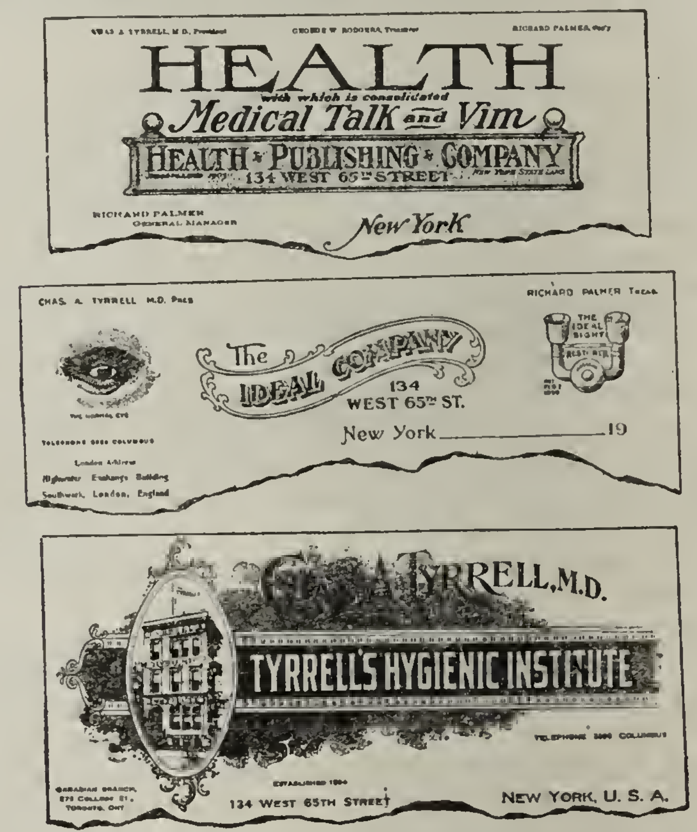
A preparation having all of the "antiseptic" and "tonic" properties of J. B. L. Antiseptic Tonic can be made by mixing 2.8 ounces of salt with 1.2 ounce of ordinary borax at a cost of not to exceed two-thirds of 1 cent.

Here, then, we have 2⅘ ounces of table salt mixed with 1⅕ ounce of borax and sold for 50 cents! No wonder Tyrrell "cannot see any good reason" for giving the public the "formula" for his "Antiseptic Tonic" which "attacks and destroys the microbes of disease in their principal breeding place!"

THE TYRRELL ADVERTISING

We have given this much space to a consideration of Tyrrell's brand of quackery because some publications that, in general, show considerable discrimination in the acceptance of advertisements have sold space to the exploiters of the "J. B. L. Cascade treatment." Correspondence with some of these publications has disclosed an attitude on the subject of quackery that would be laughable, if it were not discouraging. To the magazines in question "patent medicines," as such, are taboo. It seems, however, that if the alleged "cure" happens to be mechanical rather than chemical in nature, it becomes acceptable, no matter how preposterous the claims made for it may be. If the exploiters of the J. B. L. Cascade entirely eliminated from their alleged treatment their salt-and-borax "patent medicine" accessory, euphemistically referred to as "Antiseptic Tonic," there would still be no valid excuse for accepting the J. B. L. Cascade advertising.

The advertisements, "follow-up letters" and other advertising paraphernalia that we have on file, covering several years, show the history of the advertising campaign of the J. B. L. Cascade to have been one of deceit, misrepresentation and quackery. While some of the most blatant claims have been modified—due, possibly, to previous criticisms from The Journal—the advertising still misleads, mispresents and deceives by inference where it does not do it directly. In



RICHARD PALMER, Sec'y

HEALTH

with which is consolidated

Medical Talk and Vim

HEALTH PUBLISHING COMPANY

134 WEST 65TH STREET

RICHARD PALMER
GENERAL MANAGER

New York

CHAS. A. TYRRELL M.D. Pres

RICHARD PALMER Treas.

The IDEAL COMPANY

134
WEST 65TH ST.

New York ____________ 19

London Address
Exchange Building
Southwark, London, England

THE IDEAL SIGHT RESTORER

TYRRELL, M.D.

TYRRELL'S HYGIENIC INSTITUTE

134 West 65th Street

New York, U. S. A.

Photographic reproductions of the letterheads of three concerns of which Tyrrell is, or has been, president. *Health* is the name of a fad magazine, published by Tyrrell, which carried advertisements of various pseudo-medical products including Tyrrell's own devices, the J. B. L. Cascade and the Ideal Sight Restorer.

spite of this, the attitude of certain otherwise estimable publications seems to be that taken by the *Christian Herald,* for example, of New York, which, after having the facts brought to its attention by a physician, wrote:

> "We shall continue to carry this advertisement as we are convinced that the system advocated by Dr. Tyrrell is of far greater benefit to the public at large than the medicines prescribed by the average physician."

Summarized, the objections to the exploitation of the J. B. L. Cascade Treatment may be stated thus:

1.—The key-note of Tyrrell's campaign is his alleged theory that "there is only one disease" and that "there is only one cause for disease" and that cause "is auto-intoxication produced by intestinal obstruction." The falsity of these statements and absurdity of the theory are obvious.

2.—A supplementary feature of Tyrrell's "treatment" is the "J. B. L. Antiseptic Tonic," which, it is insisted, is "one of the most important features of the treatment." The "Antiseptic Tonic" is a secret nostrum sold under ridiculously exaggerated claims at an enormously high price. Analysis shows it to consist essentially of a mixture of common salt and borax worth probably two-thirds of 1 cent and sold for half a dollar.

3.—The administration of rectal enemas by means of the J. B. L. Cascade is not only unscientific, but may in many cases be dangerous. The common fountain syringe is both safer and more efficient.

4.—Tyrrell urges the public to take rectal enemas both in sickness and in health—in other words, as a routine part of one's living. This advice is mischievous to the point of viciousness.

5.—Tyrrell misleads the public into believing that prominent and distinguished physicians have approved of and testified to his "treatment." The facts are that not one of the physicians named can, by the widest stretch of imagination, be called prominent and distinguished.

6.—The J. B. L. Cascade is advertised as a veritable cure-all. It is claimed that used in sickness any curable disease may be cured; used in health all disease will be prevented!

Correspondence

Lister on the Use of Animals in Research

To the Editor:—The following letter was found among Lord Lister's papers by his nephew, Sir Rickman J. Godlee (ex-president of the Royal College of Surgeons, England), who is about to publish the authorized Life of Lord Lister. I have his kind permission to publish the letter. It is a signed holograph letter evidently written and revised with unusual care, for there are many changes and corrections in it. It was also evidently copied, for "a line is drawn over it as it was copied," as Sir Rickman informs me. The envelope is endorsed "Rough draft of a letter to Dr. Keen." No copy of the letter ever reached me. Presumably it went astray in the mail. It is of especial interest as showing Lister's deep convictions and personal experience.

W. W. Keen, M.D., Philadelphia.

12 Park Crescent, Portland Place, London, W.
4 April 1898.

My dear Sir:—I am grieved to learn that there should be even a remote chance of the legislature of any state in the Union passing a bill for regulating experiments upon animals.

It is only comparatively recently in the world's history that the gross darkness of empiricism has given place to more and more scientific practice, and this result has been mainly due to experiments upon living animals. It was to these that Harvey was in large measure indebted for the fundamental discovery of the circulation of the blood, and the great American triumph of general anesthesia was greatly promoted by them. Advancing knowledge has shown more and more that the bodies of the lower animals are essentially similar to our own in their intimate structure and functions, so that lessons learnt from them may be applied to human pathology and treatment. If we neglect to avail ourselves of this means of acquiring increased acquaintance with the working of that marvelously complex machine, the animal body, we must either be content to remain at an absolute standstill, or return to the fearful haphazard ways of testing new remedies upon human patients in the first instance which prevailed in the dark ages.

Never was there a time when the advantages that may accrue to man from investigations on the lower animals were more conspicuous than now. The enormous advances that have been made in our knowledge of the nature and treatment of disease of late years have been essentially due to work of this kind.

The importance of such investigations was fully recognized by the commissioners on whose report the act of Parliament regulating experiments on animals in this country was passed, their object in recommending legislation being only to prevent possible abuse.

In reality, as one of the commissioners, the late Mr. Erichsen, informed me, no single instance of such abuse having occurred in the British Islands had been brought before them at the time when I gave my evidence, and that was toward the close of their sittings.

Yet in obedience to a popular outcry, the government of the day passed an act which went much further than the recommendation of the commissioners. They had advised that the operation of the law should be restricted to experiments upon warm-blooded animals; but when the bill was considered in the House of Commons, a member who was greatly respected as a politician, but entirely ignorant of the subject matter, suggested that "vertebrate" should be substituted for "warm-blooded," and this amendment was accepted by a majority as ignorant as himself.

The result is that, incredible as it may seem, any one would now be liable to criminal prosecution in this country who should observe the circulation of the blood in a frog's foot under the microscope without having obtained a license for the experiment and unless he performed it in a specially licensed place.

It can readily be understood that such restrictions must seriously interfere with legitimate researches.

Indeed, for the private practitioner they are almost prohibitive; and no one can tell how much valuable work is thus prevented.

My own first investigations of any importance were a study of the process of inflammation in the transparent web of the frog's foot. The experiments were very numerous, and were performed at all hours of the day at my own house. I was then a young unknown practitioner; and if the present law had been in existence, it might have been difficult for me to obtain the requisite licenses: even if I had got them it would have been impossible for me to have gone to a public laboratory to work. Yet without these early researches which the existing law would have prevented, I could not have found my way among the perplexing difficulties which beset me in developing the antiseptic system of treatment in surgery.

In the course of my antiseptic work, at a later period, I frequently had recourse to experiments on animals. One of these occurs to me which yielded particularly valuable results but which I certainly should not have done if the present law had been in force. It had reference to the behavior of a thread composed of animal tissue applied antiseptically for tying an arterial trunk. I had prepared a ligature of such material at a house where I was spending a few days at a distance from home; and it occurred to me to test it upon the carotid artery of a calf. Acting on the spur of the moment, I procured the needful animal at a neighboring market; a lay friend gave chloroform, and another assisted at the operation. Four weeks later the calf was killed and its neck was sent to me. On my dissecting it, the beautiful truth was revealed that the dead material of the thread, instead of being thrown off by suppuration, had been replaced under the new aseptic conditions by a firm ring of living fibrous tissue, the old dangers of such an operation being completely obviated.

I have referred thus to my personal experience because asked to do so; and these examples are perhaps sufficient to illustrate the impediments which the existing law places in the way of research by medical men engaged in practice whose ideas, if developed, would often be the most fruitful in beneficent results.

But even those who are specialists in physiology or pathology and have ready access to research laboratories find their work seriously hampered by the necessity of applying for licenses for all investigations and the difficulty and delay often encountered in obtaining them.

Our law on this subject should never have been passed and ought to be repealed. It serves no good purpose and interferes seriously with enquiries which are of paramount importance to mankind.

Believe me
Sincerely yours,
Lister.

Toxicity of Salvarsan

To the Editor:—The cases here reported seem more serious than those recently reported by Ormsby and Mitchell, and Ellis (The Journal, Dec. 9, 1916, p. 1756). Our technic has always been carefully controlled, and we follow the procedure recommended by the manufacturer. No ill effects have come to our patients previous to the use of the last two packages of ampules shipped us from New York. Out of the last twenty-three injections of neosalvarsan we have had four cases of severe poisoning and one death.

In the first case, a woman, aged 21, was given 0.6 gm. neosalvarsan; during the injection she suffered intense pain in the extremities and a sensation of choking; two hours later she had repeated convulsions, vomited blood, and had a bowel movement every half hour; the abdominal pain was intense; the pulse, 150; temperature, 104; this continued for forty-eight hours, after which she gradually recovered.

Since this case, we have had three similar, though less severe than the first.

In the last case, Mrs. L., aged 43, suffering from syphilitic gumma, was given 0.6 gm. of neosalvarsan with no marked reaction; eight days later I injected 0.9 gm. of neosalvarsan. An hour later, there came a choking sensation, followed by a chill; three hours later, severe vomiting ensued; then involuntary bowel movements, and agonizing pain in the stomach; the body became extremely livid; this lasted three days uninfluenced by treatment; on the third day, the body became purple, the pulse imperceptible, and eight hours later the patient died.

Since this case, I have learned that several of the specialists in this city have had cases of severe poisoning from the last shipment of this drug.

Dr. G. J. Fields had five cases so severe that he has discontinued the use of either salvarsan or neosalvarsan.

Dr. F. A. Goeltz treated six cases of poisoning, all previously injected with the earlier preparation of salvarsan.

Dr. W. L. Rich reported two very serious cases of poisoning, twelve that had some symptoms of salvarsan poisoning, and eight persons who became only very ill.

Claude L. Shields, M.D., Salt Lake City.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LEAD POISONING FROM Q-BAN HAIR COLOR RESTORER

To the Editor:—I have recently seen a case of lead neuritis following the use of a hair color restorer called "Q-Ban" made by the Hessig-Ellis Drug Company of Memphis, Tenn. Will you kindly inform me as to whether you have any record of such cases, and whether you have an analysis of this preparation showing the amount of lead present?

Lester Adams, M.D.
Eastern Maine General Hospital, Bangor, Maine.

Answer.—In May, 1915, Dr. E. B. Markey of Dayton, Ohio, reported untoward effects from the use of "Q-Ban Hair Color Restorer" in two cases that came under his observation. In both cases the victims "developed a moderately severe dermatitis of the forehead, neck and face" following the use of the preparation. "Q-Ban Hair Color Restorer" was analyzed by the Connecticut Agricultural Experiment Station and the results reported in the Annual Report of 1915. According to this report the product had the following composition:

Alcohol by volume	10.46 per cent.
Solids	16.39 gm. per 100 c.c.
Glycerin	11.56 gm. per 100 c.c.
Free sulphur	3.08 gm. per 100 c.c.
Lead acetate	1.68 gm. per 100 c.c.
Oil of rose geranium	present
Salicylates, resorcin, alkaloids	none

The Connecticut chemists, in summarizing the results of their work, said: "This is a perfumed, alcohol-glycerin solution of 1.68 gm. per 100 c.c. of lead acetate, containing 3.08 gm. of free sulphur in suspension. It is simply one of the many familiar lead acetate-sulphur preparations, and its use is by no means free from danger."

TREATMENT OF ARTHRITIS DEFORMANS

To the Editor:—Is there anything worth while, medicinally, in the treatment of arthritis deformans, after such focal infections as tend to causation have been removed? I have a patient, a girl, 21 years old, who has had arthritis deformans for a year; her father has had it for twenty years. It is possible that I have overlooked the recent literature on the latest methods of treatment.

E. F. Fischer, M.D., Alton, Ill.

Answer.—The treatment of arthritis deformans involves a number of factors. There seems to be no question that the initial damage to the joints in many cases is accomplished by infection derived from some focus in the body. Bacterial invasion of joints may be intermittent, so that new joints are successively involved, and exacerbations occur in those previously affected. The source or sources of this infection should of course be sought for and, if found, removed. But when the patient seeks relief, presenting the clinical picture of some one of the types of arthritis deformans, the anatomic changes in the joints, such as the formation of granulation tissue, villous excrescences from the synovial surfaces, the erosion of cartilage, new bone formation about the margins of the articular surfaces, and the relaxation of the joint ligaments are more or less advanced. These changes have resulted not alone from infection, but also from the continued trauma of use acting on injured joint surfaces. It is evident, therefore, that the mere removal of the original cause of these changes cannot appreciably modify the existing lesions of joints, further than to prevent the invasion of new joints. But much can still be accomplished for these patients. It is important to consider the special needs of each. In one instance important joints may have become ankylosed in unusable positions, or their motion interfered with by marginal exostoses. Appropriate surgical treatment will be of service in such cases. Other joints are benefited by immobilization with splints or adhesive tape. Continued infection, pain, and interference with locomotion may have resulted in partial invalidism, with attendant anemia, poor appetite and sluggishness of function of various organs of the body. With the removal of infection and all possible mechanical correction of deformities should go attention to nutrition by giving a well balanced general diet. Tonics containing iron may be of benefit. There is no drug therapy specific for this condition, although some simple form of iron may be of benefit. Outdoor life and such moderate exercise as is consistent with the policy of rest for affected joints will help to build up the general tone of the patient.

INTRAVENOUS INJECTION OF QUININ

To the Editor:—1. Please give the latest technic on quinin administration by the intravenous method.

2. Is it safe to give from 5 to 10 grains of the dihydrochlorid in 1 c.c. sterile saline or distilled water intravenously?

3. Please give the latest technic of quinin administration by the intramuscular method.

Kindly omit name. P. H. C.

Answer.—1. The technic of the injection is the same as that of other intravenous injections, such as of neosalvarsan.

2. The formula suggested (from 30 to 60 per cent.) is far too concentrated for intravenous injection. Baccelli, the originator of the method, recommended a 10 per cent. solution. Present opinion, however, regards even this as much too strong. Deaderick ("Endemic Diseases of the Southern States," 1916) recommends a 1 per cent. solution. Recently Witherspoon (*Southern Medical Journal,* December, 1916) reported the results of several injections of 10 grains of dihydrochlorid in 15 c.c. of water, approximately a 5 per cent. solution. Practically all of the patients reacted severely to such injections. The dose which our correspondent mentions is correct. The mixing of the metric and the apothecaries' systems of weights and measures should be avoided; it is apt to lead to confusion.

3. Parenteral administration of quinin is heroic; see "Hypodermic Injection of Quinin," Queries and Minor Notes, The Journal, Dec. 30, 1916, p. 2030.

THE NATIONAL BOARD OF EXAMINERS—RECIPROCITY

To the Editor:—1. What are the requirements that one must have to take the examination by the National Board of Medical Examiners, or where can I obtain this information? 2. What is the scope of the national board as regards recognition by all the states? 3. Please inform me where I can get a pamphlet or booklet on reciprocity.

Kindly omit name. L. F. P.

Answer.—1. Candidates who graduated since 1912 (*a*) must have completed two years of acceptable college work, including physics, chemistry, biology and a modern language, based on a four year high school education; (*b*) must have graduated from a medical college rated in Class A by the American Medical Association, and (*c*) must have spent at least one year in an acceptable hospital as an intern or in a laboratory. For those who graduated prior to 1912 the board may accept equivalent credentials. Further information and application blanks may be obtained from the secretary, Dr. J. S. Rodman, 2106 Walnut Street, Philadelphia.

2. The states in which the boards have thus far announced their willingness to recognize the certificates of the national board are Colorado, Idaho, Iowa, Kentucky, Maryland, New Hampshire, North Dakota and Pennsylvania.

3. Information regarding reciprocity is contained in a book of "Laws (Abstract) and Board Rulings" published by the American Medical Association. The price is 30 cents.

LITERATURE ON INFANTILE PARALYSIS

To the Editor:—It falls to my lot to give a talk on infantile paralysis before a club, and I wish to review some of the latest work done in this line. I would consider it a great favor if you would tell me where I can get this information. M. D., Iowa.

Answer.—The following is a list of references on this subject:

Sophian, Abraham: Municipal Control of Infantile Paralysis, The Journal, Aug. 26, 1916, p. 669.
Ryerson: Operative Treatment of Deformities Due to Poliomyelitis, *Am. Jour. Orthop. Surg.*, February, 1916.
Neal and Dubois: Diagnosis of Poliomyelitis, *Am. Jour. Med. Sc.*, September, 1916.
Mathers, George, and Tunnicliff, Ruth: A Reaction of Immunity in Acute Poliomyelitis, The Journal, Dec. 23, 1916, p. 1935.
Stern, W. G.: The Prognosis in Infantile Paralysis, The Journal, July 29, 1916, p. 325.
Flexner, Simon: Note on the Serum Treatment of Poliomyelitis (Infantile Paralysis), The Journal, Aug. 19, 1916, p. 583.
Lovett, R. W.: A Plan of Treatment in Infantile Paralysis, The Journal, Aug. 5, 1916, p. 421.
Rosenow, E. C.; Towne, E. B., and Wheeler, G. W.: The Etiology of Poliomyelitis, The Journal, Oct. 21, 1916, p. 1202.
Nuzum, J. W., and Herzog, Maximilian: Experimental Studies in the Etiology of Acute Epidemic Poliomyelitis, The Journal, Oct. 21, 1916, p. 1205.

WEIL-FELIX DIAGNOSTIC REACTION IN TYPHUS

To the Editor:—What is the new Weil-Felix reaction? F. E.

Answer.—This reaction was described by Weil and Felix in the *Wiener klinische Wochenschrift*, Nos. 2, 28 and 31, 1916, but none of these numbers have happened to reach us. From references to the reaction in periodicals which have come through recently, it seems that Weil and Felix succeeded in isolating from typhus material a proteus-like germ which gives a specific agglutinating reaction with the serum of typhus patients. They cultivated this germ from the urine and blood of typhus patients in a total of thirty-four cases, and never succeeded in cultivating it from other patients. The agglutinins for this reaction do not develop much before the sixth day, but the reaction persists pronounced from then onward until defervescence, when it promptly disappears. No constant connection between this agglutination and the Widal agglutination could be detected, and in diseases other than typhus there is no agglutination with the Weil-Felix technic, or it takes hours to occur instead of the rapid response in typhus. One writer reports that the Weil-Felix strain agglutinated at 1 : 50 up to 1 : 1,600 with typhus serum, while there was no agglutination with other patients even at 1 : 20.

PURPURA HEMORRHAGICA

To the Editor:—1. Please inform me concerning the latest treatment and its results in purpura hemorrhagica.

2. Has autoserum ever been used? If so, with what success?

George H. Sciaroni, M.D., Sutter Creek, Calif.

Answer.—1. Present opinion seems to favor the employment of blood or serum injections in some form for the treatment of this disease. A full discussion of the treatment of this disease will be found in an article by Emsheimer published in The Journal, Jan. 1, 1916, p. 20. The following are the conclusions of this article:

> The best methods of treatment of purpura hemorrhagica, in addition to the usual measures, are (*a*) subcutaneous or intravenous injection of human blood serum; (*b*) transfusion, and (*c*) intramuscular injection of whole fresh human blood.
>
> The intramuscular injection of whole blood is a simple, harmless, effective procedure, and should be employed before other radical measures in all cases of severe purpura hemorrhagica.

A case successfully treated with horse serum is reported in The Journal, April 1, 1916, p. 1020.

2. No reports are available of cases in which the patient's own serum has been used.

NINE USEFUL DRUGS

To the Editor:—As a subscriber to your valuable publication I write to know if you have ever published your symposium on "Nine Useful Drugs" as inquired about in your issue of July 22, 1916? If so, when did it appear? Edward C. Tingley, D.O., Los Angeles.

Answer.—Only eighteen replies were received to the original question, hardly enough to make an analysis worth while. We again repeat the question in the hope that sufficient answers, at least 100, will be received. The question follows:

To the Editor:—In my grip which I carry with me I have a case of nine medicine bottles. Would you make a suggestion as to the most useful drugs to carry with me? Morrell Simpson, M.D., ——, Ind.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 9. Chairman, Dr. W. H. Sanders, Montgomery.
California: Sacramento, Jan. 9. Sec., Dr. C. B. Pinkham, Forum Bldg., Sacramento.
District of Columbia: Washington, Jan. 9. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
Illinois: Chicago, Jan. 24-26. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.
Indiana: Indianapolis, Jan. 9-11. Sec., Dr. W. T. Gott, 120 State House, Indianapolis.
Iowa: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.
Kansas: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.
New Mexico: Santa Fe, Jan. 8. Sec., Dr. W. E. Kaser, East Las Vegas.
New York: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.
Oklahoma: Oklahoma City, Jan. 9-10. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.
Pennsylvania: Philadelphia, Jan. 9-11. Sec., Nathan C. Schaeffer, Capitol Bldg., Harrisburg.
South Dakota: Pierre, Jan. 10. Sec., Dr. P. B. Jenkins, Waubay.
Vermont: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.
Wisconsin: Madison, Jan. 9-11. Sec., Dr. John M. Dodd, 220 E. 2d St., Ashland.

New Mexico July Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Sante Fé, July 10-11, 1916. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. One candidate was licensed by examination; three candidates through reciprocity, and 11 on satisfactory credentials. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Mississippi Medical College	(1912)	78

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University Medical College of Kansas City	(1907)	Kansas
University of Oklahoma	(1913)	Oklahoma
Memphis Hospital Medical College	(1904)	Oklahoma

College LICENSED ON SATISFACTORY CREDENTIALS	Year Grad.	Total No. Licensed
Atlanta Medical College	(1915)	1
Rush Medical College	(1886)	1
University of Louisville	(1910)	1
Tulane University	(1916)	1
Washington University	(1903)	1
College of Physicians and Surgeons	(1896)	1
College of Phys. and Surg. in City of New York	(1889)	1
Medico-Chirurgical College of Philadelphia	(1910)	1
University of Tennessee	(1916)	1
Vanderbilt University	(1916)	1
University of Texas	(1897)	1

Pennsylvania July Report

Mr. N. C. Schaeffer, secretary of the Pennsylvania Bureau of Medical Education and Licensure, reports the written examination held at Philadelphia and Pittsburgh, July 11-13, 1916. The total number of subjects examined in was 5; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 204, of whom 174 passed and 30 failed. Five candidates were licensed through reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Total No. Licensed
Gross Medical College	(1901)	1
Georgetown University	(1915)	2
Hahnemann Med. Coll. and Hosp., Chicago	(1915)	1
Coll. of Phys. and Surgs., Baltimore	(1914) (1915, 3)	4
Johns Hopkins University	(1915)	2
University of Maryland	(1914, 2) (1915, 3)	5
Harvard University	(1915) (1916)	2
University of Michigan Medical School	(1881) (1915)	2
Barnes Medical College	(1899)	1
Columbia Univ., Coll. of Phys. and Surgs.	(1914)	2
Fordham University	(1915)	1
Long Island College Hospital	(1915)	1
New York Homeo. Med. Coll. and Flower Hosp.	(1915)	1
Woman's Med. Coll. of the N. Y. Infirmary for Women and Children	(1897)	1
Ohio Medical University	(1907)	1
Western Reserve University	(1915)	1

Hahnemann Med. Coll. and Hosp. of Phila.	(1914, 3) (1915, 11)	14
Jefferson Med. Coll.	(1875) (1910) (1913) (1914, 4) (1915, 43)	50
Medico-Chirurgical Coll. of Phila.	(1914) (1915, 37)	38
Temple University	(1915)	12
University of Pennsylvania	(1913) (1914, 3) (1915, 13)	17
University of Pittsburgh	(1915)	9
Woman's Med. College of Pa	(1915)	5
School of Medicine of Nuevo Leon, Monterey	(1882)	1
FAILED		
University of Louisville	(1912)	1
College of Phys. and Surgs., Baltimore	(1914) (1915)	2
Maryland Medical College	(1912) (1913, 2)	3
New York Homeo. Med. Coll. and Flower Hosp.	(1915)	1
Eclectic Medical College	(1915)	1
Jefferson Medical College	(1914) (1915, 3)	4
Medico-Chirurgical Coll. of Phila.	(1914) (1915, 8) (1916)	10
Temple University	(1914) (1915, 2)	3
Medical College of Virginia	(1915)	1
McGill University	(1915)	1
University of Genoa	(1913)	1
University of Naples	(1895) (1908)	2

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College	(1884)	Kansas
University of Michigan Homeo. Med. School	(1911)	New Jersey
Western Reserve University	(1912)	Ohio
University of Pennsylvania	(1913)	Ohio
Univ. College of Medicine, Richmond	(1897)	W. Virginia

Hawaii September Report

Dr. R. W. Benz, secretary of the Hawaii Board of Medical Examiners, reports that eleven candidates were licensed at the examination held Sept. 20, 1916. The following colleges were represented:

College PASSED	Year Grad.	Total No. Licensed
Coll. of Phys. and Surg., Los Angeles	(1915)	1
George Washington University	(1910)	1
Loyola University	(1916)	1
University of Louisville	(1916)	2
Boston University	(1906)	1
Tufts College	(1910)	1
Washington University	(1915)	1
John A. Creighton Medical College	(1916)	1
Kumamoto Special Medical School	(1910)	1
Nagasaki Special Medical School	(1902)	1

Massachusetts September Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, Sept. 12-14, 1916. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 42, of whom 26 passed, including 3 osteopaths, and 16 failed, including 5 osteopaths. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
University of Maryland	(1916)	81.1
Boston University	(1915) 76, (1916)	75, 77.7
College of Physicians and Surgeons, Boston	(1916)	75.1, 75.6
Harvard University	(1915) 82.3; (1916)	76.6, 80.3, 80.4, 81.2, 83.5
Tufts College Medical School	(1915) 75; (1916)	75, 75.6, 78, 78.1
Albany Medical College	(1915)	77
Columbia University	(1914)	81.3
Cleveland Homeopathic Medical College	(1908)	75
University of Vermont	(1913) 75.3; (1915)	78.3
Dalhousie University	(1915)	77.9
FAILED		
Loyola University	(1916)	*
Chicago College of Medicine and Surgery	(1908) 66.2; (1916)	66.8
Baltimore Medical College	(1909)	72
Maryland Coll. of Eclectic Medicine and Surgery	(1914)	61.2
Boston University	(1915)	68.1
College of Physicians and Surgeons, Boston	(1916)	68.2, 69.6, 73
Tufts College Medical School	(1913) 70.3; (1916)	71.4

* Did not complete examination.

Wisconsin Reciprocity Report

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports that 7 candidates, including 1 osteopath, were licensed through reciprocity, September 29-30, 1916. The following colleges were represented:

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College	(1914)	Illinois
Chicago Coll. of Medicine and Surgery	(1915)	Illinois
University of Illinois	(1913)	Illinois
Tulane University of Louisiana	(1910)	Louisiana
St. Louis University	(1912)	Missouri
University Medical College of Kansas City	(1903)	Kansas

Book Notices

Dyke's Automobile and Gasoline Engine Encyclopedia Treating on the Construction, Operation and Repairing of Automobiles and Gasoline Engines. By A. L. Dyke, E.E. Fifth Edition. Cloth. Price, $3. Pp. 717, with 366 illustrations. St. Louis: A. L. Dyke, 1916.

The motor car has become almost a necessity to the physician—certainly as much so as was the horse and buggy a decade ago. And probably the same proportion of physicians take care of and drive their own machines as formerly drove their horse-drawn conveyance. To take care of and drive an automobile with any satisfaction, it is essential to know at least the general principle of the inner combustion engine and the various mechanical devices which are necessary to transmit the power generated by the gasoline explosion so that it will turn the wheels of the automobile. Dyke's "Automobile and Gasoline Engine Encyclopedia" explains all this in such a clear, simple form that any one will understand it. The book is elaborately illustrated, and the only fault with it—if this could be considered a fault—is the detail in which practically every part of the mechanism and every principle is explained.

Syphilis and the Nervous System, for Practitioners, Neurologists and Syphilologists. By Dr. Max Nonne, Chief of the Nervous Department in the General Hospital, Hamburg. Authorized Translation from the Second German Edition by Charles R. Ball, M.D., Chief of the Nervous and Mental Department, St. Paul Free Dispensary. Second American Edition. Cloth. Price, $4. Pp. 450, with 98 illustrations. Philadelphia: J. B. Lippincott Company, 1916.

This is the second American edition, presumably a translation from the third German edition of this work; it is practically the same as previous editions, except that a chapter on salvarsan therapy has been added. The author is essentially a clinician. While the book is really an extensive review of our present knowledge of syphilis of the nervous system, it contains the views of leading neurologists and syphilographers, and covers the pathology very well. The greatest usefulness of the work lies in its value as a guide to the practitioner. With the introduction of salvarsan and of intraspinal injections, the therapy of syphilis of the nervous system has undergone so many modifications that it is entirely impossible for any textbook to present a complete and up to date statement of the present status of the treatment of syphilitic diseases of the nervous system. In this respect the present book perhaps attains all that can be expected of it. As not infrequently happens in later editions, some of the more recent statements need to be harmonized with those in older portions of the text; or, rather, some of the former statements need to be eliminated entirely. While the book is not without some minor defects, it is perhaps quite the best thing in English covering the subject of which it treats. The translator has done his work well, although in places he has not succeeded in getting away from the German idiom, and occasionally is too literal.

I. K. Therapy (Immunkörper, Immune Substances) in Pulmonary Tuberculosis, with a Summary of Cases. By William Barr, M.D., D.Sc., D.P.H., District Tuberculosis Officer for the West Riding of Yorkshire. Cloth. Price, $1.25 net. Pp. 82. New York: William Wood & Co., 1916.

In order to overcome the apathy toward Spengler's Immunkörper therapy, to set forth the benefits that have been obtained therewith, and incidentally to point out mistakes occurring in its use, the author makes this contribution purely on a clinical basis. It is written in a rather generalized form and considers dosage, reactions, suitability of cases for treatment, contraindications, and effects and results of treatment. A summary of the results in forty-seven ambulant cases treated by the author is given. The book is written in extremely simple form, probably with a view to appealing to the general practitioner, and the author is easily misled by the psychology of the patient, as attested by a paragraph on page 52 ending "and, after all, it is the patient who is the final judge" (meaning of the efficacy of the treatment). Only such data as the weight of the patient, the temperature and the amount of sputum are used as criteria in judging the efficacy of I. K.

Social Medicine, Medical Economics and Miscellany

TREPONEMA PALLIDUM AND SPIROCHAETA PALLIDA

From the Standpoint of the International Rules of Zoological Nomenclature

CHARLES WARDELL STILES, M.D.
Professor of Zoology, U. S. Public Health Service,
WASHINGTON, D. C.

THE JOURNAL,[1] Nov. 25, 1916, contained an exceedingly interesting and scholarly article by Dr. Pusey of Chicago, dealing with the nomenclature of the protozoon of syphilis and showing in its composition an elaborate amount of bibliographic study. Copies of THE JOURNAL in question had been in Washington but a few hours when suggestions reached the office of the International Commission on Zoological Nomenclature that the case be discussed from the standpoint of the international rules. The latter fact evidences the point that despite the care with which Dr. Pusey prepared his brief, there are some features of the subject which he did not include in his discussion, and it is in compliance with the suggestions mentioned that the present manuscript is prepared.

Before the nomenclatorial premises are set forth and the rules applied, and to make the general subject clearer to nontaxonomists, it will be well to explain certain differences of opinion as to generic concepts.

THE OLDER AND THE NEWER VIEWS OF GENERIC LIMITS

Workers in systematic zoology and systematic botany may be divided into two general classes: those who favor broad genera with many species, and those who favor small genera with fewer and very closely allied species. The former are known as the "lumpers," because they "lump" many species into one generic group; the latter are called "splitters," because they split up the genera into small and allegedly more homogeneous groups.

For instance, a "lumper" might consider that all of the tapeworms possessing four suckers should be placed in one and the same genus, *Taenia,* while a "splitter" would recognize *Taenia* (for species of the type of *T. solium*), *Hymenolepis* (for species of the type of *T. diminuta*), *Dipylidium* (for species of the type of *T. canina*), *Davainea* (for species of the type of *T. proglottina*), etc. Or, to take another example, a "lumper" of the old school might unite the field mice, the house mouse, the rats, and the guinea-pigs in the genus *Mus,* while a "splitter" of the newer school would consider that the rats are much more closely related to each other and to the house mouse than they are to the field mice and the guinea-pigs; accordingly he would express this evolutionary or blood relationship by dividing the old genus *Mus* into a number of genera, and by uniting these genera into subfamilies, families, superfamilies, etc., in order to give what he calls a "natural" as distinguished from an "artificial" classification. Thus, a genus, from the standpoint of a "lumper," might be a family or even a superfamily from the standpoint of a "splitter."

These two points of view are determined by two factors in particular: first, by different opinions as to whether given anatomic characters are of specific, subgeneric, generic, or supergeneric value, and, second, by the existing knowledge, in any given decade, in respect to the details of the anatomy of the different species.

The second factor mentioned, increase in anatomic knowledge as years advance, has a natural tendency to cause later systematists to divide and subdivide the genera of earlier authors. The first factor, different opinion as to the classificatory value of various characters in respect to formation of systematic units of higher or of lower rank, is dependent on several points, notably, however, on the fact as to whether an author has studied a relatively small number or a relatively large number of different organisms of various groups, and, further, on the fact whether his special training has been on the taxonomic side or on the biologic side of these organisms.

In harmony with the foregoing generalizations, it may be expected that medical authors (who have to deal with relatively few different kinds of organisms) will be predisposed to become "lumpers," as were the earlier zoologists and earlier botanists, while modern systematic zoologists and modern systematic botanists (who have to classify a very much greater number of organisms) will show a predisposition to array themselves on the side of the "splitters."

These conditions are inevitable in science and must be accepted with equanimity. That the entire tendency in taxonomy today is, and for more than half a century past has been, toward the point of view of the "splitters" will be evident to any person who studies nomenclature extensively. That medical literature is and always will be from five to ten years back of zoological and botanic literature in admitting and adopting the finer points of generic concepts in zoology and botany seems equally clear.

Applying these generalizations to *Spirochaeta* and *Treponema,* a "lumper" would unite a large series of free-living and parasitic forms in the old genus *Spirochaeta,* while a "splitter" would divide these organisms into several groups (genera), at the same time uniting into each of the restricted genera the species which he considers most closely related to each other. In these differences of opinion it is natural to expect that the tendency of the medical authors will be toward the point of view of the "lumpers," while that of the zoologists (as illustrated by Schaudinn) will be toward the point of view of the "splitters."

THE NOMENCLATORIAL DIFFICULTIES

Dr. Pusey, in his interesting and learned article, practically takes the point of view characteristic of a number of authors, namely, that the choice between two names is to be determined by the preponderance of the use of one or the other of these names. This view is not entirely in harmony with that held by the vast majority of systematists, who are the authors on whom the greatest burden of systematic names falls. As zoologists are obliged to handle hundreds of thousands of systematic names, and to keep them as clear as possible despite the change of views in respect to classification from one decade to the next, the zoological profession has seen itself forced to formulate rules for guidance in accepting, changing, and rejecting names. For a number of years different countries had different sets of rules, but finally the International Zoological Congresses have succeeded in establishing a series of international rules which are under the care, so to speak, of an international commission of eighteen professional zoologists selected from various countries. These commissioners are elected in three classes of six men each. Each class serves nine years, and the term of one class expires every third year. The international rules are published in English, French, German, and Italian, and the "Opinions" of the commission are published by the Smithsonian Institution.

It is an undeniable fact that not every zoologist considers himself bound by these rules, as it is also a fact that not every physician considers himself bound by the medical code of ethics; but the rules have been adopted by the International Congress, and thus they are the formal expression of opinion of the organized zoological profession.

As a legalized practitioner of medicine, I would submit the claim that if a physician calls into consultation a zoologist, the latter becomes for the moment a quasimember of the medical profession, and in matters concerning the patient this zoologist is bound by the code of ethics as adopted by the organized medical profession.

Conversely, as a professional zoologist, I would submit that when a physician enters the field of zoological nomenclature he should consider himself subject to the rules as adopted by the organized zoological profession, rules that have been established for the good of all persons concerned.

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[1] Pusey, W. A.: Spirochaeta pallida or Treponema pallidum? THE JOURNAL A. M. A., Nov. 25, 1916, p. 1621.

THE NOMENCLATORIAL PREMISES IN THE CASE OF TREPONEMA PALLIDUM AND SPIROCHAETA PALLIDA

In considering competitive names we must first have before us certain premises, in particular the dates of publication and the genotypes (or type species) for the genera under consideration.

The dates of publication are important when it comes to the application of the law of priority.

The expression "genotype" or "type species" is relatively little known in medical literature, and must therefore be explained.

There have been about 1,500 or more specific names used with the generic name *Taenia* since 1758. Assume that we wish to divide the numerous species, thus represented, into ten or into 100 more restricted genera, the question immediately arises as to where the name *Taenia* belongs. Every generic name is supposed (theoretically) to be based on a single species, its nomenclatorial genotype or type species, and if the genus is divided the original name goes automatically to that subdivision which contains the type species (namely, *Taenia solium* for the generic name *Taenia*), so that no matter how differently authors may classify the various species, every author is obliged, under the rules, to apply the name *Taenia* to the restricted group to which he assigns *Taenia solium.*

The points which come into consideration in determining which species is genotype for a given generic name are elaborately worked out in Article 30 of the international rules.

The nomenclatorial premises for the case now under consideration are as follows:

In 1834, Ehrenberg proposed *Spirochaeta* as a new genus, basing the same on the single species *S. plicatilis,* described in the same paper, with Berlin, Germany, as its type locality, where it is a free-living organism in water. Article 30 (*c*) reads: "A genus proposed with a single original species takes that species as its type. (Monotypic genera)." Accordingly, *S. plicatilis* is the genotype of *Spirochaeta.*

In 1841, Dujardin changed the spelling of the generic name to *Spirochoeta,* and in 1872, Cohn changed it to *Spirochaete.* Both of these new modes of spelling are known as "variants," and they are dependent on the same type species as the original name *Spirochaeta.*

From 1834 to 1905, a considerable number of minute spirochete-like organisms were described by various authors, who placed the species in question in the genus *Spirochaeta* 1834. This was a perfectly proper procedure from the point of view that their major characters were identical with the characters interpreted as major characters of *S. plicatilis.* As the genus grew in size by the addition of various organisms, it became evident from the point of view of certain authors that what had been interpreted as major generic characters were probably characters of supergeneric (as family) rank, and in accord with this view several authors have selected certain species which were included by earlier writers in the genus *Spirochaeta,* have designated them as type species of new genera, and have assembled around these type species other species which they consider more closely related to the respective genotypes than to *S. plicatilis.*

Vuillemin, for instance, June 5, 1905, proposed the new genus *Spironema,* basing it on *Spirochaeta pallida.* Vuillemin was not aware of the fact that the name *Spironema* had been given in 1864 to a genus of mollusks.

Article 34 of the International Rules reads as follows:

> A generic name is to be rejected as a homonym when it has previously been used for some other genus of animals. Example *Trichina* Owen, 1835, nematode, is rejected as homonym of *Trichina* Meigen, 1830, insect. (See "Opinions" 12 and 19.)

According to Article 34, just quoted, *Spironema* 1905 is an absolute homonym of *Spironema* 1864, and is automatically rejected on this account.

Schaudinn noticed that the name of *Spironema* 1905 was not available under the rules, and he proposed the name *Treponema* as substitute, basing the name on the species *Spirochaeta pallida.* The name *Treponema* was published, Oct. 26, 1905.

Stiles and Pfender, also, independently of Schaudinn, noticed that *Spironema* 1905 was preoccupied by *Spironema* 1864, and they published, Dec. 2, 1905, the new generic name *Microspironema,* basing it on *Spirochaeta pallida.* The law of priority, namely, Article 25 of the international rules, reads as follows:

> The valid name of a genus or species can be only that name under which it was first designated on the condition (*a*) that this name was published, and accompanied by an indication, or a definition, or a description; and (*b*) that the author has applied the principles of binary nomenclature. (See "Opinions" 1, 2, 4, 5, 9, 10, 12, 13, 15-17, 19-21, 24, 28, 37-40, 46, 49-54, 56.)

Accordingly, *Microspironema* of Dec. 2, 1905, automatically falls as an absolute synonym of *Treponema* of Oct. 26, 1905.

It now remains to consider *Spirochaeta* 1834 and *Treponema* 1905. As shown in the foregoing, *Spirochaeta* 1834 has for its genotype a free-living organism (*S. plicatilis*), while *Treponema* has for its genotype an obligatory parasitic organism (*T. pallidum*), with man as the type host. These two organisms differ in certain anatomic, physiologic, and biologic characters.

We now have a very clear cut and simple nomenclatorial proposition before us, but the decision finally rests on the point whether we are "lumpers" or "splitters."

If we belong to the "lumpers" and hold that *Treponema pallidum,* an obligatory parasite, is congeneric with *Spirochaeta plicatilis,* a free-living organism, it is incumbent on us, under the rules, to express our view on the classification by the nomenclature we use, and thus to adopt the name *Spirochaeta pallida.*

If, on the other hand, we belong to the "splitters," and hold that the spirochetes represent a heterogeneous mass of species which in the interest of clarity of classification should be assembled into more restricted and more natural generic groups, it is incumbent on us to confine the name *Spirochaeta* to organisms showing the major characters of *S. plicatilis; Cristispira* to organisms showing the major characters of *S. balbianii* and *S. anodontae; Treponema* to those showing the major characters of *S. pallida; Spiroschaudinnia* to those showing the major characters of *S. recurrentis,* and so on through all of the restricted groups we wish to recognize.

Thus, not entirely in harmony with the view expressed by Dr. Pusey, namely, that authors who use *Treponema* do so out of deference to the memory of Schaudinn, these authors are in reality "splitters," who are acting entirely in accord with the international rules.

The practical question remains as to what course is best for an author who prefers not to express an opinion on the strictly taxonomic side of the problem.

Several courses are open to him:

1. He may adopt either name and quote the other in parentheses, as *Spirochaeta pallida* (*Treponema pallidum*) or *Treponema pallidum* (*Spirochaeta pallida*). It will suffice if he gives either of these double citations only once in his article, namely, the first time he mentions the technical name. After that he will do well to use consistently either the one or the other, but not both binomials.
2. He may use either name, explaining in a footnote that he does not commit himself to any taxonomic interpretation.
3. He may take an intermediate position between the "lumpers" and the "splitters" by recognizing *Treponema* as a subgenus of *Spirochaeta,* and in this case he writes: *Spirochaeta* (*Treponema*) *pallida.*

POSSIBLE COMPLICATION OF BIOLOGIC DATA

There is a point, however, which it is wise for authors to recall. In discussing biologic data, as in life histories, cultural methods, etc., it is much more difficult to separate data which are confused under one generic name than to unite data which are well defined under two generic names. Farsightedness lies in keeping biologic data as distinct as possible. Applying this principle to taxonomic units, the more progressively conservative plan is to adopt restricted rather than broad units if one is in doubt as to the name to be used. Specifically, if the biologic data concerned in *Treponema pallidum* become confused with the biologic data involved in *Spirochaeta plicatilis,* it will, in all probability, be very much more difficult later to divide the data between *Treponema* and *Spirochaeta* if both are classified now as congeneric than if they are now classified as generically distinct, for the reason that many authors, in discussing these data, will use the name "spirochetes" instead of the specific names *S. plicatilis* and *S. pallida*, and as one author quotes from another, year after year, confusion will increase in this case as it has in other cases.

From this point of view, even if from no other, it appears more far-sighted to adopt at present the name *Treponema* for *T. pallidum.*

As this article is intended simply to present the nomenclatorial points at issue, I refrain from entering into a discussion of the more strictly zoological points as to the characters which have induced certain zoological authors to recognize *Treponema* as of generic rank, distinct from *Spirochaeta.*

I believe, however, that it is entirely consistent with the nature of the discussion to add that my experience in zoological nomenclature, not only as a systematist, but especially as a member of the International Commission since 1895, has thoroughly persuaded me of the wisdom and conservatism (from the point of view of the future) of using restricted generic groups in preference to larger heterogeneous genera, and that in case of doubt it is, in general, the better course to accept a restricted generic name, especially when discussing its genotype.

For instance, if I were seriously in doubt as to whether *Treponema* should be considered generically distinct from *Spirochaeta,* I should accept *Treponema* for *T. pallidum* and its closest allies, on the practical ground that this course is much less likely to result in later confusion in respect to biologic and bibliographic data in case subsequent work proves to the satisfaction of the "lumpers" that *Treponema* should be recognized as distinct from *Spirochaeta;* but I should, in that case, quote *Spirochaeta* at least once in my article in a way to indicate to systematists that I was aware of the difference of opinion which exists among authors.

The case under discussion is not unlike that of *Endamoeba histolytica.* A "lumper" might consider *Amoeba histolytica* congeneric with *A. limax, A. proteus,* etc., but a "splitter" would consider it more exact and more practical to recognize *Endamoeba histolytica* and *Vahlkampfia limax* as generically distinct from *Amoeba proteus (seu Chaos chaos).*

The question whether the literature of any particular group of men uses *Amoeba* or *Endamoeba* would not be the determining factor in the nomenclature of the group.

From the foregoing it will be clear, I hope, that the question of sentiment is not recognized by the international rules.

In his last paragraph, Dr. Pusey says, "If the best usage means anything, *Spirochaeta pallida* is an acceptable term for the organism of syphilis." In this connection it may, however, be pointed out that our conception as to what is best usage depends largely on the question whether we are "lumpers" or "splitters." Best usage from the point of view of the splitter is that usage which comes closest to expressing a natural classification of the organisms, and this is a question which will eventually be based on consensus of opinion by taxonomists who deal with large numbers of organisms, both free-living and parasitic.

If it can be shown that it "will produce greater confusion than uniformity" to use *Treponema* instead of *Spirochaeta,* it would be within the power of the International Commission to suspend the rules in this case and to apply *Spirochaeta* to the treponemes, instead of to the spirochetes typified by *S. plicatilis,* even if authors universally agree that *S. plicatilis* and *T. pallidum* are not congeneric; but unless it can be shown that the application of the rules will produce greater confusion than uniformity, authors who consider *T. pallidum* generically distinct from *S. plicatilis* have no argument which would justify them in continuing to use *Spirochaeta pallida* in place of *Treponema pallidum.*

SUMMARY

1. Any author who considers *Spirochaeta plicatilis* congeneric with *Treponema pallidum* is expected to express this view in his nomenclature by using *Spirochaeta pallida* as the name for the organism of syphilis.

2. Any author who considers that *Treponema pallidum* is generically distinct from *Spirochaeta plicatilis* is expected to use the name *Treponema pallidum.*

3. This is not an editorial question, but one of nomenclature based on taxonomic concepts, and it will be finally settled on the basis of ultimate consensus of opinion by systematists as to the generic limits of *Spirochaeta,* type *S. plicatilis.*

4. In case of doubt, and pending final settlement, it is clearly better, in order to keep biologic data as distinct as possible, to follow Schaudinn in using *Treponema* as generic name for the organism of syphilis. The use of *Treponema pallidum* precludes confusion; the use of *Spirochaeta pallida* need not necessarily result in confusion, if all authors quote the specific as well as the generic name, but it invites confusion because so many authors shorten the technical name to "spirochetes."

5. A position intermediate between the "lumpers" and the "splitters" may be taken by recognizing *Spirochaeta* as a genus containing certain subgenera (*Spirochaeta* s. str., *Treponema,* etc.). If this intermediate position is preferred, the proper citation of the organism of syphilis would be *Spirochaeta (Treponema) pallida.*

6. If a vernacular name is desired for *Spirochaeta (Treponema) pallida,* "treponeme" is likely to keep biologic data differentiated more clearly than will the name "spirochete."

[Dr. Pusey's discussion of Dr. Stiles' reply will appear in this department next week.]

Practical and State Medicine

In his address to the students at the opening of the medical school of the University of Michigan in October, 1916 (*Science,* Dec. 8, 1916, p. 799), Prof. Victor C. Vaughan in expressing his views of the needs of the present and of the future of practical medicine, said:

> The greatest need of practical medicine today is more and better equipped hospitals. With these the specialist and the skilled nurse will multiply and improve. Such hospitals should be supplied with thoroughly equipped and competently manned diagnostic laboratories which should serve not only curative but also preventive medicine. Water and milk supplies should be examined daily, and visiting nurses under the direction of a competent health officer should constantly patrol the community. Adjunct dispensaries which should serve as schools of instruction in baby feeding and care, child welfare, home sanitation and everything pertaining to healthy living should supplement the community hospitals. When in addition to these agencies the people generally can be educated to see the benefits that would follow the periodic thorough examination of all in order to detect the first departure from the normal, then medicine will be able to render its highest service to mankind.
>
> It must be evident that if these hopes are to materialize, the practice of medicine must become more and more a state function. That the tendency is in this direction, and that this should be encouraged for the public good, are not matters of doubt in my mind. Only a few years ago some of the most eminent men in the profession combated earnestly state support of medical education. They claimed that the state had no right to establish and maintain medical schools, and that such aid was not fair in competition with the proprietary schools, which at that time educated more than 90 per cent. of the annual recruits to the profession. Now, no one questions either the right or the duty of the state to establish and support medical schools, while the proprietary schools, having proved wholly inadequate and inefficient, have practically ceased to exist. Even the man in the street sees the advantages which have resulted from these changes. To state that a medical school is a proprietary one, in the sense generally understood by that term, immediately condemns it with intelligent men. Courts from the lowest to the highest in the land have uniformly held that the state has the right to maintain its own medical school, and also to pass on the merits of other schools both within and without its borders, to set up standards of medical education, to define the requirements of admission to medical schools, to submit those who wish to practice within its borders to certain intellectual and moral tests in order to pass on their professional fitness, and to revoke the licenses of the unworthy.

Medicolegal

There Must Be Some Imprisonment for Illegal Practice — As to Residence

(Rutherford vs. State (Texas), 187 S. W. R. 481)

The Court of Criminal Appeals of Texas reverses a judgment against defendant Rutherford, who was convicted of unlawfully practicing medicine and his punishment assessed at a fine of $100. The reason given for this reversal and remanding of the cause is that Article 756 of the Penal Code of Texas provides that the punishment for unlawfully practicing medicine shall be by fine of not less that $50, nor more than $500, and by imprisonment in the county jail for any period of time not exceeding six months. It is thus seen that the legislature has fixed some imprisonment as a minimum punishment the jury can assess. The punishment assessed must be always within the minimum and maximum fixed by law. This court, and no other court in the state, can assess a punishment that the law does not authorize.

Another thing should be mentioned. While the trial court did not err in overruling a motion to quash the indictment on the grounds presented in the motion, yet the court of criminal appeals thinks that on another trial the indictment either should allege and the proof show that the defendant was temporarily residing in Johnson County if such was the fact; or if this was not the fact, then, as it was alleged that his residence was unknown, the indictment should not only allege that he had not recorded a certificate authorizing him to practice in Johnson County, but should further allege that he had no certificate authorizing him to practice, and proof that he had recorded no certificate would be prima facie proof that he had none by virtue of the statute.

Sufficiency of Complaint and Validity of Provisions of Medical Practice Act

(Piper vs. State (Wis.), 158 N. W. R. 319)

The Supreme Court of Wisconsin, in affirming a conviction of Defendant Piper of practicing medicine without a license, holds that the complaint did not fail to state an offense and was not fatally defective because it did not set forth the classes of medical and surgical practitioners exempted from the law. The exemptions specified by Section 1435d, Statutes of 1915, are in a separate section, and need not be specified in the complaint. These are defensive matters. Nor was the complaint defective because it charged the commission of the offense on "information and belief."

It was contended that the provisions of Section 1435, Statutes of 1913, arbitrarily attempt to define what is to constitute the practice of medicine and surgery, and condemns practices which do not, in substance, constitute the practice of medicine and surgery, and hence deprive persons of rights guaranteed them by Section 1, Article 14, of the federal constitution, and Sections 5 and 11, Article 1, of the state constitution. The defendant claimed on this point that the provisions of Section 1435f, Statutes of 1913, penalizing all persons who shall append to their names the words or letters "Doctor, Dr., Specialist, M.D., D.O., or any other title, letters, combination of letters or designation which in any way represents him or her, or may tend to represent him or her, as engaged in the practice of medicine, surgery or osteopathy in any of its branches, or who shall for a fee or for any compensation of any kind or nature whatsoever, prescribe or recommend for like use any drugs or other medical or surgical treatment or osteopathic manipulation, for the cure or relief of any wound, fracture, bodily injury, infirmity or disease, . . ." are an arbitrary and unlawful classification as medical and surgical practitioners of persons who are not necessarily engaged as such practitioners, and thus deprives them of the liberty to do these things, contrary to their constitutional rights. The contention overlooked the provision that the use of the words or titles so appended to a name is denounced by the law whenever they represent, or tend to represent, the person as a practitioner or medicine, surgery or osteopathy, or if he as such a practitioner does anything by way of treatment or gives a prescription for a fee. All the prohibited acts are limited to persons who in fact do these things as practitioners of medicine, surgery or osteopathy. When so applied, these regulations have been repeatedly held to be within the legislative power. The court discovers nothing in these provisions which conflicts with the right of trial by jury in cases arising under the law. The statute is a proper one for the regulation of the practice of medicine, surgery or osteopathy, and the provisions accomplish this purpose in a reasonable way.

Requisites to Making Married Woman Liable for Medical Services for Son

(Davenport vs. Rutledge (Texas), 187 S. W. R. 988)

The Court of Civil Appeals of Texas, in reversing a judgment obtained by the plaintiff in this case on account for services rendered by him as a physician to the defendant's minor son, who had been injured by a railroad, says that at the time of the alleged services the defendant's husband was alive, and he and the defendant were living together as husband and wife. The child was their offspring, living with them. In order to make the defendant—the wife—personally responsible for the services, she must have entered into a contract with the plaintiff for services rendered necessary to her child. If there was no such contract, and she only acquiesced or consented for the physician to treat the child, this would not bind her personally or make her separate property liable. It is not sufficient that she merely give an order or call in a physician, for in such case the presumption is that she does so as the agent of her husband, whose duty it is to supply such things. After the services were rendered, a mere verbal promise on her part to pay would not render her separate estate liable for the debt of the community, as it is called. She would not be bound personally for the default of her husband by such verbal promise to pay his debt. If the testimony of such verbal promise was admissible at all, it was admissible only as a circumstance on the question whether she contracted for such services in the first instance. A liability could not be founded against her on such verbal promise, made after the debt accrued, and if the judgment reversed was based on such promise, it was erroneous and without legal testimony. Her mere acquiescence or consent for the physician to treat her child would not support the judgment.

Society Proceedings

AMERICAN SOCIAL HYGIENE ASSOCIATION, CENTRAL STATES DIVISION

Joint meeting with Chicago Women's Club, Woman's City Club and Chicago City Club with the Chicago Medical Society participating, held at Chicago, Dec. 14, 1915

Dr. William T. Belfield, Chicago, in the Chair

SYMPOSIUM ON SYPHILIS

The Campaign for Social Hygiene

Dr. William T. Belfield, Chicago: Fifty years ago personal liberty assured to every one the right to contract scarlet fever and diphtheria and scatter it among his fellows without interference by law. The city did, however, recognize the duty of seeing that the remains were decently interred. Today personal liberty assures to every one the right to contract syphilis or gonorrhea and to communicate it to his intimates, or to his bride or to his unborn children without interference by the law. It does, however, recognize the duty to see that the remains are decently interred in the asylums for the insane, for the feebleminded, for the blind, in penitentiaries and in poorhouses, all of which derive a considerable percentage of their rapidly increasing population from the venereal diseases. Illinois spends every year millions in mopping up the floor, but forgets to turn off the faucet. Since the disasters wrought by syphilis, civic, economic and vital, are greater than those caused by scarlet fever in its community cost, syphilis is obviously the more important;

but the public, for evident "reasons," refuses to employ against syphilis the effective measures that have long been used against scarlet fever, including compulsory notification and quarantine. The proposed ordinance now in the hands of the health committee of the Chicago council carefully excludes these two features.

I am convinced that the campaign for social hygiene in this country has been worth while, for it is generally conceded now to be not a new phase of religious mania, but the earnest effort of intelligent people to stem the tide of mental and physical degeneracy which is even now painfully apparent in our population. Some states compel every male applicant for a marriage license to present a certificate of freedom from venereal disease, and in other less progressive states like Illinois, multitudes of fathers demand the same assurance before giving up their daughters. The dean of a large educational institution recently said that among 5,000 students the number acquiring venereal diseases had in five years dropped from about 18 to less than 2 per cent.

No man contends that knowledge of venereal diseases will alone restrain young men from contracting them; but some of us do believe that this knowledge will reduce—indeed, has already reduced—the contamination of wives and children with these infections, and that, as it seems to me, should be the slogan of the entire social hygiene movement. Keep the infection out of the family and out of the stock, and confine it, so far as may be, to those who voluntarily expose themselves.

What Should Chicago Do for the Venereally Diseased?

Dr. William A. Pusey, Chicago: It is a fair statement that there are in this country at least 5 per cent. of syphilitics among the adult population. I am not so familiar with the figures as to gonorrhea, but 20 per cent. would probably be well within the figures. Three methods of handling contagious diseases are: (1) control of the routes of communication; (2) restraining the liberty of the infected person until the danger is past, and (3) control of the infectious disease as quickly as possible, thus rendering patients free from danger to others. These methods are potentially applicable to the venereal diseases.

Several methods attempt to control the diseases indirectly: the inculcation of clean living, sexual restraint, high moral standards, the regulation or repression of vice, and the control of the liquor traffic. These methods only scratch the surface. In large measure, they appeal only to the intelligent, the careful and the conscientious. I confess to feeling hopeless as to the control of these venereal diseases by these indirect methods. We immediately come in contact with the insistent force of the sexual appetite, against which indirect methods are in large part futile. I do not minimize their importance and would not like to see a falling off in that feature of the crusade, but I believe that if we are to control venereal diseases we shall have to control them as diseases and not as moral problems. In my judgment, control by isolation and quarantine is impossible in disease so widespread and contagious over so long a period.

We are therefore reduced to the third method of attack. Fortunately the medical profession is particularly well qualified to do this as regards venereal diseases; better as regards syphilis than any other infectious disease, and able to do a great deal in gonorrhea by controlling its infectiousness. This puts us in position to act against them as public menaces, and justifies the establishment of means for taking care of these patients. Medical institutions, hospitals and dispensaries are already doing it, but lack the equipment and support for effective work.

The ideal condition would be to provide universal opportunity for treatment and, I would add, compulsory treatment. The essentials of such a crusade would be the organization of dispensaries and small hospitals for this purpose. Such institutions should be well manned and equipped for diagnosis and treatment. A social service and follow-up service is essential. There should be also free and easy access to these dispensaries without embarrassing restrictions.

Dispensaries should have evening hours, so that patients may attend without sacrificing time from their work. Such facilities should be free to the abject poor, but should also have provisions as to those able to pay small fees.

The proposition as to the notification of venereal diseases sounds plausible in the abstract, but it is exceedingly difficult in the concrete, and in my opinion gets us nowhere. It does not even give us statistics, and it is not necessary to have statistics to prove the menace and the prevalence of the venereal diseases. Such statistics, as now provided for in eleven states, are notoriously unreliable and would be laughed out of any court. Likewise isolation is impracticable for the 20, or even 10 or 5 per cent. of the productive adult population of Chicago with venereal diseases which last so long a time.

What the Chicago Health Department is Doing for the Venereally Diseased

Dr. F. O. Tonney (Director, Municipal Laboratory), Chicago: In 1910 a venereal clinic was established in the Iroquois Hospital, and the health department began to accept specimens for examination by the Wassermann reaction and for gonorrhea, collected from charity patients. At present no venereal clinics are being operated by the department of health, although specimens for laboratory tests are being collected daily.

The health department has always endeavored to do educational work. The morals commission constitutes the chief agency of publicity, and since its establishment in 1914 has collected and disseminated many valuable data. The functions of the commission are: to study all phases of sexual immorality and practices which tend to promote or restrict them, or which concern the physical and moral welfare of the inhabitants of the city with a view to their suppression; to study measures to rehabilitate prostitutes, to study prostitution and the venereal diseases, and take the legal action necessary to suppress houses of prostitution; to prosecute the owners, keepers and inmates of such houses; to advise the prosecuting attorney and chief of police in relation to such matters, and to make reports of their findings to the mayor and the council and recommend legislation necessary to secure these objects. The work of the morals commission is exemplified in their reports relating to conditions in dance halls and places of amusement. While this secures publicity, it does not relate specifically to venereal diseases and does not form data for a campaign against such diseases. In 1915 out of a total of 221,433 examinations by the board of health laboratory, there were 106,400 Wassermann tests and 347 for gonorrhea. Although the laboratory has sufficient space, it must have more bacteriologists before free general service can be offered. For treatment there are only the dispensaries of the medical schools and hospitals.

The ordinance provides for report to the commissioner of health by number cases of venereal diseases by physicians and institutions having to do with such cases, giving information as to the danger of such persons to others. They shall also distribute circulars of instruction for the prevention of the transmission of such diseases, and shall report such fact to the commissioner of health.

Status of Chicago's Hospital and Clinical Facilities for Diagnosis and Treatment of Venereal Diseases

Dr. Oliver S. Ormsby, Chicago: I limit my remarks to what is being done in the treatment of syphilis in the dermatologic department of the Central Dispensary of Rush Medical College. The older methods were simple, consisting of the use of mercury by mouth, by injection or by inunction, and the employment of potassium iodid, all of which methods, except the injections, could be carried out by the patient. The present methods of treatment require more equipment, more time and more money, but the results warrant these. At the dispensary we employ salvarsan, with the proper apparatus to demonstrate the spirochete, and have a laboratory for Wassermann tests with a worker to make the tests and administer the salvarsan. At present this man makes the blood tests in the morning and assists with the treatment in the afternoon. Treatment is necessarily controlled by the blood and spinal fluid tests, and it is therefore necessary to have facilities for making these tests. The department has had some assistance from the social service department, and later will have one worker devoting whole time to the work. The treatment is given in courses, five salvarsan injections and from twelve to twenty-four mecurial injections, controlled by the Wassermann reaction. The treatment depends on the stage of the disease. By this method the patients are kept under control better and are given a better chance to recover, and their relatives are better protected from infection. They get the same treatment as private patients. From the standpoint of public health the infectious cases are cleared up, preventing the spread of the disease. By having a social service others are protected, and associated patients are urged to take treatment. The worker also ascertains whether or not they are entitled to free treatment. Children are sometimes brought in who have been accidentally infected, and other members of the family may then be found to be infected. Those with active lesions in the mouth and other localities are soon rendered safe to go among their fellows; otherwise the danger would exist for several weeks. Contributions have enabled the dispensary to do this work, along with the efficient work of the superintendent and the cooperation of the department. Patients of the dispensary class are apt to neglect treatment. When the treatment is carried out as outlined, the patients realize the importance of regular attendance and lend their cooperation.

DISCUSSION ON SYPHILIS

Dr. Hugo Betz (Superintendent, Iroquois Emergency Hospital) Chicago: After we find cases positive there is no recourse for them whatever as to treatment. The health department at present is not able to take care of all the patients sent to them because of lack of appropriations.

Dr. L. W. Bremerman, Chicago: The work at the Central Free Dispensary is excellent, but there are many other free dispensaries in Chicago at which venereal diseases are scientifically treated, while many have meager or no proper equipment. I think the trouble with the dispensaries for the treatment of venereal diseases is that they are run at the wrong time of day. Dr. Pusey's suggestion of night clinics is excellent. One fault with the dispensaries is that patients are not properly instructed regarding the time when they are cured. Many feel that when the acute symptoms have disappeared, they are free from infection and cease coming. Another evil is the drugstore dispensary. There should be some regulation in regard to druggists' treating venereal disseases. I always endeavor to ascertain from patients how many attacks they have had before and whether they have been treated at a drugstore or by a physician, and find in a great many instances that they have had preliminary treatment from the corner druggist.

Mr. John E. Ransom (Superintendent, Central Free Dispensary), Chicago: We shall never solve the problem of venereal diseases, until we have solved the problem of sexual immorality; and we will agree that that is an educational matter. Until we have trained the people in matters of self-control and in a sense of their responsibility to the community, we shall not have solved the problem. One of the great shortcomings of what we have done in the past is that we have not cured the patients. I have looked over the records of our institution for 1914 and 1915 with reference to cases of syphilis and gonorrhea. Those who came once constitute the largest number; those who came twice the next, and so on, until the number who came a sufficient number of times to be cured are very few indeed. This is the problem of the administration of the institution, and so far as it fails to keep patients under treatment until cured, it is failing as a medical institution.

In the Massachusetts General Hospital, in which social service work was first started, they have a worker devoting whole time to syphilis, and during the first ten months in the special clinic for the treatment of syphilis they had 2,114 patients. These made 10,326 visits, or an average of five visits to each patient. In the ten months about 10 per cent. of the patients were lost. In a city like Boston, and this is more true of Chicago, a large percentage of syphilitics are transients whom we expect to lose.

In our institution we are treating syphilis in every department. Being a layman, I am not able to say whether it should be treated in all the departments or not; but taking the parallel of tuberculosis, the greatest advances have been made in special clinics, hospitals, dispensaries and sanatoriums for this one disease. I believe that when syphilis and gonorrhea are treated in the same way, we shall be doing better work than we are doing today.

Dr. B. N. Novy, Chicago: We have in Chicago six colleges, three dispensaries and many hospitals which have dispensary connections. We see 8,066 cases in these dispensaries. They all have day hours and none has night hours. Two types of patients come to the dispensaries: one is the chronic disease carrier. He comes only when he has an acute exacerbation and stays until the acute attack is past or he has no discomfort and then leaves. The other class is the temporarily unemployed class who come for treatment. They also stay until they can secure a position. Not more than 5 or 10 per cent. of patients are cured at our dispensaries for the reason that they do not come back, or do not have the time to come back. If we had night dispensaries they would be able to come until cured.

Dr. Anna E. Blount, Oak Park, Ill.: We have made two mistakes: in treating effects instead of determining causes and in treating the physical side of the question as though it were a physical question instead of a psychologic, a social, an economic question. When prostitution is not a trade for women we shall not have a venereal problem. I believe the reason we have so much venereal disease at present is that our girls cannot earn a decent economic independence. Without treating the social question I believe we are only tinkering with results in all these matters, particularly as to medical cure and medical prophylaxis. I think the cure when we get it will be educational, just as it was in tuberculosis.

Dr. Rachelle Yarros, Chicago: We are doing less for cases of gonorrhea, and they are equally dangerous, as syphilis. The treatment of venereal disease is an expensive luxury, and few can afford it.

Mr. W. A. Clark (Secretary, Chicago Branch American Social Hygiene Association), Chicago: The survey contemplated is yet somewhat hazy. A group connected with the City Club and other organizations are hoping we may be able to get together persons and funds with which to make such a survey. The persons interested are men interested in social questions, not medical men. We are approaching it from the standpoint of a social problem. The assistance of men who have specified knowledge of these conditions and who are trained as public health men will aid us in getting the funds necessary to make this survey.

Dr. B. C. Corbus, Chicago: We have in Chicago, I believe, twenty-seven dispensaries. The largest are the Northwestern, the Postgraduate, the Central Free Dispensary and the University of Illinois. Today I interviewed the heads of each of these clinics as to what percentage of patients they are turning out cured. One said 25 per cent. I challenged the statement. In fact, only 1 or 2 per cent. are discharged as cured. We should consider this problem under education, isolation and treatment of cases and also under clinical facilities. Few of us realize what other cities are doing. In New York they are far ahead of Chicago. In England they have the famous Lock Hospital, known throughout the world, for the treatment and care of these cases. Chicago is not doing her share.

Mr. Samuel E. Thrasher (President, Committee of Fifteen), Chicago: I can speak of what the Committee of Fifteen is trying to do. We do not believe we can solve the problem of the social evil in a day in a city like Chicago or anywhere else. We are dealing with only one phase of this problem, and that is commercialized vice. The great cause of commercialized vice, as we see it, is threefold: (1) undeveloped mentality; 80 per cent. of women in prostitution are subnormal; (2) overdeveloped animalism on the part of men, and (3) that avarice which commercializes these two weaknesses of human nature. So long as men and women make money out of this business—and it is a large commercialized business in Chicago today—we are not going to get far in solving this problem. The Committee of Fifteen aims to destroy the profitable business of prostitution. If for no other reason than for the promotion of the public health, prostitution should be suppressed.

Dr. A. W. Stillians, Chicago: In the past our failure has been to convince the patient that it is necessary for him to come back. We have also failed to disabuse his mind of the suspicion that if the physician wanted him to come back it was from some ulterior motive. The social service worker has time to acquire the confidence of the patient and power over him. Soon after the establishment of social service in the county hospital it was recognized that an evening clinic was needed; that there were many patients who could not get to the day clinics, because of their work and the danger of losing their positions. At the request of Mrs. Ira Couch Wood, of the Illinois Training School for Nurses, an evening pay clinic for skin diseases was established. Lately it has kept open two nights a week. The average attendance has been seven patients an evening, and there have been forty-nine cases since June. These forty-nine patients made 192 visits. Only eight patients made less than five visits; seventeen made more than five. A large proportion of them, of syphilis, are clinically free and Wassermann free. The urologic department of the clinic has been open only a short time, but has had twelve cases, with thirty visits. We make moderate charges—$1 for consultation and medicine. We found that was unjust because some required expensive medicines. Now we charge 50 cents for consultation and a little over the wholesale cost of the drugs. For salvarsan we charge something over the wholesale cost of the drug. The Wassermann reaction costs $1, and the other laboratory examinations are made free. Our financial report so far is not very good because at first we treated a good many free. We treated sixty-two without recompense, but this is unnecessary, in our experience. There are a few who are working at a wage insufficient to take care of them and their dependents, and we are glad to treat them. We got far enough in October to feel that we could pay the physicians. This I believe will have much to do with making efficient service, as many young men of high caliber and ability are willing to go into the work who would not otherwise feel able to do so.

Mr. Arthur B. Farwell, Chicago: It is all right to take care of women and men diseased, but it is a great deal better to prevent them from being diseased. I speak from an experience of nearly fifty years in this work, and to me, in any of these questions the greatest power is religion; second, education; third, agitation, and fourth, the law

Dr. Clara P. Seippel, Chicago: I should like to mention what Chicago is doing for venereally diseased children. Chicago has the only institution in the world, so far as I know, that cares for and educates these children while under treatment. What Chicago should do for these children is also a question that I think will develop along with these other problems. In 1911, in connection with the general welfare exhibit, Dr. Grace Meigs and I made a survey of twelve leading hospitals and dispensaries, and were amazed to learn that 1,000 little girls came there annually afflicted with vulvovaginitis. This problem will have to be considered with the venereally diseased persons, and it will be necessary for the state to provide for them.

Dr. Mary G. McEwen, Chicago: The General Federation of Women's Clubs is engaged in a nation-wide campaign along this line. At the last meeting of the Federation in New York, the only resolution endorsed by the federation was one authorizing all clubs in New York to cooperate with boards of health and other agencies to secure adequate facilities for the diagnosis and treatment of venereal diseases, and at present a nation-wide campaign is in progress asking each club to arouse interest in the subject, passing out leaflets, making surveys of local conditions, a follow-up program, and devising ways and means to make it practical in their own community; so that in every club in the nation they will be looking toward Chicago to find what a big city should do, and then they will apply it to the smaller cities.

Dr. Charles S. Bacon, Chicago: I should like to ask Dr. Pusey in his closing discussion to tell us whether he thinks agencies now existing, the dispensaries now handling this work, are probably sufficient satisfactorily to meet the situation; or would it be desirable for the municipality, or the county, to undertake to establish dispensaries and institutions for the handling of this question, just as they have for the handling of the tuberculosis question?

Dr. Edward A. Fischkin, Chicago: It was the expression in Berlin of the German National Society for the Suppression of Venereal Diseases about three years ago that neither character, religion nor anything else would eradicate human passion. The only thing that is feasible is to attempt to eradicate the disease. Preventive medicine has succeeded in many other fields. Dr. Pusey has omitted to pay attention to the possibility of curing the disease by the large army of physicians. Medical armies are not cured in dispensaries, but the diseases of society are taken care of by the army of physicians outside the dispensaries, and if we want to eradicate the venereal diseases, the patients must have the chance to be treated by the great army of medical men. The dispensaries in Chicago, as we have seen, take care of only 8,000, while according to the figures given by Dr. Pusey there must be at least 50,000 afflicted. We physicians who have somewhat more chance to deal with these diseases see a large number of patients who are unable to pay. It will be of advantage in gaining our point if all possible agencies carry propaganda to the workingman and others to induce them to get over their disease. There are larger facilities than those of the hospitals and dispensaries; there are the aid societies of the workingmen, the insurance societies, that would carry propaganda to them. In Berlin that was the first effort to carry propaganda. These persons should not be treated as outcasts. I think these agencies are of greater benefit than all the dispensaries and hospitals which the community can establish.

Dr. Bertha Van Hoosen, Chicago: I believe the establishment of more and more dispensaries will do little toward the eradication of gonorrhea. If we would tell women that they have gonorrhea, whether innocently or otherwise, and that it is going to destroy their sexual organs, and take it seriously and put them in a hospital and treat them in a careful, conscientious way, we would accomplish something.

Dr. William A. Pusey, Chicago: In answer to Dr. Bacon, I do not think present hospital and dispensary facilities are nearly adequate to handle all cases; but I do think that the first step in a practical way would be to improve present services and imbue them with the importance of the sanitary work they have to do. I think a desirable thing to do would be to have established one hospital in the down-town district, not only for serving that district, but as an object lesson.

With regard to Dr. Van Hoosen's remarks, to take it seriously, I do not think that any one who talked tonight failed to consider the seriousness of gonorrhea. I challenge her statement that it is necessary to take these patients into the hospital. It is ideal, but we are dealing with world and not with Utopia. They can be handled on their feet, and we can handle the problem better practically in that way.

One point Dr. Bremerman brought out. I would like to have drug clerks prevented from treating syphilis and gonorrhea. I sympathize with Dr. Blount's and Dr. Yarros' ideas, but I was asked to talk on a medical topic. I am just as interested in seeing people happy and comfortable as they are. I do not think we can wait for a social revolution before tackling venereal diseases. I have a feeling of regret when the moral issue is raised. Of course it is a moral issue. The discussion tonight was on a disease that is mixed up with a moral question, but we are dealing with disease and it can be handled as disease, and unless so handled we shall never get anywhere. We cannot control the sexual appetite. We can reach a group like this, of educated people, but not the submerged tenth, and they are the real menace. We must handle it as a matter of disease. Education and religion will reach a certain number, and I am interested in doing that to as great an extent as possible, but I am convinced that we must tackle it as a physical proposition. The problem goes back to Adam. The sexual appetite is not an instinct; it is one of the fundamental appetites of man, and sexual contact can be controlled only within moderate limits. The sexual appetite in the intelligent, the careful, the conscientious can be controlled and restrained. It is a biologic function that cannot be restrained beyond certain limits, and we have got to deal with venereal diseases as diseases. I repeat that I am ready to support all efforts for the betterment of mankind and improve the moral status, but we must not forget that man is man—and I mean the woman too—and possesses fundamental instincts that cannot be gotten away from.

What this organization can do is this: It can make a survey. I should like to see that done; we can make efforts to better and increase the provisions for taking care of the venereally affected. We shall secure benefit every time we establish a well equipped, well manned dispensary for that purpose. Dispensaries such as outlined tonight will do inestimable good. They will not eradicate the disease. I shall not live to see that, nor will some of the younger; but in time venereal diseases can be controlled just as definitely as yellow fever. The problem is simpler than that of tuberculosis, and morally it is like yellow fever, and it is amenable to sanitary handling. It was a pleasure to hear what Dr. Ormsby is doing, and Dr. Stillians. It is a revolution to hear about social service work being done in venereal disease.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

December, 1916, XVIII, No. 6

1 *Acidosis in Acute and Chronic Disease. C. Frothingham, Jr., Boston.—p. 717.

2 Sensory Disturbances of Cerebral Origin. A. Gordon, Philadelphia.—p. 733.

3 *Action of Various Female Remedies on Excised Intestine of Rabbit. W. R. Delzell, G. E. Burman and J. D. Pilcher, Omaha.—p. 752.

4 Case of Intermittent Complete Dissociation of Auricles and Ventricles Presenting Unusual Features. J. D. Heard and A. H. Colwell, Pittsburgh.—p. 758.

5 *Origin and Conduction of Cardiac Impulse. J. A. E. Eyster and W. J. Meek, Madison, Wis.—p. 775.

6 *Metabolism Study of Goiter; Effect of Thyroid and Thymus Treatment. J. O. Halverson, O. Bergeim and P. B. Hawk, Philadelphia.—p. 800.

7 *Relation of Changes in Form of Ventricular Complex of Electrocardiogram to Functional Changes in Heart. G. C. Robinson, St. Louis.—p. 830.

8 *Study of Low Blood Pressures Not Associated with Trauma or Hemorrhage. J. P. Simonds, Chicago.—p. 848.

1. **Acidosis in Acute and Chronic Disease.**—From his studies Frothingham thinks it fair to conclude that the study of the hydrogen-ion concentration in the urine is not reliable as an index of acidosis; that evidence of acidosis appears at times in certain diseases, while in other diseases no evidence of it is found. Those diseases which showed an acidosis at times by some of these tests are diabetes, chronic nephritis, pneumonia, acute articular rheumatism and several acute febrile conditions in the miscellaneous group. Cases of exophthalmic goiter, epilepsy, syphilis, chronic cardiac disease, subacute nephritis, lung abscess, and many in the miscellaneous group distinctly did not show any evidence of acidosis by these tests. The results in the cases of primary anemia, gastric cancer, Addison's disease, and cirrhosis of the liver were not so clearly defined and in some of the tests suggested a slight acidosis. It is evident from these tests that the acidosis found in diabetes is due to different causes, in part at least, from those that produce it in other conditions. It also seems likely that the acidosis met with in different diseases is due to various causes, since the response to these tests varies somewhat in the different conditions. Of these tests, either the estimation of the carbon dioxid tension in the alveolar air or the so-called soda tolerance test showed variation from the normal in all the cases of acidosis. They also seem to be of value in detecting the degree of acidosis.

3. **Action of Female Remedies on Excised Intestine.**—The results of this work indicate that the members of the group of female remedies that act on strips of uterus exhibit practically an identical action on strips of intestine, both in manner and degree of action. The other drugs of the group have no effect on either uterus or intestine. This shows that they in no sense act specifically on the uterus. The following depressed the intestinal strips actively in the concentrations used: Jamaica dogwood, pulsatilla, unicorn root and figwort; while valerian (the oil is very depressant) and lady's-slipper are less active; and skullcap, wild yam, liferoot and false unicorn depress very slightly. The following are practically devoid of action: blessed thistle, cramp bark, maple bark, black haw, passion flower, motherwort and squaw vine. They have no effect on the smooth muscle of arteries in rather concentrated solutions.

5. **Origin and Conduction of Cardiac Impulse.**—Eyster and Meek found that in the dog's heart the cardiac impulse, arising within the upper part of the sino-auricular node, is conducted to the right auricle and to the auriculoventricular node by two separate paths. The former is a diffuse path represented by the contact of the right auricle with the node. The latter path is either also diffuse in nature, involving connections above, below and on the intercaval borders of the node, or there are numerous possible paths offering varying degrees of resistance to the passage of the impulse.

6. **Metabolism Study of Goiter.**—A study was made of the metabolism of nitrogen, phosphorus, sulphur, calcium and magnesium on a patient with exophthalmic goiter, with apparently a slight hypothyroidism, and responding readily to treatment. The study was made in five periods of five days each, including periods of thyroid and thymus treatment. In the preliminary period without treatment a marked disturbance of metabolism was noted, with pronounced losses of nitrogen, phosphorus, and magnesium and a practical balance of calcium and sulphur. Thyroid treatment markedly stimulated the metabolism of all elements determined, this stimulation continuing long after treatment was stopped. Considerable retention of all elements was brought about, the maximum effect being reached sooner in the case of calcium and magnesium than in the case of nitrogen, sulphur and phosphorus. The effect of thymus administration on the metabolism was less marked than that of the thyroid, but appeared to be distinct. In the thymus period the retention of all elements was depressed. When thymus administration ceased, the rate of retention for all elements immediately increased. Thus thymus treatment appeared to depress the stimulating effect of the thyroid on metabolism, which supports the view of a possible antagonistic action of these glands, such as has been suggested by others on the basis of indirect evidence. The administration of thyroid caused diuresis immediately. Thymus treatment had the opposite effect, leading to a retention of water, with marked decrease in urine volumes on constant water ingestion. The weight of the patient decreased on thyroid treatment and increased after withdrawal and on thymus administration. Following thyroid treatment there was a progressive decrease in urinary indican excretion. This may indicate lessened intestinal putrefaction.

7. **Changes in Form of Ventricular Complex.**—A series of cases is reported which yielded electrocardiograms showing abnormal ventricular complexes. These abnormalities consist in changes in the initial portion of the complexes, the Q, R, S group, and differ from those yielded by contractions caused by ectopic stimuli and from those changes which occur with bundle-branch block. These observations are taken by Robinson as evidence for the belief that in cases in which the ventricular complexes constantly show certain abnormal forms, there are functional changes in the heart which prevent the normal recovery of intraventricular conduction during diastole. It is shown that changes in form of the ventricular portions of the electrocardiogram may occur synchronously with functional changes in the heart, and evidence is offered for the belief that certain abnormalities in the form of the electrocardiogram indicate functional derangement of the ventricles.

8. **Artificial Respiration and Low Blood Pressure.**—It is suggested by Simonds that in cases of shock in man, associated with low blood pressure not due to hemorrhage, the artificial production of dyspnea or the voluntary increase of the rate and depth of respiration by the patient may lead to improvement.

Arkansas Medical Society Journal, Little Rock

December, 1916, XIII, No. 7

9 *Case of Splenectomy for Pernicious Anemia. W. F. Smith, Little Rock.—p. 131.
10 Mental and Nervous Effect of General Disease. W. M. McRae, Little Rock.—p. 137.

9. **Splenectomy for Pernicious Anemia.**—Smith's case was one of pernicious anemia with a disseminated sclerosis which he believes to be due to the pernicious anemia. The patient's mental condition was an infection exhaustion psychosis. The neurology is that of a disseminated sclerosis due to an impoverished blood stream, there being an involvement of the lower motor neurons, and there would probably be found in the motor tracts of the cords sclerotic patches. The patient's present mental condition seems to be normal His disposition is happy and his outlook optimistic. His physical condition has improved to the extent that he is able to walk around with the aid of crutches.

Bulletin of Medical and Chirurgical Faculty of Maryland

December, 1916, IX, No. 6

11 Alimentary Dilatation; with Especial Regard to Atony. F. B. Turck, New York.—p. 84.

Canadian Medical Association Journal, Toronto

December, 1916, VI, No. 12

12 Gunshot Wounds of Present War. E. J. Williams.—p. 1057.
13 Internal Secretions: A Review. J. B. Collip, Edmonton.—p. 1063.
14 Appendicitis. M. O. Klotz, Ottawa.—p. 1070.
15 Earlier Diagnosis of Pulmonary Tuberculosis. H. A. Farris, St. John, New Brunswick.—p. 1083.
16 Special Work in Field Ambulance. P. G. Bell.—p. 1091.
17 Case of Shell Shock. E. Ryan.—p. 1095.
18 *Foreign Body in Tumor of Anterior Abdominal Wall. C. K. P. Henry, Montreal.—p. 1100.
19 Pyosalpinx Complicating Ectopic Gestation. J. R. Fraser, Montreal.—p. 1101.

18. **Foreign Body in Tumor of Anterior Abdominal Wall.**—Save for a tumor the size of a hen's egg, just below and external to the umbilicus, the examination of the abdomen in Henry's case was negative. The mass was ill defined but was clearly in the abdominal wall, attached to and movable with the contractions of the right rectus muscle. White blood cells were 9,600, red blood cells, 6,300,000; there was no occult blood in the stools and the systems were normal. The mass was considered to be a tumor arising from the rectus sheath, likely a fibroma. On attempting to excise the growth, it was found softer than expected and was torn through; a soft center of inflammatory tissue was exposed and, sticking upright in this, a pointed object was seen which was pulled out with artery forceps. This was a fish bone, about 1½ inches long, the sharp point nearer the skin surface and lying perpendicular to the plane of the abdominal wall. The mass of inflammatory tissue was dissected free and down through the rectus sheath and muscle to the peritoneum, a portion of which had to be removed with the tumor. Underlying this piece of peritoneum was adherent omentum which had to be tied off. At no point was there any adherent bowel and no hernia existed.

Colorado Medicine, Denver

December, 1916, XIII, No. 12

20 Library and Its Meaning. L. Farrand, Boulder.—p. 363.
21 Greetings from Surgeon General's Library. F. H. Garrison, Washington, D. C.—p. 366.
22 Fasting. C. D. Spivak, Denver.—p. 368.
23 Diagnosis of Menstrual Reflux Through Tubes. J. N. Hall, Denver.—p. 373.
24 Infections of Seminal Vesicles. W. M. Spitzer, Denver.—p. 376.
25 Two Years' Experience with Much's Tuberculin in Treatment of Tuberculosis. S. Simon, Denver.—p. 381.

Georgia Medical Association Journal, Augusta

December, 1916, VI, No. 8

26 *Diseased Conditions of Salivary Glands and Their Ducts. D. Roy, Atlanta.—p. 143.
27 Ischemic Myositis (Volkman's Contracture); Report of Two Cases. C. C. Harrold, Macon.—p. 149.
28 *Ideal Operation for Retrodisplacements of Uterus. W. W. Battey, Jr., Augusta.—p. 152.
29 Case of Gunshot Wound of Spinal Cord; Laminectomy, Removal of Bullet, Recovery. W. L. Cooke, Columbus.—p. 155.
30 Conservation of Tissue; Restoration of Function, Not Removal of Organs, Should Be Aim of Surgery. F. W. McRae, Atlanta.—p. 158.

26. Abstracted in THE JOURNAL, May 6, 1916, p. 1491.

28. **Operation for Retrodisplacements of Uterus.**—In the method described by Battey the round ligament is caught in a pair of forceps at a point which when drawn up seems to take up the laxity, and made taut. With a needle threaded with fine linen the proximal and distal ends are stitched together. This gives us a loop of the round ligament. A second and third stitch one-half inch apart toward the end of the loop are introduced through both sides of the ligament and tied, the third stitch being left long. With a pair of curved forceps the internal ring is entered and the peritoneal investment of the round ligament is dessected downward and the peritoneum is punctured at a point as near as possible to the first stitch in the ligament. The linen stitch left long is caught in forceps and the ligament is pulled through the artificial opening. With No. 1 chromic catgut the ligament is sutured to the under surface of fascia of the rectus by interrupted sutures. The operation is, in a measure, extraperitoneal, and the author says there is no likelihood of an intestinal obstruction taking place.

Illinois Medical Journal, Chicago

December, 1916, XXX, No. 6

31 Prevention of Disability Following Fracture of Os Calcis. C. R. G. Forrester, Chicago.—p. 385.
32 Clinical Study of Lobar Pneumonia. F. Tice and R. F. Herndon, Chicago.—p. 388.
33 Community Nursing. H. K. Scatliff, Elgin.—p. 394.
34 Carriers of Gonococcus. E. H. Eastman, Chicago.—p. 396.
35 Surgical Treatment of Acute Epididymitis. C. M. McKenna, Chicago.—p. 398.
36 Seminal Vesiculitis. Indications for Operative Interference; Report of Case. E. W. White, Chicago.—p. 400.
37 Restricted Milk Diet for Removal of Dropsies. N. S. Davis, Chicago.—p. 404.
38 Nephritic Crisis. L. M. Bowes, Chicago.—p. 408.
39 Case of Bichlorid of Mercury Poisoning Successfully Treated by Sodium Acetate and Sodium Bicarbonate. M. S. Pedott, Chicago.—p. 410.
40 Infantile Spinal Paralysis. L. H. Johnson, Casey.—p. 411.
41 Intestinal Teniasis in Chicago. W. C. Becker, Chicago.—p. 416.

Iowa State Medical Society Journal, Des Moines

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42 Then and Now. H. H. Clark, McGregor.—p. 497.
43 Dental Foci of Infection, Their Cause and Prevention. E. A. Schrader, Independence.—p. 501.
44 Bronchial Asthma. T. R. Jackson, Albia.—p. 509.
45 Postoperative Management of Surgical Cases. C. J. Rowman, Iowa City.—p. 511.
46 Diagnosis of Gastric and Duodenal Ulcer. E. A. Merritt, Council Bluffs.—p. 517.
47 Reflexes of Appendix. H. H. Ennis, Baxter.—p. 520.

Journal of Biological Chemistry, Baltimore

December, 1916, XXVIII, No. 1

48 New Constituents of Milk. Distribution of Phosphatides. T. B. Osborne and A. J. Wakeman, New Haven, Conn.—p. 1.
49 *Antigenic Properties of Beta-Nucleoproteins. H. G. Wells, Chicago.—p. 11.
50 Changes in Urea Content of Blood and Tissues on Exclusive Oat Diet. H. B. Lewis and W. G. Karr, Urbana, Ill.—p. 17.
51 *Action of Sodium Citrate and Its Decomposition in Body. W. Salant and L. E. Wise, Washington, D. C.—p. 27.
52 *Kafirin, an Alcohol Soluble Protein from Kafir, Andropogon Sorghum. C. O. Johns and J. F. Brewster, Washington, D. C.—p. 59.
53 *Some Proteins from Jack Bean, Canavalia Ensiformis. D. B. Jones and C. O. Johns, Washington, D. C.—p. 67.
54 *Proteins of Peanut, Arachis Hypogea. Globulins Arachin and Conarachin. C. O. Johns and D. B. Jones, Washington, D. C.—p. 77.
55 Modified Benedict and Hitchcock Uric Acid Standard Solution. L. J. Curtman and M. Freed, New York.—p. 89.
56 Occurrence and Physiologic Significance of Flavone Derivatives in Plants. K. Shibata, I. Nagai and M. Kishida, Tokyo.—p. 93.
57 Protein Copper Compounds. T. B. Osborne and C. S. Leavenworth, New Haven, Conn.—p. 109.

58 *Chinese Preserved Eggs—Pidan. K. Blunt and C. C. Wang, Chicago.—p. 125.
59 Composition, Especially Hydrogen Ion Concentration of Sea Water in Relation to Marine Organisms. J. F. McClendon, Minneapolis.—p. 135.
60 *Dietary Deficiencies of Maize Kernel. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 153.
61 Perfusion Pump. F. B Kingsburg, Minneapolis.—p. 167.
62 Mechanism of Diffusion of Electrolytes Through Membranes of Living Cells. J. Loeb, New York.—p. 175.
63 Elimination of Malates After Subcutaneous Injection of Sodium Malate. L. E. Wise, Washington, D. C.—p. 185.
64 *Relation Between Water and Glucose Concentration of Blood. A. Hiller and H. O. Mosenthal, Baltimore.—p. 197.
65 Folin and Denis Method of Nitrogen Determinations by Direct Nesslerization and Its Application to Spinal Fluids. R. L. Kahn, New York.—p. 203.
66 Effects of Feeding Proteins of Wheat Kernel at Different Planes of Intake. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 211.
67 *Urinary and Fecal Output of Calcium in Normal Men. C. F. Nelson and J. L. Williams, Lawrence, Kan.—p. 231.
68 *Calcium and Magnesium Content of Normal Urine. C. F. Nelson and W. E. Burns, Lawrence, Kan.—p. 237.
69 Influence of Carbohydrates on Accuracy of Van Slyke Method in Hydrolysis of Casein. E. B. Hart and B. Sure, Madison, Wis.—p. 241.
70 *Method for Measurement of Urea Excreting Function of Kidneys. T. Addis and C. K. Watanabe, San Francisco.—p. 251.
71 *Pancreatic Diabetes in Dog. Influence of Pylorus Exclusion and of Gastrectomy on Effects of Pancreatectomy. J. R. Murlin and J. E. Sweet, Philadelphia.—p. 261.
72 *Influence of Sodium Carbonate on Human Diabetes. J. R. Murlin and L. F. Craver, New York.—p. 289.
73 Relationship Between Oxidase Activity of Plant Juices and Their Hydrogen Ion Concentration. H. H. Bunzell, Washington, D. C.—p. 315.
74 Hitherto Neglected Factor Affecting Determination of Minute Quantities of Creatinin. A. Hunter and W. R. Campbell, Toronto, Canada.—p. 335.

49. **Antigenic Properties of Beta-Nucleoproteins.**—The so-called beta-nucleoproteins obtained from various tissues by extracting with boiling water, Wells says, possess definite antigenic properties demonstrable by the anaphylaxis reaction. As there are but few known proteins that retain their antigenic capacity after boiling, this observation may indicate something as to the nature of the protein complex of beta-nucleoproteins. The proteins of alpha-nucleoproteins are, on the contrary, very susceptible to chemical and physical changes. Beta-nucleoproteins from beef pancreas, beef spleen, and pig pancreas, seem to be similar but not identical, so far as can be determined by the anaphylaxis reaction.

51. **Action of Sodium Citrate; Its Decomposition in Body.**—Salant and Wise found that sodium citrate disappears rapidly from the circulation after intravenous injection into cats and dogs, but this is retarded when the doses are repeated. Large doses of sodium citrate when given by the mouth render the urine alkaline. Only negligible quantities are sometimes found in the urine and in the blood after feeding sodium citrate. The toxicity of sodium citrate when given intravenously depends on the rate of injection, the fatal dose varying between 0.4 and 1.6 gm. per kilo (approximately), but about 70 mg. may produce symptoms. Only large amounts of citrate are toxic when ingested. Large doses given subcutaneously showed cumulative action. No citrate was found in the urine when doses under 0.5 gm. per kilo were given intravenously. The toxicity of sodium citrate depends on the rate of its oxidation in the body. Sodium citrate mixed with blood in the proportion of 1:100 inhibited coagulation for four days when kept at a temperature of 10 C.

52. **Kafirin, Alcohol Soluble Protein from Kafir, Andropogon Sorghum.**—A new alcohol soluble protein has been isolated by Johns and Brewster from kafir seeds, which constitutes more than one-half the protein in the seed. This protein has been named kafirin. Kafirin resembles zein in its ultimate composition, but is different in physical properties. It contains tryptophan and apparently lysin, both of which are lacking in zein. An analysis of kafirin by the Van Slyke method shows quantitative differences between kafirin and zein.

53. **Proteins from Jack Bean.**—Two globulins, canavalin and concanavalin, and an albumin of the legumelin type have been isolated by Jones and Johns from the jack bean. The distribution of nitrogen in canavalin and in the albumin has been determined.

54. **Proteins of Peanut, Arachis Hypogea.**—Two globulins have been isolated by Johns and Jones from the peanut. These have been named arachin and conarachin. Arachin contains 0.4 and conarachin 1.09 per cent. of sulphur. Arachin gave 4.96 and conarachin 6.55 per cent. of basic nitrogen, the latter being the highest percentage of basic nitrogen recorded for any seed protein. From the results obtained it seems probable that peanut press cake will prove to be highly effective in supplementing food products made from cereals and other seeds whose proteins are deficient in the basic amino-acids. Feeding experiments are already in progress to determine the nutritive value of combinations of peanut proteins with other proteins obtained from the more extensively used seeds.

58. **Chinese Preserved Eggs—Pidan.**—This paper gives the results of analysis of a kind of Chinese preserved eggs called pidan. The Chinese and other Oriental people preserve eggs, not necessarily to keep them unchanged, but to make various new substances—a process analogous to the production of cheese from milk. The products have been little studied and the literature on the subject is therefore limited. The following changes have been shown to take place during the formation of pidan from fresh ducks' eggs: (1) water in large quantities has been transferred from the white to the yolk, and water has been lost from the white to the outside; (2) the ash and the alkalinity of ash have increased in a way similar to that of other eggs preserved in alkali; (3) the ether extract has decreased and its acidity is high; (4) both total and lecithin phosphorus have decreased; (5) the noncoagulable nitrogen has increased and also the ammoniacal nitrogen, the latter to an extraordinary degree, and the amino-nitrogen is high. From these changes the conclusion is drawn that decomposition of the egg protein and of the phospholipoids has taken place. The production of pidan from the fresh eggs is probably brought about through the agency of the alkali, bacteria and enzymes.

60. **Dietary Deficiencies of Maize Kernel.**—The results of a systematic series of experiments with ground maize, in which single or multiple additions of purified food substances were made, are presented by the authors. The proteins of the maize kernel contain all the amino-acids essentials for growth, but the proportions of certain of them are such that they are not utilizable to a high degree as the sole source of protein. The maize kernel contains both the unidentified dietary factors, the fat soluble A and water soluble B. The former is present in amount too small for the maintenance of growth at the maximum rate in rats, and regardless of how satisfactorily the maize kernel is supplemented in other respects, failure of perfect nutrition will supervene within a few months unless some foodstuff containing the fat soluble A (butter fat, certain other fats, leaves of plants, etc.) is supplied. Maize contains an abundance of the unidentified dietary factor, the water soluble B. The inorganic content of the corn kernel is not of a character suitable for the promotion of growth. The addition of purified protein and salts or of butter fat and salts to the maize kernel fails to induce physiologic well-being throughout the life of the animal. The addition of protein and butter fat without salts forms a poorer food mixture than the pairs of additions first named.

64. **Relation Between Water and Glucose of Blood.**—Hiller and Mosenthal state that the water concentration of the blood in the normal individual often shows a variation of about 1 per cent. during the course of a few minutes. There is no assignable cause for this inconstancy. Raising or lowering the sugar content of the blood does not give rise to a corresponding change in its concentration. If glycemia plays a part in controlling the water content of the blood, this is so slight in its effect that other factors, such as polyuria, etc., nullify its results, except in rare instances.

67. **Calcium in Normal Men.**—The average daily output of calcium in urine and feces varied in the cases studied by

Nelson and Williams from 0.420 to 1.016 gm. Since the individuals examined were apparently in the best of health, of ages from 13 to 70 years, and furthermore, since they were all on absolutely unrestricted diets, guided solely by appetite, the results obtained represent normal values in calcium excretion. From subsequent data from the same individuals covering four additional five-day periods during an interval of more than six months, these differences remained practically within the same limits. The daily combined urinary and fecal excretion of calcium, on unrestricted diets, may thus be said to vary roughly from 15 to 25 per cent.

68. **Calcium and Magnesium Content of Normal Urine.**—The average daily output of calcium and magnesium (calculated as oxid) for five-day periods varied in the cases studied by Nelson and Burns from 0.1685 to 0.1468 gm. of calcium and 0.1912 to 0.3130 of magnesium. The daily output of calcium and magnesium of twenty-five apparently healthy individuals showed seventeen in which calcium was excreted in larger amounts than magnesium, and eight in which magnesium predominated over calcium. The largest amount of calcium (calculated as oxid) excreted in one day was 0.4875 gm.; magnesium (calculated as oxid), 0.4160 gm. The smallest amount of calcium was 0.0990 gm.; magnesium, 0.1180 gm. Either calcium or magnesium may be excreted by way of the urine in the larger amount, in the normal individual. Whichever element predominates does so constantly, or very nearly so, and seems to be independent of the character of the food ingested.

70. **Urea Excretion.**—Urine and blood were collected simultaneously from rabbits, and the ratio

$$\frac{\text{gm. of urea in one hour's urine}}{\text{gm. of urea in 100 c.c. of blood}}$$

was determined before and after the destruction of one kidney by ligation of its ureter, while the animals were taking similar food and the same amount of water. After the operation there was no decrease in this ratio as compared with the one found under similar conditions before operation, except when urea was injected. The depression of the ratio after the operation when urea was injected is interpreted as indicating that the remaining kidney had less capacity for the excretion of urea than both kidneys before operation. The fact that a depression of the ratio was found only when urea was injected is explained by Addis and Watanabe on the theory that the capacity of the remaining kidney was sufficient to meet ordinary demands, but showed itself defective under the strain of the additional work thrown on it by the urea injection.

71. **Pancreatic Diabetes.**—The results of this study suggest that the internal function of the pancreas may be closely akin to its external function, in that, on the one hand (external), it provides for the complete neutralization of the acid contents of the stomach, thereby protecting the liver in its glycogenic function, and on the other (internal), it somehow preserves the proper concentration of hydrogen ions in the tissues for combustion of glucose.

72. **Effect of Sodium Carbonate in Diabetes.**—Murlin and Craver recommend the normal salt rather than bicarbonate of sodium and are certain it can be used intraduodenally up to 1 per cent. with entire safety. However, if it is kept up too long there is possibility of sloughing. Signs of this were seen in one case, although it was not serious. The figures for blood sugar and specific gravity of the blood prove, they think, conclusively, that there may be a bona fide reduction in the percentage of blood sugar by the alkali independently of any factor of dilution. If this is true, there is little reason to doubt that the alkali may, in man as in the dog, facilitate the actual oxidation of glucose. Five cases were studied.

Journal-Lancet, Minneapolis

December 15, 1916, XXXVI, No. 24

75 *Value of Temporary Cholecystostomy in Gastric Surgery. L. L. McArthur, Chicago.—p. 723.
76 *Technic of Nerve Repair in Traumatic Injuries. J. F. Corbett, Minneapolis.—p. 725.
77 *Actinomycosis; Report of Cases. N. O. Ramstad, Bismarck, N. D. —p. 732.
78 Forceps Operation. R. S. Hart, Turton, S. D.—p. 735.
79 *Subcutaneous Administration of Fresh Human Blood. P. F. Holm, Wells.—p. 738.
80 Arsenobenzol in Syphilis. G. E. Brown, Miles City, Mont.—p. 740.

75. **Value of Temporary Cholecystostomy in Gastric Surgery.**—McArthur claims that in those cases of stomach surgery complicated by the need of biliary fistulae, whether gastro-enterostomies with or without excision of ulcer, resections of the stomach for malignant disease, or resection of ulcer-bearing areas, he has been able to obviate serious complications by the utilization of a temporary biliary fistula made in the normal gallbladder. A double purse-string suture, inverting around a small rubber tube the fundus of the gallbladder, and bringing out the same tube through the abdominal incision or through an appropriately placed stab puncture, he says, complicates the stomach surgery but little more than the making of a stab puncture through the abdominal flank for peritoneal drainage. This has been done for the past two years in a majority of his gastric operations. During the early postoperative hours, the bile being allowed to escape externally, fails to disturb the more or less paretic stomach.

76. Abstracted in The Journal, Nov. 25, 1916, p. 1626.

77. **Actinomycosis.**—The best treatment of actinomycosis in Ramstad's hands has consisted in the removal of the primary focus, and as much of the infected tissue as possible, with prolonged free drainage. Internally iodids were given to the point of saturation, and of late he has given copper sulphate internally and uses a solution of it for the daily dressing of the wounds. The effect of the iodids is increased by giving them intermittently.

79. **Subcutaneous Administration of Fresh Human Blood.**—For several years Holm has injected fresh human blood subcutaneously under various conditions and for different diseases, with apparent benefit. In a case of pernicious anemia, under frequent subcutaneous administration, he has seen the blood picture go from 30 per cent. hemoglobin to 85 per cent., and the red blood cells rise from 1,500,000 to over 4,000,000 in the course of a few months. He says that a fairly large amount of blood (4 to 8 ounces or more) may safely be injected into the subcutaneous tissues, and perfect absorption take place, if ordinary aseptic technic be employed. Blood which apparently is toxic to the patient when used intravenously may be injected subcutaneously without causing any undue reaction, and with apparent benefit. Holm describes the technic he has used in hemorrhage of the newborn, hemorrhage of gastric ulcer, splenomyeloid leukemia and in pernicious anemia.

Kansas Medical Society Journal, Topeka

December, 1916, XVI, No. 12

81 So-Called Chronic Gastro-Intestinal Indigestion. F. C. Boggs, Waverly.—p. 341.
82 Foul Breath Causes Other than Dental Caries. J. H. Johnson, Coffeyville.—p. 343.
83 Minor Emergency Surgery. N. C. Speer, Osawatomie.—p. 348.
84 Acidosis. W. T. Brown, Williamsburg.—p. 350.

Michigan State Medical Society Journal, Grand Rapids

December, 1916, XV, No. 12

85 *Sarcomatous Degeneration of Uterine Fibroids; Report of Eighteen Cases. F. C. Witter, Petoskey.—p. 565.
86 Empyema of Maxillary Sinus or Antrum. C. H. Oakman, Detroit. —p. 572.
87 Recent Methods of Transfusion with Indications and Technic. H. A. Freund and W. D. Mayer, Detroit.—p. 576.
88 *Recent Progress in Treatment of Carcinoma of Uterine Cervix. H. W. Hewitt, Detroit.—p. 578.
89 New Epoch in Practice. C. D. Aaron, Detroit.—p. 583.
90 Mercuric Chlorid Poisoning; Report of Case. L. J. Dretzka, Detroit.—p. 586.
91 Tuberculosis Survey as Seen. J. D. Dunlop, Alpena.—p. 587.

85. Abstracted in The Journal, Sept. 2, 1916, p. 768.
88. Abstracted in The Journal, Sept. 9, 1916, p. 834.

Military Surgeon, Washington, D. C.

December, 1916, XXXIX, No. 6

92 Demography in so Far as it Relates to Vital Statistics of Armies. W. P. Chamberlain, U. S. Army.—p. 583.
93 Army Medical Records. A. G. Wilde, U. S. Army.—p. 591.

94 Control of Venereal Diseases. W. A. Bloedorn, U. S. Army.—p. 599.
95 Experiences with Venereal Diseases at Schofield Barracks. L. C. Mudd, U. S. Army.—p. 608.
96 Treatment of Syphilis of Nervous System. A. S. Clark, New York.—p. 616.
97 Present Status of Blood Extract Coagulants and Blood Transfusion. C. G. Levison, U. S. Army.—p. 625.
98 Another Viewpoint of Our Red Cross Work in Serbia. S. O. Beasley.—p. 634. To be continued.
99 Straddle Trench Cover. D. R. Lucas, New York.—p. 644.
100 Sanitary Field Problems on Miniature Terrain. R. C. Turck, New York.—p. 649.

Nebraska State Medical Journal, Norfolk

November, 1916, I, No. 5

101 Diagnosis of Scarlet Fever. H. M. McClanahan, Omaha.—p. 131.
102 Epidemiology of Scarlet Fever. J. C. Moore, Omaha.—p. 133.
103 Complications of Scarlet Fever. N. Jones, Omaha.—p. 137.
104 What Shall Be Done with Indigent Tuberculous? S. R. Towne, Omaha.—p. 141.
105 Revised Classification of Nervous Diseases of Syphilitic Origin. F. E. Coulter, Omaha.—p. 145.

New York Medical Journal

December 16, 1916, CIV, No. 25

106 Medical Fees Among Primitive Man. J. Wright, Pleasantville.—p. 1173.
107 Anorectal Injuries. S. G. Gant, New York.—p. 1177.
108 Aural Complications of Grippe. E. B. Dench, New York.—p. 1180.
109 Nose and Throat Complications and Sequelae of Grippe. W. L. Culbert, New York.—p. 1182.
110 Removing Faucial Tonsils in Singers. I. W. Voorhees, New York.—p. 1183.
111 Experimental Pathology of Goiter. E. Zueblin, Baltimore.—p. 1186.
112 Infantile Paralysis Treated with Immune Serum. O. H. Petty, Philadelphia.—p. 1190.
113 Compulsory Health Insurance. E. V. Delphey, New York.—p. 1191.
114 Gastric and Duodenal Ulcers. S. Weiss, New York.—p. 1193.

New York State Journal of Medicine

December, 1916, XVI, No. 12

115 *Influence of Syphilitic Infection in Gynecology and Obstetrics. J. W. Bovée, Washington, D. C.—p. 569.
116 Therapy of Bronchial Asthma. W. Freudenthal, New York.—p. 574.
117 Causation and Treatment of Idiopathic, Operative and Postoperative Anorectal Hemorrhage. S. G. Gant, New York.—p. 580.
118 Removal of Tonsil as Prophylactic Measure. H. H. Forbes, New York.—p. 586.
119 Report of Possibly Milk Borne Epidemic of Infantile Paralysis. J. C. Dingman, Spring Valley.—p. 589.
120 Radium in Various Surgical Conditions. J. B. Bissell, New York.—p. 590.
121 *Some Practical Experiences in Medical Inspection in Rural Sections. W. A. Howe, Albany.—p. 593.
122 *Open Air Schoolchild as Type. E. Durney, Buffalo.—p. 595.
123 Health Insurance; Its Relation to Preventive Medicine. B. S. Warren and E. Sydenstricker, Washington, D. C.—p. 597.
124 Compulsory Health Insurance from Point of View of General Practitioner. E. V. Delphey, New York.—p. 601.

115. Abstracted in The Journal, June 24, 1916, p. 2122.

121 and 122. Abstracted in The Journal, June 3, 1916, pp. 1815 and 1816.

Philippine Journal of Science, Manila

May, 1916, XI, No. 3

125 Development of Twins and Other Polyembryos with Special Reference to Four Sets of Duck Twins. E. S. Ruth, Manilla.—p. 109.
126 *Influence of Fresh and Autoclaved Cows' Milk on Development of Neuritis in Animals. R. B. Gibson and I. Concepción, Manila.—p. 119.
127 Blood Pressure Picture of Filipinos. I. Concepción and E. Bulatao, Manila.—p. 135.

126. **Development of Neuritis in Animals.**—The experiments reported on by Gibson and Concepción indicate that the antineuritic vitamin is present in milk in slight amounts only and that the continued feeding of either fresh milk or autoclaved milk to animals (dogs and pigs) without suitable additions to the diet induces certain beriberi symptoms, namely, degeneration of the peripheral nerves, persistent edema and aphonia. There is no evidence that autoclaving the milk for two hours has in any way affected its nutritive value. Not even scorbutic changes have been observed. At the best, the antineuritic powers of the milk are so slight that in infant feeding the diet should be extended as soon as possible. The young of healthy mothers probably come into the world with a reserve supply of the vitamin substances sufficient to tide them over nutritively until the time when, under natural conditions of life, they would begin to eat other foodstuffs.

Southern Medical Journal, Birmingham

December, 1916, IX, No. 12

128 Opportunities and Responsibilities. R. Wilson, Jr., Charleston, S. C.—p. 1029.
129 Teaching and Practice. W. S. Thayer, Baltimore.—p. 1035.
130 *Comparative Study of Kidney Functional Tests. L. J. Desha, J. B. McElroy and B. W. Fontaine, Memphis, Tenn.—p. 1041.
131 *Case of Bichlorid of Mercury Poisoning; Recovery. C. Thorington, Montgomery.—p. 1045.
132 Some Aspects of Southern Mortality. J. A. Hodges, Richmond, Va.—p. 1046.
133 Empiricism in Surgery. J. H. Blackburn, Bowling Green, Ky.—p. 1054.
134 Carrel Method of Wound Sterilization. L. Noland, Birmingham.—p. 1056.
135 Incontinence in Female; Its Prognosis and Treatment. G. A. Wall, Tulsa, Okla.—p. 1062.
136 Alcohol Injections in Trifacial Neuralgia; Report of Cases. S. R. Benedict, Birmingham.—p. 1067.
137 Development of Section and Its Membership. J. W. Jervey, Greenville, S. C.—p. 1071.
138 Double Cavernous Sinus Thrombosis Following Obscure Mastoiditis. W. T. Patton, New Orleans.—p. 1073.

130. **Study of Kidney Functional Tests.**—The nephritic test meal of Hedinger-Schlayer-Mosenthal was used by Desha in thirty-six cases. In general, the results have demonstrated its value in diagnosis and prognosis as found by Mosenthal. The results show a general agreement with the findings from the phenolsulphonephthalein and nonprotein nitrogen determinations. While the test meal gives more information than either of the other two, it does not entirely replace them. Among blood nonprotein nitrogen values higher than 40 mg. per 100 c.c., there is noted an absence of relationship between the magnitude of the value and the prospective fatal determination. The Greenwald modification of the Folin determination of nonprotein nitrogen was used with satisfaction.

131. **Bichlorid of Mercury Poisoning.**—Thorington's patient swallowed one 7½ grain mercuric chlorid tablet. The stomach was immediately washed out with about 3 gallons of water through a stomach tube. The first returning water showed blood. Several eggs were given and were retained. Shock necessitated stimulants. The most interesting feature of the treatment consisted in the large amount of water drunk, much of which was retained and passed through the kidneys. Every twenty minutes he was given a tumblerful until the amount drunk in twenty-four hours was about 3 gallons. Each day the amount of water was lessened, as gastric and cardiac complications arose. However, for several days the patient took from two to three times as much water as he usually consumed in a day. The urine, in spite of the unusual amount passed, showed considerable albumin. There was severe salivation, and the heart was quite irregular both as to rhythm and tone.

Vermont Medicine, Rutland

October, 1916, I, No. 10

139 Pelvic Pain. E. H. Ross, St. Johnsbury.—p. 281.

November, 1916, No. 11

140 Simple Dressings for Simple Fractures. G. W. Bartlett, Bennington.—p. 313.
141 Consideration of Certain Unusual Clinical Features of Cholecystitis and Its Surgical Treatment. E. Eliot, Jr., New York.—p. 318.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bulletin de l'Académie de Médecine, Paris

November 14, 1916, LXXVI, No. 45, pp. 369-378

1 Extra-Articular Removal of Projectile in Condyle of Femur. S. Mercadé.—p. 371.
2 Epidemic Cerebrospinal Meningitis; Twelve Cases. A. Azalbert.—p. 373.
3 Reproduction in the Dog of Generalized Vaccinia. L. Camus.—p. 376.

November 21, No. 46, pp. 379-402

4 Blunders and Injustice in Medical Terms Resulting from Misapprehension of Zoologie and Botanic Nomenclature and from Ignorance of the History of the Biologic Sciences. (Méconnaissance de la nomenclature zoologique et botanique et de l'histoire des sciences biologiques.) R. Blanchard.—p. 380.
5 Elementary Forms of Delirium of Persecution. J. Lépine.—p. 389.
6 *Modifications in Pulse and Arterial Pressure in Soldiers after a Battle. (Modifications du pouls et de la pression artérielle observées chez le soldat au combat.) Briscons and R. Mercier.—p. 391.
7 Cultivation of the Land and Its Productive Capacity to Population Compared in Germany and in France. (De l'insuffisance des productions alimentaires de l'Allemagne; ses causes, ses conséquences.) E. Maurel.—p. 393.

6. **The Pulse and Blood Pressure Under Trauma.**—Briscons and Mercier studied the blood pressure and the pulse in the men brought to the hospital during a recent offensive. They found that men who had been knocked down, but not otherwise apparently directly injured by an explosion, had the pulse and blood pressure affected the same as the wounded men. Those suffering from the effects of the air concussion alone had the pulse accelerated, but the blood pressure was not modified so much as in the first group. On the other hand, men presenting distress and rapid breathing, suggesting organic trouble, but in reality merely the effect of emotional stress, had pulse and blood pressure approximately normal notwithstanding their impressive clinical appearance. It thus proved possible to sift out at once the cases of actual organic injury.

Grèce Médicale, Athens

1916, XVIII, No. 7-8, pp. 13-16. French Supplement to Iatriki Proodos

8 Recklinghausen's Disease Localizing in the Eyelids. A. Gabrielides.—p. 13.

No. 15-16, pp. 29-32

9 Treatment of Congenital Dislocation of the Hip Joint. (Sur le traitement des luxations congénitales de la hanche.) P. Nicolaidis.—p. 29. Concluded in No. 17.

Journal de Médecine de Bordeaux

November, 1916, LXXXVII, No. 13, pp. 251-268

10 *Inherited Syphilis Masquerading as Tuberculous Glandular Lesions. (Lésions dites "bacillaires" et syphilis héréditaire.) J. Vergely.—p. 251.
11 *Treatment by the Nonspecialist of Ear, Nose and Throat Affections. (Médecine générale et oto-rhino-laryngologie.) Got.—p. 254.

10. **Bacillary Glandular Affections and Inherited Syphilis.**—Vergely relates that among the soldiers sent to recuperate at the hospital in his charge on the seashore, there were about a hundred who came labeled *adénite bacillaire.* The glands involved were in order of frequency after the neck, in the groin, axilla, peritoneum and mediastinum. Some had been suppurating for months. He examined teeth, eyes and ears for stigmata of inherited syphilis, and asked if there was tuberculosis in the family, whether other children had died young, and whether the patient had ever had syphilis. When anything could be found to suspect syphilis he instituted very vigorous specific treatment for it. The mercury was pushed almost to the limit, for a month or two, and the long rebellious glandular lesions subsided promptly. He comments that the domain of syphilis is being enlarged more and more every day, and this is fortunate, as syphilis is curable. Even when tuberculosis or other affections are associated with it, getting the syphilis out of the way is important progress toward the cure of the whole.

11. **General Medicine and Otorhinolaryngology.**—Got's long communication is in response to an official request of the military authorities for information on the ear, nose and throat affections that can be treated by the nonspecialist and those that must be sent to specialist headquarters, and the time when this should be delayed no longer. The address was presented at a conference of army medical men, nonspecialists.

Lyon Médical, Lyons

November, 1916, CXXV, No. 11, pp. 465-512

12 The Chemical Industry in France and in Germany.—P. Garnal.—p. 465. Continued.
13 *Address to Returning Medical Prisoners of War. E. Weill.—p. 502.

13. **Address at the Arrival of Repatriated Medical Prisoners of War.**—Weill was commissioned to deliver the address of welcome, Oct. 6, 1916, to a band of French physicians just released from captivity in Germany, Lyons being their first stop after entering France by way of Switzerland. They had been shut off for months or years from all news of medical matters in France, and Weill presented the medical history for this period. Lauding preventive vaccination, he related that not a single case of smallpox has been known in the French armies, and since vaccines against both typhoid and paratyphoid have been used, these diseases have been practically conquered. It has been found that curative serums and surgery give better results the earlier they are applied, so the laboratories for diagnosis, the operating rooms, etc., in short the whole medical equipment and personnel have crept closer and closer to the firing line until the wounded now get at once, as if by magic, the benefits of the most recent advances in science. The mortality from skull wounds has thus been reduced to 25 per cent.; of abdominal wounds to 45 per cent. from 95 per cent.

Paris Médical

November 18, 1916, VI, No. 47, pp. 437-452

14 *Examination of Abdomen and Tongue in the Typhoid Group. L. MacAuliffe.—p. 437.
15 *Suspension in Treatment of Fractures. Cattier.—p. 439.
16 *Extraperitoneal War Wounds of the Colons. M. Stassen and J. Voncken.—p. 444.
17 Telephone Device for Locating Metal Foreign Bodies in the Tissues. (Le repérage immédiat des projectiles de guerre.) G. Houzel.—p. 448.

14. **Examination of the Abdomen and Tongue in Typhoid Group.**—MacAuliffe describes in detail the findings on palpation and percussion of the abdomen throughout the course of typhoid and paratyphoid and also the aspect of the tongue, as he has recorded them during the epidemics of these diseases since the war began. He says that his data supplement the description in the textbooks. The tension of the abdominal walls is most pronounced in the region of the cecum from the very first, and persists longest here. When perforation or hemorrhage is impending the abdominal wall stiffens. Recovery cannot be counted on till the caliber of all the parts of the intestines accessible to palpation is regular once more.

15. **Suspension in Treatment of Fractures.**—Cattier gives an illustrated description of various devices for this purpose as he saw the method applied "avec succès et magistralement" in the American hospitals.

16. **Extraperitoneal Wounds of the Colons.**—Stassen and Voncken remark that the symptoms from a mere wound of the abdominal wall may be as stormy at first as from injury of viscera. A grazing wound may cause contusion of the intestinal wall with an eschar, and as this drops off the mischief may be as great as from a primary injury. Extraperitoneal injury of the large intestine may entail gaseous crepitation in and around the injured area, with rapid development of a fecal phlegmon. If the projectile is loose in the lumen of the intestine, it may move along and give misleading shadows at intervals of only a few minutes while, left alone, the projectile may be passed in the stools within a few days. They reiterate that extraperitoneal wounds of the abdomen should not be included in the statistics of other abdominal wounds, as they are in a class apart. Their only gravity is from a subperitoneal phlegmon, and an early mechanical cleaning out of the region wards this off, but the symptoms may be deceptively like those of more serious injuries. The disappearance of the area of dulness over the liver, regarded by many as an infallible sign of perforation of the intestine and escape of gas into the peritoneum, has lost its diagnostic value as it may occur with these extraperitoneal wounds of the colon. It seems to be connected with irritation of the nerves of the peritoneum. The same might be said of all the classic "abdominal signs." Only the intensity of the symptoms, the relations between them and the clinical aspect as a whole, in connection with supervision every minute of the beat and force of the pulse, enable us to distinguish between the harmless cases and those requiring a laparotomy.

Presse Médicale, Paris

November 23, 1916, XXIV, No. 65, pp. 529-536

18 *Remedy for Alimentary Anaphylaxis in Man of 29. (Etude physio-pathologique et thérapeutique d'un cas d'urticaire géante. Anaphylaxie et anti-anaphylaxie alimentaires.) P. Pagniez and P. V.-Radot.—p. 529.

19 Arthrotomy of the Knee through the Patella. (L'arthrotomie de genou par la voie transrotulienne verticale ou oblique.) Bougot and de la Rüe.—p. 532.

18. **Cure of Alimentary Urticaria.**—The robust man of 29 displayed a slight tendency to corpulence but had been healthy till March, 1915, when he developed suddenly a syndrome resembling Quincke's edema, the attacks of edema coming on suddenly, lasting several hours and then completely subsiding. The edema was at times so extreme that the eyes were entirely closed. Chronic, intense urticaria developed at the same time and persisted in variable forms, not a day without some manifestations. Twice the edema affected the pharynx, and the urticaria was accompanied by pruritus. The disturbances were traced to the food, to albumin from any source, animal or vegetable, but most pronounced after the former. The case was studied extensively from several points of view, and the findings are tabulated. The various methods of treating urticaria, calcium chlorid, epinephrin, autohemotherapy, etc., were given thorough trials without benefit. Finally an attempt was made to combat the anaphylaxis responsible for the condition by inducing an anti-anaphylaxis according to Besredka's principle of warding off anaphylaxis in serotherapy by giving one or more small doses of the serum an hour before the main injection. The patient was given an hour before the meal a small amount of the albumin of which he was to make his meal. The results surpassed all expectations, the man being thus relieved at one stroke of the disturbances culminating in the urticaria, pruritus, etc. The details are tabulated in full of this method of fighting fire with fire. For example, if the meal is to consist of bouillon, boiled beef, macaroni, bread, wine and sweets, the man eats an hour beforehand 5 gm. of boiled beef, 5 gm. potato, and 2 gm. bread. Not a trace of skin trouble follows. Practically the same meal, taken an hour after a preliminary ingestion of 6 gm. of potato alone, is followed by severe manifestations of urticaria.

Further study of the case showed that it was possible to ward off the anaphylaxis with preliminary ingestion of derivatives of albuminoid substances, such as ordinary peptone. This answered the purpose of the desired anti-anaphylaxis, which rendered the task much more convenient for the patient. It was found that under this preliminary ingestion of a sample of the food to be eaten an hour later, or taking peptone instead, the blood no longer showed the typical anaphylaxis changes but behaved like normal blood, developing the leukocytosis of digestion as under physiologic conditions, instead of the reverse drop in the leukocytes during the anaphylactic crisis. The latter occurs in two phases; first, the drop in arterial pressure, the inversion of the leukocyte formula, the change in coagulability, and the pruritus; secondly, the skin changes, which come on and persist for many hours, testifying to the intensity of the shock to the organism. In conclusion it is suggested that possibly this case may have a lesson for the treatment of hay-fever and asthma by preventive anti-anaphylaxis. The patient in the case reported still has his urticaria, etc., when he omits to take the preliminary dose of exactly 0.5 gm. peptone or small amount of the food to form the meal, and the interval has to be exactly one hour. At the same time it is evident now that the urticaria is growing less severe than it used to be.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 11, 1916, XLVI, No. 46, pp. 1537-1568

20 *Improvised Orthopedic Devices. H. Hössly.—p. 1537.

November 18, No. 47, pp. 1569-1600

21 *Myelitis Developing under Salvarsan. (Ueber Salvarsan-Myelitis.) C. Socin.—p. 1569.

22 Present Status of Knowledge of Roentgen Rays and Radio-Active Substances. (Ueber Strahlentherapie.) E. Anderes.—p. 1580.

23 Rupture of Tympanic Membrane from Closing Nose and Mouth to Repress Vomiting Impulse. (Seltener Fall von indirekter Trommelfellruptur.) P. Sokolow.—p. 1591.

November 25, No. 48, pp. 1601-1632

24 Importance of Bacteriologic Diagnosis of Diphtheria. (Ueber die Leistungsfähigkeit und den Wert der bakteriologischen Diphtherieuntersuchungen.) R. Klinger and E. Schoch.—p. 1601.

25 Present Status of Pseudoparalytic Myasthenia Gravis, with Report of Case. C. Krähenbühl.—p. 1611.

26 Extrapleural Pneumothorax with Artificial Pneumothorax. Gwerder.—p. 1618.

20. **Orthopedic Devices.**—Hössly is chief of a military sanatorium caring for disabled interned prisoners of war, and he describes with twenty-six illustrations a number of apparatus that have been devised to meet the various conditions encountered and overcome the disability. Diagrams are given to show the mechanical principles of a number.

21. **Myelitis Under Salvarsan.**—Socin's case resembles in some respects that reported by Chiari in 1913 in which a woman of 27 with secondary syphilis developed severe symptoms of cerebral irritation after three doses of neosalvarsan. After four days the brain symptoms subsided but paralysis of both legs and of the bladder then developed, and the woman died in six months from general debility in consequence of suppurative bladder and kidney disease and extensive decubitus. Nothing pathologic was found in the brain or medulla, but the spinal cord showed extensive destructive processes. Socin's patient was a woman of 38 with a history of abortions and miscarriages, appendicitis at 18, articular rheumatism at 23 and pneumonia at 30 with empyema treated with resection of ribs. Her husband had died of "softening of the brain." During the last six months she has been restless and agitated, with frequent headaches, and some efflorescences on shoulder and knee, undoubtedly of syphilitic origin although the Wassermann test twice applied elicited no response. An intravenous injection of 0.5 gm. salvarsan was given, repeated five days later. The first was borne well, but after the second the temperature rose and in two days there were symptoms of encephalitis. These gradually subsided and symptoms developed indicating a severe and extensive affection of the spinal cord, with decubitus and a tendency to clonic and tonic spasms. She died in fourteen months from debility from the profusely suppurating decubitus, etc., plus pneumonia. The Wassermann test was negative throughout. Socin states that there was nothing to suggest that the trouble was an acute infectious myelitis of unknown cause, while the encephalitis symptoms at first sustain the assumption that the drug was responsible for the whole syndrome. The stormy stage lasted six weeks and then some of the symptoms subsided, but spastic paraplegia of both legs was left and persisted till death, with sensory disturbances, all indicating myelitis of the cord in the lower cervical region affecting predominantly the lateral columns. The necropsy findings are described in detail. They confirmed in every respect the assumption of toxic myelitis. The freedom from phenomena of degeneration in the sensory roots testifies against the trouble being due exclusively to the arsenic element. Socin adds that 65.8 per cent. of all the fatal encephalitis cases occurred with doses of 0.5 gm. and over.

Deutsche medizinische Wochenschrift, Berlin

October 26, 1916, XLII, No. 43, pp. 1309-1340

27 *Statistics in regard to Prevalence of Diabetes. (Diabetes und Krieg.) A. Gottstein and F. Umber.—p. 1309.

28 *Nerve Transplantation. (Zwei neue Methoden der Ueberbrückung grösserer Nervenlücken.) A. Bethe.—p. 1311. Concluded

29 *Dengue in Argentina. R. Kraus.—p. 1314.

30 *Diagnosis of Duodenal Ulcer. J. Nowaczynski.—p. 1315.

31 Neuroses and Psychoses of Toxidigestive Origin. E. Grandjean-Hirter.—p. 1316.

32 Frequency of Albuminuria with Artificial Pneumothorax. J. Gwerder and J. H. Benzler.—p. 1318.

33 *Cystic Kidney. (Zur Diagnose der Zystenniere.) W. Karo.—p. 1320.

34 Weight Gage for Testing Strength of Muscles. (Ein neuer Kraftmesser.) Loewenthal.—p. 1322.

35 The Peptone Test in Milk. (Die Peptonprobe in der Milch.) S. Serkowski.—p. 1323.

36 Welfare Work for the Blinded in War. (Kriegsblinden-Fürsorge.) W. Feilchenfeld and Bauer.—p. 1324.

27. **Diabetes and the War.**—Gottstein and Umber relate that all writers on diabetes have deplored the lack of reliable data as to the prevalence of diabetes. The mortality records

afford little information as comparatively few die from diabetes, and the existence of the diabetes is not mentioned when they succumb to an intercurrent disease. The war has unexpectedly bridged this gap in our knowledge of diabetes, as, in the state regulation of the food supply, all requiring a special diet were compelled to bring a medical certificate to that effect. They could thus obtain the extra fat they needed, and all the diabetics took advantage of this, even the milder cases. The opportunity was utilized to obtain specific data on the age, profession, etc., and duration of the diabetes. The statistics thus collected in Charlottenburg, a fashionable suburb of Berlin, show that there are 706 diabetics there, of whom about 58 per cent. are males. In five cases both husband and wife are diabetic, in one case father and adult son. This is a proportion of 2.3: 1,000 inhabitants while in Berlin proper the proportion is only 1.2 or 1.3: 1,000. About 33 per cent. of all the cases were at the age of 60 to 70 while only 2 per cent. were in the twenties and 6.8 per cent. in the thirties. These statistics confirm the graver prognosis the younger the age. The duration of the diabetes was given as six years in fifty-three diabetics in the fifties, and over nine years for sixty-six in the sixties, including five with diabetes for over twenty years. The vicissitudes of the war do not seem to have brought on diabetes in the previously healthy, and the predisposed do not inevitably develop it.

28. **Bridging Gaps in Nerve.**—Bethe transplants a segment of a corresponding nerve from the cadaver, and commends this method of bridging a gap as it has proved its reliability on dogs in the clinic. The great endurance of excised segments of nerves permits thorough bacteriologic tests for their sterility before they are grafted. Blood from the cadaver in question can also be tested for the Wassermann reaction. When the segment is excised from the fresh cadaver, he cuts the peripheral end slanting, to be sure to recognize it. The nerve segment is placed in a small Petri dish inside a larger one and is placed on ice, while other scraps are taken for bacteriologic tests. The nineteen segments he has prepared to date, taken from seven cadavers, all happened to be sterile. He has thus transplanted nerves in four clinical cases. All healed in place without any temperature reaction. In dogs the implant heals in place in four or five days so that further immobilization is unnecessary. Small stitches, only 2 mm. from each end, parallel to the course of the fibers, are much better than larger stitches. He uses the finest eye needles and No. 000 silk. Even with this care, some of the fibers may get caught in the stitches. For a nerve with a diameter of 2 or 3 mm. he takes six or eight stitches, applies a starch dressing and lets the animal run around. By the fourth or fifth day the dressing is taken off and the animal uses the leg freely; none of the sutures ever seemed to have loosened. He advises to use the corresponding nerve from the cadaver for the graft, but thinks it scarcely practicable to fit the ends of the bundles of fibers exactly like to like.

29. **Epidemic of Dengue in Argentina.**—Kraus states that nearly the entire population of two towns, one in Argentina and one across the border in Uruguay, had dengue last spring and it spread throughout that Argentine province but died out in March and April. There were no complications and no fatalities, but convalescence was protracted and the patients felt extremely weak and had no appetite. No microorganism could be cultivated from the blood or detected with the microscope. The leukocyte count was low in many cases, down to 2,200 leukocytes in some, with increased numbers of lymphocytes and large mononuclears, but no eosinophilia was evident in the convalescents. The disease did not seem to be transmitted by direct contact, but it is probable that the swarms of *Culex fatigans* and *Stegomyia fasciata*, exceptionally prevalent that season, were responsible for the transmission. He adds that dengue has been known for years in Brazil and Argentina, but this seems to be the first description of it there to be published.

30. **Diagnosis of Duodenal Ulcer.**—Nowaczynski reports three cases in which the clinical picture indicated abnormal conditions in the pylorus calling for operative treatment, but this diagnosis was not sustained by the operation. The trouble proved to be adhesions between the stomach and liver or adhesions as far away as the spleen region, suggesting a fresh anatomic lesion and inducing spasm of the bowel. These spastic conditions affect the stomach and by reflex action modify the stomach functioning. This altered functioning of the stomach may be manifested by pylorospasm, hypertonus, exaggerated peristalsis and hypersecretion with its train of subjective disturbances. If then are superadded on these symptoms, the disturbances from altered conditions in the vegetative nervous system, such as are common with duodenal ulcer, the diagnosis of duodenal ulcer is almost inevitable. In one of the three cases described occult blood in the stools aided in misleading the diagnosis. There did not seem to be any lesion elsewhere in the bowel that might have explained it. It is hard to explain the source of the occult blood found constantly in the stomach content in the case in which an old healed ulcer was found in the duodenum; the blood certainly came from the stomach in this case. It is a question whether local violent and painful contractions of the stomach can cause laceration of vessels enough to explain the blood findings. In the three cases reported there had been stomach trouble respectively for ten weeks or twelve years, five years and one month, with intervals of freedom from symptoms. The patients were 33, 25 and 23 years old. In the last mentioned case the disturbances began suddenly with intense pain in the stomach and bloody vomit. The repeated vomiting relieved the pains but they soon returned regularly after each meal. By the end of the month the pains had become stronger and continuous, but there was a good appetite and no occult blood in the stools. A gastric or duodenal ulcer seemed almost certain and as the pains kept up unbearable, the abdomen was opened. The stomach was somewhat enlarged and the pylorus contracted, but no signs of an ulcer could be detected in stomach or duodenum. In the spleen region stout adhesions were found, relics of perisplenitis. A gastro-enterostomy was made with a short loop.

33. **Cystic Kidney.**—Karo removed the right kidney on the diagnosis of pyonephrosis but found this a mistake as it was evidently a congenital cystic kidney. The other kidney was enlarged but seemed to rally to the task thrust on it. The patient had immeasurably improved over his previous condition, when an intercurrent pneumonia proved fatal by the end of the month. The case is reported as showing that bilateral cystic kidney will permit nephrectomy under certain circumstances.

Münchener medizinische Wochenschrift, Munich

October 17, 1916, LXIII, No. 42, pp. 1477-1508

37 *Diagnosis of Weil's Disease. C. Bäumler.—p. 1477.
38 *Injection of Alcohol in Treatment of Hemangioma. K. Stromeyer.—p. 1480.
39 Pulmonary Tuberculosis or Pulmonary Syphilis. (Lungentuberkulose oder Lungensyphilis?) Wilmans.—p. 1481.
40 Embedding in Gelatin for Frozen Sections. (Gelatineeinbettung für Gefrierschnitte.) S. Gräff.—p. 1482.
41 Concretions in the Lungs. (Fall von Steinhusten.) M. Helbig.—p. 1483.
42 Seven Years of Infant Welfare Work. (Sieben Jahre Säuglingsfürsorge in Gunzenhausen.) Eidam.—p. 1484.
43 Dysentery and Its Diagnosis. (Einiges über Ruhr und vorläufige Mitteilung eines einfachen Verfahrens zur Schnellfärbung von Ruhramöben zu diagnostischen Zwecken.) W. Riegel.—p. 1493.
44 *Five-Day Fever. (Zur Ursache und Uebertragung des Wolhynischen Fiebers.) H. Töpfer.—p. 1495.
45 Paratyphoid in the Eastern Seat of War. (Epidemiologische Bemerkungen über Vorkommon von Paratyphus A im Orient und auf dem Balkan.) Mühlens.—1496.
46 Acute Bacterial Urethritis Following or Accompanying Gonorrhea. (Ueber akute urethritische Prozesse bakterieller (nichtgonorrhoischer) Natur nach abgelaufenem Tripper oder bei chronischer Gonorrhöe und den Streptobacillus urethrae Pfeiffer in ätiologischer Beziehung zu ihnen.) Engwer.—p. 1496.
47 Reinfusion of Liter of Own Blood from Abdominal Hemorrhage. (Zur Wiederinfusion abdomineller Blutungen.) Kreuter.—p. 1498.
48 Ligation of Hypogastric Artery for Hemorrhage from Superior Gluteal Artery. (Zur Bekämpfung der Nachblutung aus der A. glutaea sup. durch Unterbindung der A. hypogastrica.) Flörcken.—p. 1499.
49 First Treatment of Wounds of the Ear. (Ueber Anzeige und Art der ersten Behandlung von Ohrschussverletzungen.) W. Klestadt.—p. 1499.
50 Intravenous Injections of 1 per cent. Lactic Acid in Treatment of Epidemic Meningitis. J. Bamberger.—p. 1501.

51 Breathing Exercises, etc., in Treatment of Functional Voice and Speech Disturbances. S. Marx.—p. 1502.
52 Treatment of Dysenteric Liver Abscess. T. Grussendorf.—p. 1503.
53 Leech in Throat; Three Simultaneous Cases. (Blutegel im Kehlkopf.) Härting.—p. 1505.
54 No Effect from Cholin Chlorid Injected to Soften Cicatrix; Thirty-Seven Cases. O. Burkard.—p. 1505.
55 Frame to Hold Three Litters to Economize Space. (Die Lagerstätten in den Sanitätsunterständen.) Stumpf.—p. 1505.
56 Device to Overcome Effects of Ulnar Paralysis. Port.—p. 1506.
57 Moist Dressings for Wounds. (Feuchte Wundbehandlung.) Hartleib.—p. 1907.
58 *Lice Drop Off and Can Be Carried by the Wind a Short Distance. (Zur Biologie der Kleiderlaus.) Schaefer.—p. 1507.

37. **Weil's Disease.**—Bäumler remarks that the army experiences have confirmed the peculiar restriction of this disease to the younger men and the summer months, and its prevalence at certain points in small epidemics. Another feature is the frequency of cases in which swimming pools seemed to be a factor in its spread. Differentiation is simple and easy now since it has been shown that intraperitoneal injection of the blood in a guinea-pig reproduces the typical disease. Krummbein and Frieling have recently announced that the disease can occur in dogs and be transmitted by their bite or by fleas from them. The disease is rare among civilians. Bäumler has encountered only one case in civilian circles in his fifty years of practice. This was in 1894, and he reproduces the clinical notes on the case. It was extremely severe, the prolonged fever, severe nephritis and jaundice in the carpenter, 26 years old, being more pronounced than in the classic type of Weil's disease. There were also urticaria, parotitis, cystitis and general hydrops, and actual convalescence did not set in until after the ninth week. The man then gained over 37 pounds in two months. Bäumler publishes the details mainly to emphasize the complete recovery, recent examination having shown the man sound and robust with healthy children.

38. **Treatment of Hemangioma.**—Stromeyer squeezes out the contents, compressing the afferent vessels to keep out influx of more blood, and then injects alcohol, forcing it against all parts of the wall of the hemangioma. He has thus treated thirty patients with hemangioma; the success was prompt and complete in all. He keeps up the compression for a minute or two after the injection. The procedure is repeated at intervals of one or two weeks. Three or four sittings are usually required for a hemangioma as large as a walnut.

44. **Five-Day Fever.**—Töpfer incriminates the louse in the transmission of this disease, called wolhynic fever by His. He mentions other features of the disease and of the short thick bacilli he found in lice that had bitten patients—all testifying to the analogy between this disease and typhus, although they are well defined separate diseases. Probably the germs causing them are closely allied.

58. **Biology of Body Louse.**—Schaefer calls attention to the way in which body lice are liable to drop off when the clothing is being taken off. They let themselves drop to seek more sheltered spots when they are thus exposed to the light and air. He was examining in the open air some war prisoners who complained of being sick. As one of the men stripped off some of his clothing, Schaefer saw a falling louse caught up by the wind and flung against his coat. It dropped to the ground from the smooth surface of the coat, but since then he never stands to leeward of a person suspected of harboring lice, and has never become infested with them, although he has had occasion to vaccinate and examine thousands all more or less louse-infested.

Wiener klinische Wochenschrift, Vienna

October 11, 1916, XXIX, No. 41, pp. 1289-1320

59 *Hemolysis by Radium Rays. (Ueber Hämolyse durch Radiumstrahlen.) W. Hausmann.—p. 1289.
60 *Treatment of Bacilli Carriers. (Behandlung der Bazillenträger.) A. Herz.—p. 1290.
61 Skin Affection from Contaminated Petrolatum Used in a Salve. M. Oppenheim.—p. 1293.
62 War Neuroses. (Zur Klinik und Prognose der Kriegsneurosen.) E. Schneider.—p. 1295.
63 Factitious Ulcerations. (Ein charakteristisches, künstlich erzeugtes Geschwür.) Liebl.—p. 1303.
64 Improvised Splint for Fracture of Upper Third of Femur. (Zur ersten Versorgung hochsitzender Oberschenkelfrakturen.) O. Schwarz.—p. 1304.
65 Treatment of Abdominal and Skull Wounds Close to the Firing Line. R. Fibich.—p. 1317. Continued.

59. **Hemolysis by Radium.**—Hausmann relates experiences which show that the radium rays are able to hemolyze rabbit red corpuscles suspended in agar plates. This seems to be the work of the beta rays.

60. **Treatment of Bacilli Carriers.**—Herz states that the central hospital for epidemic diseases in his charge has had a constant average of 700 typhoid or paratyphoid cases, and thus has provided ample opportunity for study of various epidemiologic questions, especially those connected with carriers. The stools and urine were examined for bacilli day by day or on alternate days, in order to detect any possible connection between the elimination of the bacilli and clinical manifestations. By this means it was ascertained that any intercurrent febrile affection seemed to check the elimination of the germs. This suggested that an artificially induced rise in temperature might have the same effect. To induce this, the corresponding vaccines were given a trial, but did not prove effectual. Then parenteral injection of a protein was tried and this seemed to answer the desired purpose. Herz selected milk as the best available protein, as R. Schmidt has reported that this induces a therapeutic fever in hemophilia, pernicious anemia, leukemia, etc.; Müller has thus treated also inflammatory processes, bubo, phimosis and epididymitis, while Saxl has been applying it systematically in typhoid. Herz injected into the gluteal muscle 10 c.c. milk, boiled in the water bath. About eight or ten hours thereafter the temperature rose, sometimes with a chill; it kept high for two or three hours and then dropped back to the previous figure. No by-effects were noted except slight headache in some cases. The rise in temperature was moderate, and variable in different patients and at different times in the same patient. No such temperature response was obtained as is the rule in blood disease. In the bacilli carriers, besides the fever, it was noted that the bacilli were driven out into the blood and some were eliminated in the urine. The blood picture was also modified, and there is reason to assume that any local inflammatory process was also whipped up. These biologic phenomena are accompanied by mobilization of antibodies, and these various factors seem to combine to eradicate the lurking bacilli in the body and put an end to the "carriership." Of course time alone will show whether the parenteral protein treatment gives durable results. To date, the stool and urine findings have been constantly negative in four chronic cases given four or five injections. In the recent cases one injection sufficed. He emphasizes the importance of this from a military point of view, as otherwise these men would have to be kept for weeks or months in the hospital after complete clinical recovery, encumbering the hospitals and depriving the army of their services. On the other hand, the reaction to the parenteral protein is comparatively insignificant, the disturbances being less, as a rule, than even those from antityphoid vaccination.

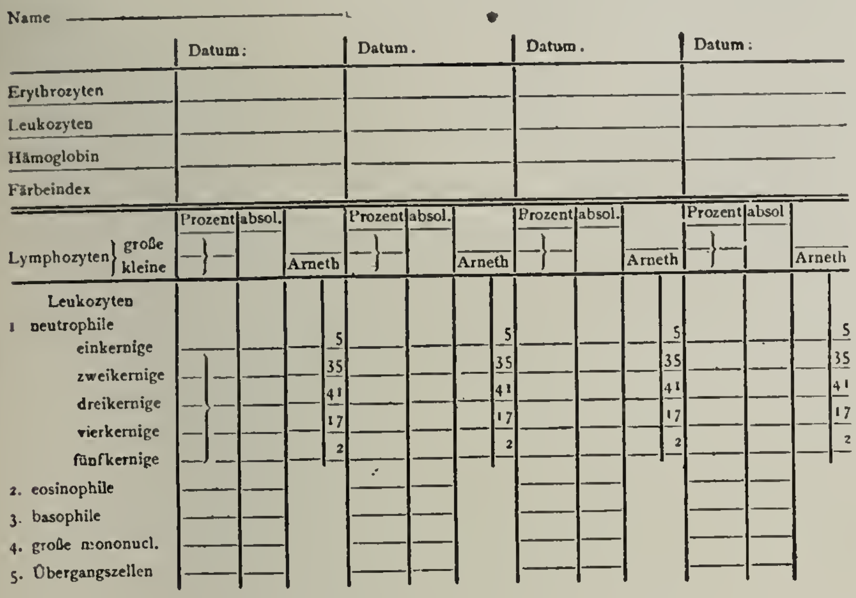
Zeitschrift für Tuberkulose, Leipzig

1916, XXVI, No. 4, pp. 241-320. Last indexed Dec. 2, 1916, p. 1704

66 Modification of Course of Pulmonary Tuberculosis by Emotional Stress. (Zur Frage der Bedeutung psychischer Momente für den Verlauf der Lungentuberkulose.) K. Turban.—p. 241.
67 *Record of Differential Blood Count in Pulmonary Tuberculosis. (Zur Beobachtung des Blutbildes bei Lungentuberkulose.) K. Turban.—p. 242.
68 *Storing of Drugs in Tuberculous Tissues. (Ueber die Speicherung von Medikamenten in tuberkulösem Gewebe.) Stern.—p. 244.
69 How Switzerland Meets the Question of Tuberculosis in Soldiers. (Die Versorgung der Kriegstuberkulösen im schweizerischen Heer.) E. Meissen.—p. 249.
70 *Connection between Trauma and Tuberculosis. J. Orth.—p. 264.
71 Tuberculosis and Alcohol. L. Katthariner.—p. 281.
72 The Predisposition to Tuberculosis. L. Kathariner.—p. 288.

67. **Systematic Study of the Blood Picture in Pulmonary Tuberculosis.**—Turban has found the accompanying chart extremely useful in recording the blood findings over long periods for comparison. In protracted chronic cases, once a month is the routine interval, avoiding the menstrual period

in women and the few days before and after it unless its influence on the blood picture is being studied in particular. Daily records of the differential blood count over long periods might afford very valuable information; it requires extreme care and practice in enumerating the nuclei as otherwise comparison between the findings of different observers is unreliable.



Name

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Leukozyten																
Hämoglobin																
Färbeindex																
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Leukozyten																
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zweikernige				35				35				35				35
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4. große mononucl.																
5. Übergangszellen																

68. **Accumulation of Medicinal Agent in Tuberculous Tissue.**—Stern thinks that the principle of chemotherapy, in the sense of a special affinity of the bacilli or of the diseased tissues for the introduced drug, has not been proved. But there is every reason to assume that where the circulation is especially active the drug is brought into the region; then by checking the circulation, the drug can be kept there. It is possible to influence artificially the circulation along these lines. Among the arguments he presents to sustain this view of the lack of a firm scientific basis for the so-called chemotherapy is the efficacy of potassium iodid in sporotrichosis. Nothing else ensures so prompt and so complete a cure as this, but potassium iodid does not act on the parasite; there is no "affinity" between them. It disintegrates the cells of the infiltrate, leaving the parasites unmodified. This is its action also in syphilitic gummas; it breaks up the pathologic tissue cells but does not destroy the spirochetes. No one claims that it kills the spirochetes. We are far from the realization of an effectual chemotherapy for tuberculosis, but in the meanwhile we are able to draw and hold the drug in the diseased area by various measures to induce hyperemia in general and also local hyperemia. Attempts to increase the action of phototherapy by salve treatment and efforts in the line of accumulating deposits of the drug in the pathologic area by stasis or other hyperemia—thus storing up potassium iodid, for instance, in the diseased tissues—deserve the greatest attention and imitation. Here is a field, he adds, in which actual experience takes precedence of theorizing.

70. **Connection Between Trauma and Tuberculosis.**—Orth has had occasion to testify in four additional cases in which the accident insurance companies were questioning the connection between a trauma and following tuberculous disease or aggravation. The details of these (ninth to twelfth) cases are given in full. In three of the cases he testified to the effect that the trauma had no direct connection with the tuberculosis, but, in the fourth case, that there could be no doubt that the trauma had been responsible for the fatal hemoptysis that had followed.

Zentralblatt für innere Medizin, Leipzig

October 28, 1916, XXXVII, No. 43, pp. 753-768

73 *Alimentary Dropsy. (Ueber Hungerödeme.) A. V. Knack.—p. 753.

73. **Alimentary Dropsy.**—Knack describes what he calls *Hungerödeme* as it has been observed in various devastated regions and prison camps during the war. It resembles the edema with kidney disease but comes on with dysenteriform symptoms. The extreme edema in certain parts of the body and the motor feebleness are the main features. Analysis of the various epidemics demonstrates apparently some connection with the food, not so much quantitative as qualitative. The persons that suffer from this hunger edema are not so much the ordinary poorer classes as those reduced to penury by the war or other cause. The bad quality of the food, spoiled potatoes, etc., induce a primary severe upset in the digestive organs and this entails the cachexia, edema and other features of the syndrome in question. It has never been produced experimentally under starvation alone.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 8, 1916, XXXVII, No. 81, pp. 1265-1280

74 Disinfection of Wounds with Fermented Milk in Prevention and Treatment of Tetanus. (Due casi di tetano guariti. Batterioterapia lattica della ferita.) S. Colombino.—p. 1267.

Policlinico, Rome

November, 1916, Surgical Section No. 11, pp. 321-352

75 *Case of Bilateral Mammary Tuberculosis. P. Gilberti.—p. 321.
76 *Catheterization of the Ureters. (Contributo allo studio del valore del cateterismo ureterale.) E. Pirondini.—p. 331.

75. **Bilateral Mammary Tuberculosis.**—Gilberti's patient was an unmarried woman of 50 and there was no evidence of tuberculosis elsewhere than in the left breast. The lesion had been developing for seven months and was as large as a hen's egg. He resected the entire breast and the otherwise healthy woman rapidly recovered. She returned a year later with a similar tumor in the right breast. It had been noted for two months, and he removed this breast also. Scanty tubercle bacilli and the characteristic tissue findings were demonstrated in each of the lesions. This isolated bilateral tuberculosis of the breast is very rare, still more so the development in a virgin.

76. **Catheterization of the Ureters.**—Pirondini concludes this long study of the advantages and the drawbacks of catheterization of both ureters, with the statement that nothing else can compare with it in reliability, but that even this may prove misleading. The catheters may injure the tissues and falsify the deductions, or the patient's general condition may interfere with instructive findings. An exploratory incision, exposing the kidney, may usefully supplement catheterization of the ureters in dubious cases. He adds that massage of the kidney as a means to induce unilateral polyuria is futile. His wide experience with catheterization of the ureters is reviewed with much detail.

Siglo Medico, Madrid

November 18, 1916, LXIII, No. 3284, pp. 737-752

77 *Experimental Arthritis in Rabbits. (La artritis experimental en los conejos, contribucion a la patogenia de la artritis en el reumatismo febril.) H. K. Faber.—p. 738.
78 *Simultaneous Spastic Spinal Paralysis of Alimentary Origin in Two Brothers. (Doble caso de latirismo.) E. F. Sanz.—p. 741.

77. **Experimental Arthritis and Pathogeny of Arthritis in Rheumatic Fever.**—This is a translation of Faber's report which was reviewed in The Journal, 1915, lxv, 1850.

78. **Spastic Spinal Paralysis of Alimentary Origin.**—Two brothers, 27 and 19 years old, previously healthy and of a healthy family boarded for three months together at a place where dishes made with the chick-pea formed a large proportion of the food. By the end of the third month both brothers noted that it was increasingly hard for them to move their legs and in a few days they could not walk or stand without aid, while there were spasmodic contractions at times. The older brother was able to get about with a cane, but the younger was entirely helpless. The syndrome is that typical of spastic spinal paraplegia in both, and it has persisted unmodified during the eight months to date, without any other symptoms, all the disturbances being limited to the lower limbs. The only probable explanation for the trouble is poisoning from the flour made from the seeds of the chick-pea, the vetch of the lathyrus species, which is known to be capable of inducing bromatologic intoxication or lathyrism. It is not so rare in Spain, Sanz remarks, as the paucity of the literature on the subject would indicate. The two brothers in question were farm hands free from venereal disease and abuse of alcohol. He relates that the plant in question is the *Lathyrus cicera* or *clymenum* which is called *guija* or

almorta in Spanish, *Platterbse* in German, *gesse* in French, *cicerchia* in Italian and *chich* or *chick-pea* in English. The poisoning is probably not so much from the seeds themselves as from some special modification of them from still unknown causes. Rost has published a statement to the effect that poisoning from this source is more common in rainy than in dry seasons. No attempts to reproduce lathyrism experimentally in animals have proved successful to date, and no necropsy reports of clinical cases have been published, to Sanz' knowledge.

Brazil-Medico, Rio de Janeiro

October 28, 1916, XXX, No. 44, pp. 345-352

79 *Gonorrhea in the Male at Rio. (Sobre o tratamento da blenorrhagia do homem no Rio de Janeiro.) A. Pereira.—p. 346.

November 4, No. 45, pp. 353-360

80 Pigeon Proteus and Its Transmission. (Pesquisas sobre o "Hemoproteus columbae.") H. de B. Aragão.—p. 353.

81 Chloroform for General Anesthesia and Its Dangers. (Annotações praticas sobre a chloroformisação e seus perigos.) O. Clark.—p. 354. Commenced in No. 43, p. 337.

79. **Treatment of Gonorrhea in Males.**—Pereira has been impressed with the frequency of pyelitis in gonorrhea at Rio. It seems to be a part of the normal evolution of gonorrhea in the male there. He says that it can occur only by the infection being carried to the kidney pelvis by the blood or lymph, and this confirms the assumption that gonorrhea is not a local but a general affection. This explains why local measures fail to prevent its passing into a chronic phase. He has been impressed also with the way in which the gonorrhea seemed to be permanently cured when the man had contracted syphilis likewise and was being given treatment for the latter. Under salvarsan alone it showed no improvement, but under a specific course of mercury the gonorrhea seemed to be aborted. The conclusion is inevitable that a general course of mercurial treatment is indicated in gonorrhea. After extensive experiments he decided that mercury biniodid seems the best adapted for the purpose. The dosage need not be so large as for syphilis. He has thus eradicated the gonorrhea in from twenty to sixty days with ten to thirty-six injections of 5 mg. or half this, of mercury biniodid (*bi-iodureto de mercurio*), repeated daily or on alternate days, without any local measures. By way of the stomach, the action is slow and inconstant, and intramuscular injections are less effectual than intravenous. In conclusion, Pereira reiterates that chronic urethritis is almost incurable at Rio by the other treatments advocated to date, but the prospects are bright for the permanent cure, without local measures, under a systematic course of mercurial intravenous injections.

Semana Medica, Buenos Aires

September 21, 1916, XXIII, No. 38, pp. 277-304

82 Venereal Granuloma. M. Beatti.—p. 281.

83 Genesis and Treatment of Dementia Praecox. C. A. Bambaren and H. F. Delgado.—p. 292.

84 Pharmacy a Profession. (El farmaceutico en ejercicio. Su caracter civil ante los poderes judiciales.) J. Oro.—p. 297.

September 28, No. 39, pp. 305-330

85 *The Hand Sign of Syphilis. (El signo de la mano. Contribucion al diagnostico de la sifilis.) J. N. Posadas.—p. 305.

86 *Biologic Diagnosis of Pregnancy. F. A. Deluca.—p. 307.

87 *Occlusion of the Urethra in Treatment of Gonorrhea. H. Dasso.—p. 309.

88 Climatotherapy of Tuberculosis in Argentina. J. M. Escalier and P. D. Galli.—p. 317.

85. **The Hand Sign in Syphilis.**—Posadas for the last three years has been noticing very often in his syphilitic patients, with or without treatment, a pinkish spot in the hypothenar region or palm. There is evidently a special dilatation of the capillaries in the skin of this region on both hands. It forms a triangle with the base line running from the middle of the inner half of the first fold on flexing the root of the hand, to the middle of the ulnar edge of the hand. The inner side of the triangle runs from the middle of the ulnar edge of the hand to the digitopalmar fold corresponding to the little finger. The triangle thus occupies the hypothenar region but there may be merely a round spot instead of a triangle. The skin may look pinkish or resemble a scarlatinal eruption or even a vascular nevus, but the redness never extended beyond the outline of the triangle described above. He found this hand sign in 321 of 493 syphilitics examined, that is, in over 65 per cent. but never earlier than the third year after infection. Omitting the patients with infection of more recent date, he found this sign pronounced in nearly 81 per cent. of 397 patients. Specific treatment renders it more intense for the time being and then it returns to its former aspect.

86. **Biologic Diagnosis of Pregnancy.**—In this preliminary communication Deluca calls attention to what he calls the urine-hemolytic reaction as a sign of pregnancy. Tests with sheep red corpuscles, rabbit hemolytic amboceptor and guinea-pig complement showed that addition of urine from a pregnant woman hastened hemolysis by five or ten minutes. Urine from men and from nonpregnant women had the opposite effect, retarding hemolysis. The pregnant urine lakes the red corpuscles even without the hemolytic amboceptor, but it took several hours for this. The presence of complement is indispensable. The findings were constant in the thirty pregnant women examined, in the second to the ninth month of the pregnancy. In one woman the hemolytic reaction was pronounced although six weeks had passed since an abortion at two months.

87. **Occlusion of the Urethra in Treatment of Gonorrhea.**—Dasso is convinced that keeping the tissues laved with the medicinal substance is an important aid in treatment, and hence he applies a rubber covered clamp to close up the urethra in treating gonorrhea. It can be applied and removed as often as necessary, the aim being to maintain the local medication day and night.

Hospitalstidende, Copenhagen

November 15, 1916, LIX, No. 46, pp. 1109-1132

89 *New Bladder Made from Rectum in Treatment of Exstrophy. (En ny Metode til Helbredelse af Ektopia vesicae.) T. Rovsing.—p. 1109.

89. **Treatment of Exstrophy of the Bladder.**—Rovsing gives an illustrated description of two methods for remedying this condition. The second is only to be applied in case the first proves unsatisfactory. The first method is merely to introduce a retention catheter and suture the bladder walls around it. With the second method the trigonum is implanted in the rectum which is severed at the sigmoid flexure and drawn forward to make the new bladder. In the case described in detail he thus produced a closed and continent bladder, which contracts and can be voided voluntarily and with normal frequency, but the patient is left with a fecal fistula above, where the stump of the sigmoid flexure is brought out. Rovsing regards the discomfort from a well made fecal fistula in sound tissues as less annoying than that from exstrophy of the bladder. With his first method, the peritoneum is not opened. The bladder is separated from the urethra and the latter is sutured separately, while the retention catheter assumes its functions. The bladder wall loosened up on all sides is sutured around the catheter. This method has proved satisfactory in a number of cases, the bladder increasing in size to almost normal capacity in time. In case the bladder is too irritable for this, a urinal is worn. This method is far from ideal, but in the most harmless manner it does away with incontinence, seeping of urine and all its evils. When the bladder does not permit this technic, the only choice is between transplanting the ureters into the skin or into the bowel. Each has so many drawbacks that he prefers what he calls his second method, cutting away the bladder walls except around the trigonum and bringing the rectum over to make a new bladder. This method was successfully applied to a boy of 3 after the first method had been tried and failed, owing to conditions left by bilateral herniotomy.

Ugeskrift for Læger, Copenhagen

November 16, 1916, LXXVIII, No. 46, pp. 2009-2050

90 Sprue. (Orientalsk Tropediarré.) A. Trolle.—p. 2009.

91 Protheses after Amputation of Both Thighs. (Om Fremstilling af kunstige Lemmer til Patienter med dobbelsidig Laar-Amputation.) E. Nyrop.—p. 2018.

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THE PATHOLOGY AND PATHOGENESIS OF ECZEMA AND DERMATITIS

THE IDENTITY OF THE TWO DISEASES *

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NEW YORK

With a tenacity for tradition positively British, and an ancestry worship almost Chinese, dermatologists have clung to the views of their revered dead and to obsolete designations, less with wisdom than with a certain commendable if sentimental loyalty. The term eczema is derived from the Greek, meaning to boil up, to bubble. Actually, the picture of bubbling is suggested as much and as little by eczema as by herpes, pemphigus, or any other vesicular or bullous disease. Thus, even as a simile the designation is defective. This in itself would be a matter of minor import, did not the term lead us astray with reference to a closely related or indeed actually identical disease, simple dermatitis. It is the object of the present paper to illustrate this identity, and to suggest the abandonment of the word eczema, or at least to restrict its use to a precise group of cutaneous manifestations. In a measure the disadvantages of a purely figurative appellation will be counteracted as its limitations are realized and its limits defined. If the term eczema survives, it will do so in the sense in which Norman Walker regards it, as a dermatitis of the cause or nature of which the observer is ignorant. It will then indicate a diminishing group from which, little by little, as our knowledge grows, the component elements will be transferred to the ever increasing body of dermatitides of known origin.

It would be more rational to eliminate the term entirely, and to speak of dermatitis of known etiology on the one hand, and of unknown etiology on the other, the latter corresponding to what has hitherto been called eczema. It might of course be permissible to speak of eczema of known and unknown origin, with the understanding that eczema is a dermatitis. The objection to this resides in the fact that there is no sound reason for the existence of an inexact word when an exact one may be substituted. The poet's famous query as to the value of a name may in general be a thrust well aimed, but in science it is not, and concerning the subject at hand the misnomer is vicious, because it implies invalid and indefensible distinctions.

A description of the clinical features of eczema, since these are well known, may be dispensed with, save in so far as from time to time such adversions may be required in order to maintain the thread of discussion. By eczema shall be understood what is commonly included under this caption in any representative textbook on dermatology. By simple dermatitis shall be meant those forms of cutaneous catarrh represented by various types of dermatitis venenata, occuptional dermatitis and the like. Both groups are characterized by itching or burning and by more or less extensive erythematous eruptions, associated with papules, vesicles, pustules, weeping, crusting, scaling and lichenification. The combination of these lesions, their extent, the course of the disease, all depend in part on the nature of its pathogenic agent or agents, and in part on the degree and duration of their activity.

It is certain that objectively eczema and simple dermatitis are indistinguishable. The sites affected, the polymorphous character, the nature of the primary and consecutive lesions, the manner of involution with crusting and scaling, or scaling alone, the subjective symptoms, all are alike in both. Wherefore it appears unreasonable to separate them clinically. An apparent point of departure is reached anamnestically, however, in that a known cause is ascertainable in dermatitis, but not necessarily in eczema. Closer scrutiny, nevertheless, reveals that in the former, although the cause is recognizable, it is pathogenic only in selected individuals, so that it at once becomes obvious that the operation of the external agent alone is incapable of provoking the morbid process. Furthermore, a discriminating analysis of cases of eczema so frequently discloses the presence of a probable local excitant, that in those cases in which one seems lacking, the want must be ascribed less to its actual absence than to limitations of the patient's or physician's power of observation which prevent its discovery.

Microscopically, the two conditions are alike, as will appear below. Therapy throws a certain, though perhaps less conclusive, light on the identity of the two processes. The milder cases of both respond to similar local therapy. The severer cases require the same local as well as general measures for a cure to be effected. In thus broadly surveying the field, then, two conditions are under inspection which are clinically and histologically identical; the pathogenesis of which follows in the same channels, and the treatment of which is successful only when conducted along the same lines. It is absurd to continue to separate two conditions which in every respect correspond to each other, and to the support of their absolute identification the ensuing will be dedicated.

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* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

HISTOPATHOLOGY

Unna[1] divides eczema into two phases, a vesicular and chronic or true form. The vesicles are single chambered, variable in size, contain three parts of serum and fibrin to one of pus cells, and lie in the malpighian layer. Pressure exerted by the vesicles causes flattening of the surrounding rete cells. As the epidermis grows upward the vesicles rise, finally reaching the corneous layer, which consists of nucleated cells. The rete pegs are enlarged in all diameters, but their general shape is not materially altered. In the papillae and pars reticularis a dilatation of the vessels takes place, the endothelium of which is swollen, while a perivascular infiltration of lymphoid cells is present.

Chronic eczema exhibits three distinct epidermal features, parakeratosis, acanthosis and spongiosis. The first is an expression of incomplete keratinization, which is evidenced by persistence of the nuclei in the stratum corneum; the second is due partly to proliferation of the cells in the rete and pegs, and to interstitial edema; while the last, spongiosis, is entirely due to interstitial edema. Spongiosis imparts a curious aspect to the rete. The intercellular spaces are broadened by accumulated fluid, forming a tracery of canals which simulates the arrangement seen in a transected sponge. This phenomenon is at the bottom of chronic vesiculation, as will presently appear. In turn, the vesiculation and spongiosis itself cause crust or scale formation. Ivan Bloch[2] emphasizes a productive inflammation in the cutis, persistent vascular dilatation with engorgement and surrounding lymphoid cell deposits. Pautrier[3] divides the contents of vesicles into an uppermost layer consisting of serum, a second of serum and leukocytes, and a third of leukocytes. These three again constitute the roof of the vesicle, leaving a space below twice as broad, filled with pus and degenerated epithelial cells. For the rest, Pautrier, as well as other authors, notably Darier,[4] Ehrmann and Fick,[5] and Walker[6] agree with Unna.

The varieties of eczema, such as the erythematous, papular, vesicular, weeping, crusted and scaling, will be described shortly. Verrucous eczema depends on excessive acanthosis; lichenified and elephantiasic depend on the degree of productive inflammation and lymphatic engorgement, respectively, present in the cutis. These types are incidental rather than basic and their detailed elaboration would add nothing to the present paper.

In my own studies I have been able to confirm the foregoing. The formation of the vesicle of acute eczema is different from that of the chronic type. In the former an intracellular or parenchymatous edema in the rete is the starting point. Accumulation of fluid in the cytoplasm causes the cells to enlarge and become round, while the nucleus is pushed toward the periphery of what is now a sac of fluid. Microscopically, such a cell resembles a cavity. This process is known as *altération cavitaire,* the designation having been suggested by Leloir. In chronic eczema the vesicle depends on interstitial edema. The saturation of the intercellular spaces stretches the epithelial threads to the breaking point, freeing the cells which then become spherical. Thus, whether the edema begins within or without the cells, the latter finally become rounded out. When numerous contiguous cells are so altered they lie in a space, the vesicle proper, and are surrounded by serum, fibrin and migrated leukocytes, chiefly of the polymorphonuclear variety. The rounded epithelial cells resemble toy balloons, an observation which caused Unna to call the process ballooning degeneration. The wall of the vesicle is formed of contiguous epidermal elements flattened by the pressure of the vesicle contents. Although the vesicles are always single chambered, they are often numerous, and when separated by thin walls may simulate multilocularity. Usually in acute eczema and invariably in chronic, spongiosis, acanthosis and parakeratosis, as affirmed by Unna, are present.

Erythema is due, in both the acute and chronic stages, to dilated vessels; papules, to edema of the papillae, infiltration therein, hyperplasia of collagen, or all three; and scaling to parakeratosis. In the acute form weeping is almost invariably due to the rupture of vesicles, while in the chronic it may be due to this, but is more frequently occasioned by the interstitial edema. The frail and imperfectly keratinized corneous stratum is washed away by the saturation of the epidermis, thus exposing the rete, out of which wells up the excess of serum. From whatever source, the fluid dries and forms crusts, additional elements of which are bacteria, leukocytes, exfoliated corneous and degenerated rete cells and erythrocytes. Should the vesicles have become purulent, the crusts assume the characteristics of dried pus.

SIMPLE DERMATITIS

Very little attention has been devoted in the literature to the microscopic study of simple dermatitis. Kulisch[7] produced vesicles experimentally with croton oil and cantharides, duplicating Hebra's classic investigations, which had caused the latter to conclude that eczema was always of external origin. It would be redundant to paraphrase Kulisch's account of his results, as they absolutely correspond to a description of eczema. More recently Weidenfeld,[8] working along similar lines, corroborated the above findings.

In each of the three instances just cited the investigators were working on the problem of eczema, and had no thought of dermatitis, but it is obvious that they made no distinction between the two processes, for they produced what they called eczema by the use of external agents. The latter were poorly selected, since they are vesicants and produce blisters on practically all skins. Microscopically, however, the lesions were those of acute eczema.

It has been my good fortune to examine specimens of skin excised from patients suffering with various forms of acute and chronic dermatitis due to chemical agents vocationally employed. They were identical in their minute anatomy to eczema in its various forms.

RÉSUMÉ

Microscopically, then, eczema and simple dermatitis are one and the same process. In terms of general pathology they represent, as the case may be, acute, subacute, or chronic catarrhal inflammation. As Johnston[9] says: "Eczema differs not at all from the other fibrinous lymphocytic inflammations except in the histologic peculiarities occasioned by its site." A belief is nurtured in some quarters that dermatitis begins with epidermal changes, those in the cutis being secondary, while the reverse obtains in eczema. Weidenfeld's studies, however, adequately disprove this. Furthermore, such reasoning is fanciful, for all inflammatory processes, by their very nature, depend on vascular changes, and it is impossible to distinguish microscopically, when alterations have occurred both in the epiderm and corium, which preceded and which followed.

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[1] Unna: Histopathologie der Hautkrankheiten, Berlin, 1894, p. 194.

[2] Bloch, I.: Unna's Lehren, Berlin, 1908, p. 434.

[3] Brocq, Pautrier and Ayrignac: Les charactéristiques symptomatiques histologiques de l'eczema, papulo-vésiculeux, Ann. de dermat. et de syph., 1911, p. 525.

[4] Darier: Eczematides, Précis de dermat., Paris, 1909, p. 72.

[5] Ehrmann and Fick: Komp. der speziellen Histopathologie der Hautkrankh., Vienna, 1906, p. 17.

[6] Walker: Introduction to Dermatology, New York, 1899, p. 89.

[7] Kulisch: Sind die durch Canthariden und Crotonöl hervorgerufene Entzündungen der Haut Eczeme? Monatsh. f. prakt. Dermat., 1893, **17**, 1.

[8] Weidenfeld: Beitrag zur Pathogenese des Eczems, Arch. f. Dermat. u. Syph., **111**, 891.

PATHOGENESIS OF ECZEMA

There are three possible ways by which the pathogenesis of eczema may be explained: through internal causes, external causes, and the activity of outside agents in predisposed individuals.

Internal Causes: In the earliest French literature eczema was considered a dartre. After the concept had been discarded by Willan[10] as meaningless, Hardy[11] reapplied it clothed out as the "dartrous diathesis." A dartre was a vice or poison capable of protean manifestations, one of which was eczema. In modern France this idea has been perpetuated as arthritism, in England as the gouty diathesis. Besnier[12] elaborately included among the internal causes of the disease five groups:

1. Predisposing: heredity, syphilitic and alcoholic ancestors, ancestors who suffered with other skin diseases, constitutional weakness, diabetes, lithiasis, bronchitis, etc.
2. Physiologic: dentition, pregnancy, lactation.
3. Nervous.
4. Functional: digestive, assimilatory and excretory disturbances.
5. Local predisposing: ichthyosis, keratosis pilaris, seborrhea, skin folds and body orifices.

One and all of these excitants has had its champions. Three of the list, however, deserve emphasis, the nervous, digestive and metabolic causes. A varied fabric of fantasy has been woven about the rôle played by the nerves in producing eczema, and yet undoubtedly a connection exists. This may not be direct and probably is not, but there can be no doubt that indirectly, through its effect on body function, what is popularly known as nervousness may disturb metabolism sufficiently to provoke cutaneous diseases. It will save space to quote in toto a passage from another paper[13] on this theme:

> Tilbury Fox finds the disease due to "perverted innervation." Anderson mentions mental excitement, grief, overstudy, and sedentary habits among the causes; Malcolm Morris, mental depression and nervous shock, a point of view acceptable to Johnston, who denies, however, that there are any demonstrable nerve lesions. Bulkley enumerates neurasthenia, nervous and mental shock, reflex internal neuroses, such as those due to dentition, and reflex external neuroses, such as scratching and irritation, as well as structural and functional neuroses.

That digestive disturbances are prominent in producing eczema, as the entire literature of the infantile form of the disease illustrates, is beyond question. Such causation, numerous authors agree, is not restricted to babyhood, however, and constipation is widely regarded as intimately associated with eczema, if not actually provocative thereof, the two conditions possibly being expressions of the same underlying cause.

More important than the preceding is the influence of metabolism. Johnston[9] asserts that "all eczemas must have a basis of failure of metabolism for their development." He alludes especially to ductless gland disturbances, and those of nitrogen chemistry. Neisser[14] includes among probable causes chemical substances elaborated in the cachexias, diabetes, and gout, while Tilbury Fox[15] adds nephritis to this list. Towle and Talbot[16] find disturbances of sugar and fat metabolism in infantile eczema. More recently White,[17] by a series of percutaneous tests, has demonstrated that many adults with eczema are allergic to egg albumin, fat free, milk and oatmeal water, and that in a certain number of cases lactose and salt-free butter may be at fault. A considerable proportion of these cases suggest that sensitization to given proteins is responsible for some forms of the disease.

External Causes: There are three groups of alleged external causes, local predisponants, irritants and micro-organisms. Besnier[12] includes among local predisposing faults, as already mentioned, ichthyosis, keratosis pilaris, hyperhidrosis, seborrhea, and skin folds. Brocq[18] regards dyshidrosis as a most frequent offender, while Jadassohn[19] actually considers it as a form of eczema itself. Great unanimity is displayed among authorities as to the pathogenic function of this group. Little need be said concerning local irritants, since their action is obvious. They are mechanical, physiologic and chemical; as friction, pressure of implements, actinic rays; drugs, cosmetics, dyes; chemicals, such as cleansing powders, disinfectants, and substances employed in art, science and manufacture. Artificial dermatitis, occupational and professional eczemas are examples of the conditions they provoke.

As to micro-organisms, Unna[20] attempted to prove the existence of a special eczematogenic bacterium called the morococcus. A perusal of the Transactions of the Fourth International Dermatological Congress will show how vainly he contested and how completely he was vanquished. The organism he sponsored was generally regarded as the white skin staphylococcus. Possibly the presence of micro-organisms in the lesions intensifies the process, or perhaps their toxins do, but their specific pathogenicity has been disproved.

The Combined Internal and External Causes: Willan,[10] Neisser[14] and Rayer[21] regard eczema as due to external agents operating in the predisposed. Fox[15] and Fordyce[22] apply this principle to eczemas caused by chemicals; and Hall[23] and Jacquet and Jourdanet[24] to those arising occupationally.

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[9] Johnston: Eczema: a Sketch of Its Process and Management, New York Med. Jour., Oct. 20, 1906.

[10] Willan and Bateman: A Practical Synopsis of Cutaneous Diseases, 1815, p. 252.

[11] Hardy: Piffard's Translation of the Dartrous Diathesis, 1868.

[12] Besnier: Pratique Dermat., **2**, 1.

[13] Heimann: A Critical Review of Eczema and Dermatitis, etc., Jour. Cutan. Dis., **34**, 259.

[14] Neisser: Ueber den gegenwärtigen Stand der Lichenfrage, International Dermat. Congress, 1894.

[15] Fox, Tilbury: Eczema: Its Nature and Treatment, 1870.

[16] Towle, H. P., and Talbot, F. B.: Infantile Eczema and Indigestion, Am. Jour. Dis. Child., October, 1912, p. 219; Jour. Cutan. Dis., **31**, 54.

[17] White: Anaphylaxis in Eczema, Jour. Cutan. Dis., **34**, 57.

[18] Brocq: La question des eczemes, Ann. de dermat. et de syph., January to March, 1900.

[19] Jadassohn: Fourth Internat. Congress, 1900, p. 71.

[20] Unna: Parasitic Origin of Eczema, Fourth Internat. Congress, 1900, p. 9.

[21] Rayer: Traité théorique et pratique des maladies de la peau, 1835.

[22] Fordyce, J. A.: The Modern Conception of Eczema, THE JOURNAL A. M. A., June 13, 1903, p. 1621.

[23] Hall: Brit. Jour. Dermat., 1905, **17**, 181, 203, 247, 287.

[24] Jacquet and Jourdanet: Etudes des dermites professionelles, Ann. de dermat. et de syph., 1911, p. 11.

THE PATHOGENESIS OF SIMPLE DERMATITIS

This division is purely artificial, but temporarily may be allowed, partly for the sake of clearness, but more especially because it indicates how purely arbitrary is a separation of eczema from dermatitis. Everything already stated in connection with eczema due to external causation and combined external and internal origin applies equally to dermatitis.

THE PATHOGENESIS OF ECZEMA AND DERMATITIS AS A WHOLE

It is overwhelming, when first confronted with the task, to find a way in which to bring into accord so many causes capable of producing a relatively consistent clinical picture. The difficulty, though, lies not in the number of the causes, but in the fundamental misconception that eczema is a disease. It is rather, like coryza, bronchitis or nephritis, for example, an expression of disease. In order to comprehend this fact we need only recall the doctrine of cutaneous reactions, of which urticaria is a simple example. Innumerable causes provoke hives, but their clinical picture always remains constant. After all there are not a great many manners in which it is possible for the skin to respond to disease-producing agents and one of these is the catarrhal inflammation. Thus eczema and dermatitis are in effect a generic reaction to a wide variety of excitants, an index, as it were, of morbidity. Bazin in 1866, according to Brocq,[18] said that eczema is a "special reaction of the skin to diverse causes." To realize this is to possess the key to the solution of the entire problem.

The internal causes of eczema, disturbances of digestion, of the nerves, of metabolism, of the endocrinous glands, anaphylaxis, have been mentioned. Not every one, however, in whom such conditions exist gets eczema. Thus, an external factor must be sought, a local excitant to precipitate the attack. It is, as a matter of fact, at times impossible to find either a general or local reason for the skin changes. This is no argument that there is none, but simply an indication of inability to demonstrate it. If there were actually no cause for the eruption, if the patient were in perfect health, it would necessarily follow that pathologic changes might exist without disease, a manifest absurdity.

Eczema of external origin is due, as has already been outlined, to all sorts of mechanical, physical or chemical agents. But if these alone sufficed to produce cutaneous alterations every one on earth would be always afflicted. The truth is that they are harmful to very few individuals exposed to their action. This establishes beyond doubt the fact of predisposition. Such a predisposition may be general or local. The first would at once identify eczema of external origin with that of internal, with the added feature of a known exciting cause. The second requires somewhat further elaboration, for local predisponants, skin anomalies, as ichthyosis, secretory disturbances, as hyperhidrosis, inflammations, as seborrhea, may act as precipitating causes in connection with general disturbances, or as predisposing causes in connection with external agents. In other words, local predisposing conditions are capable of playing a double rôle.

Dermatitis of external origin can also develop only in the predisposed, or it would be universal. Since simple dermatitis and eczema of external causation are alike clinically and histologically, since both are cutaneous catarrhs, and since in both the pathogenic mechanism is the same, it must be admitted that the two conditions are identical. It has also been shown that eczemas of internal and external causation differ from each other in only one essential respect, namely, the absence in the former of a demonstrable precipitating cause. This can scarcely be sufficient to establish eczema as a separate entity, for the quantity is mined and undetermined, and as methods of investigation are improved the former will increase at the unknown solely because it has not yet been found. It simply represents the difference between the deter-expense of the latter until the latter reaches the vanishing point. Thereupon eczema will automatically cease to exist.

This view has already been implied in the literature. Willan and Bateman,[10] Biett, Cazenave and Schedel[25] hold that there is no difference between eczema and dermatitis. Fordyce[22] says that the two are clinically and microscopically indistinguishable. Ormsby[26] is able to differentiate them only by the history, and not by their appearance. Pusey in his textbook boldly asserts the absurdity of attempting any such distinction, and because of the splendid force of his expression and his compelling logic, the entire passage in question is worth transcribing from his work:

> Hebra first cleared the subject of eczema of some of its vagueness, and also opened the discussion as to its proper definition, by declaring that eczema is dermatitis, such as can be excited in any skin by external irritants. And most authors agree, or at least admit incidentally in their descriptions of eczema that its eruption is indistinguishable from dermatitis; for example, Stelwagon says, "Inflammation of the skin of artificial origin is often similar in symptomatology to that of eczema and may, indeed, be considered identical." But many authorities are not willing to rest with this. They insist that it differs from an ordinary dermatitis of external origin by certain added factors, usually factors of personal equation in the patient. The position of Malcolm Morris may be cited as an example of the point of view of those who hold that eczema is something more than a dermatitis. Morris, than whom no one is better able to state a case, gives the following definition of eczema: "Eczema is . . . a catarrhal inflammation of the skin originating without visible external irritation and characterized in some stage of its evolution by serous exudation. . . . The definition of eczema here given excludes all forms of inflammation of the skin caused by chemical or mechanical irritants. The artificial dermatitis set up by such agents is *identical automatically with the eczematous process* and gives rise to *lesions indistinguishable from those of eczema*, but it is not eczema." This seems to me a reductio ad absurdum. It amounts to saying that two things which are the same are different because they are produced differently. The most that this statement can mean is that there is dermatitis of external origin and dermatitis of other origin which are indistinguishable, and that he would confine the conception of eczema to the dermatitis of other origin. Morris goes on: "It is evident, therefore, that there is something more in eczema than inflammation of the skin due to a local and transient cause. There is an unknown quantity beyond this, a pathological *x* which may be either some invisible source of irritation or some constitutional peculiarity or both of these factors. These identical words could be used in favor of the position that pneumonia and tuberculosis are not essentially due to the pneumococcus and the tubercle bacilli respectively. Indeed, in the old days this line of argument was used to prove that tuberculosis was a "constitutional" disease. If it were not for this pathological *x*, some factor of lowered resistance, we would all have pneumonia all the time; and who of us would escape tuberculosis? Further, his qualification that the process originates without *visible* external irritation is also certainly an unessential condition. It makes

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[25] Biett, Cazenave and Schedel: Abrégé pratique des maladies de la peau, 1838, p. 90.

[26] Ormsby: Diseases of the Skin, 1915, p. 187.

no difference in the essential character of a dermatitis that the irritant happens in some cases to be discoverable and in others not.

Leaving out these unessential qualifications, we cannot avoid the position that eczema is dermatitis; and, as far as the lesions in the skin are concerned, this statement represents the fact.

Support of this attitude may be found in clinical experience. In an analysis of fourteen closely observed cases (Heimann[13]) the following facts stood out. An ascertainable local irritant was present in eleven; a presumable one in another case. These irritants were hair dyes, scalp lotions, resorcin, or other chemicals. Local predisposing causes could be determined in seven, seborrhea having been the most frequent. It might be maintained that because of their relation to an external irritant, such as a hair dye, these cases were not eczema, but simple dermatitis, and that therefore the deductions in this paper are not valid. To forestall this argument it is necessary only to point out that the process was not limited to the scalp, but involved the face, neck and elbow flexures. In another case in which the irritant had been applied to the bust, the entire body was involved. A patient whose illness had been precipitated by resorcin was sick for six weeks, long after the resorcin could have been active, and the course of the attack was characterized by recurrences without the reapplication of the original offending substance.

In all of the patients some general disturbance was present, such as neurasthenia, intestinal derangement, or evidences of anaphylaxis. The commonest abnormal conditions were neurasthenia and constipation, while in two instances analysis of the feces showed a protein putrefaction. Most striking, however, was the light thrown on the pathogenic mechanism of these cases by therapy. In all fourteen the average duration of the attack was sixteen days. The average duration in the patients treated locally alone was twenty-two days; while in those receiving general treatment as well, it was just under nine days, or less than half as long. The general measures consisted of colon irrigations, enemas, or the use of cathartics or sedatives, according to special indications.

It is clear from this brief clinical exposition that two main pathogenic factors were present. These were local irritants which were active beyond the site of their application and beyond their period of immediate contact with the skin, and general causes which rendered the skin susceptible to the former. In other words, the irritants merely precipitated a reaction in prepared individuals. General treatment served to lessen the susceptibility, so that the clinical experiences here outlined serve as experimental evidence favoring the argument advanced in this study.

SUMMARY

Eczema and simple dermatitis resemble each other clinically and microscopically. Thus eczema, from the standpoint of pathology, is dermatitis, differing from the latter in the clinical sense only in so far as it arises without a demonstrable local cause. For the rest, both are dependent on a predisposition which renders the patient susceptible or responsive to the influence of the determining factor. A great number of conditions, both general and local, constitute defects which augment susceptibility, while an equally formidable array of known precipitating agents has been compiled, their number steadily increasing at the cost of a diminishing body of unknown ones. The distinction between eczema, since it is dermatitis, and what is frankly regarded as dermatitis, is purely academic and is based solely on human limitations. Processes which are alike clinically, histologically, histogenetically and pathogenically are identical; wherefore, all that remains of eczema is the fact that it is dermatitis of unknown origin.

This being the case, it is scientifically disadvantageous to continue the use of the term. The whole class of conditions in question should be divided into two groups; dermatitis of known and unknown origin, respectively, of which the second would represent the ancient eczemas. But as such a change would throw a heavy tax on loyalty to tradition and on dermatologic literature, the continuance of the classic term may be allowed with the restriction that it indicates dermatitis, the immediate cause of which remains obscure. Eczema would thus cease to be accounted a disease sui generis, and would be looked on as an index of morbidity, the determination of which would become a duty. In other words, since its rational treatment would depend on a knowledge of its cause, it would stimulate the study of the dermatosis from the standpoint of internal medicine. This would be of benefit to the patient and would hold dermatology to a scientific path from which it tends only too often to be lured by the fascination of glittering, if somewhat unsound, morphologic superficialities.

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ECZEMA OF EXTERNAL ORIGIN AND ITS RELATIONSHIP TO DERMATITIS

BASED ON A STUDY OF 36,996 DERMATOLOGIC CASES, OF WHICH 6,453 WERE CLASSED AS ECZEMA *

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In May, 1912, I had the pleasure of reading a paper before the American Dermatological Association with the title of "The External Origin of Eczema, Particularly the Occupational Eczemas, as Based on a Study of 4,142 Cases." This study was based on a review of 24,459 cases of diseases of the skin observed, in nine years, in the dermatologic clinics of the Pennsylvania, University and the Howard hospitals. During the last five years I have had the opportunity of observing 12,537 additional cutaneous cases in the skin departments of the Pennsylvania and the University hospitals, of which number 2,311 were tabulated as eczema. Therefore, during the last fourteen years there have been studied 36,995 dermatologic cases, of which a total of 6,453 have been classified as eczema (14.75 per cent.). In the former series of cases, fully one quarter of those tabulated as eczema were of determinable external causation, while in the present group almost one third could be attributed to external factors.

It should be recalled that the cases tabulated in the foregoing lists have been classed as eczema because of their chronicity as to course, lasting over a period

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* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

of weeks and months, although most of them were exceedingly acute in their clinical appearance. Hundreds of cutaneous cases were diagnosed as dermatitis in the hospitals named, particularly those attributable to plant poisoning or acute irritants, in which the outbreak ran a rapid course toward recovery, cure being effected in a few days.

The study of the external etiology of eczema may conveniently be divided into three classes: the parasitic origin of the disease; eczema from external irritants, exclusive of occupation, and trade eczemas.

Investigations into the parasitology of eczema have been made by many excellent observers. There is no definite evidence that organisms in or on the skin are causal of eczema, although cocci, usually of the staphylococcus group, no doubt have a decided influence in determining secondary lesions and complicating factors. The parasitology of the disease may be summarized by stating that the majority of dermatologists do not regard eczema as due to a specific organism, or as a parasitic disease, the various forms of which conform to different organisms; but the belief is prevalent that bacteria may play an important part in the evolution of the lesion. Numerous references on this phase of the subject may be found in a former publication of mine and in the article recently written by Heimann.

Eczema of external origin, exclusive of occupation, may be produced by any irritant in a susceptible person, or by prolonged and frequent exposures to an irritating factor in those less predisposed. We are all familiar with the many external factors which cause an outbreak, such as injuries, dyes, drugs, friction, etc. Those irritants which should be particularly emphasized are iodoform, hair dyes, dyed fur, and cosmetic preparations. Iodoform very often gives rise to a spreading inflammation of the skin, particularly when used as a dressing to a raw surface. This spreading redness, resembling erysipelas and at times a scarlatina, may not only be evanescent in course but also partake of the character of an eczema, lasting over a considerable period.

Paraphenylendiamin, which is the dye used in many hair preparations, is coming more and more to the fore as the cause of a persistent erythematous and vesicular outbreak on the ears, face and neck, which may last over a period of some weeks. This dye is also a prolific source of irritation about the neck and the wrists of those wearing brown fur and black pony coats. Numerous instances of eruptions are observed in our private work from the use of vanishing creams, so called, and all types of cosmetics. Within the last week an outbreak of some weeks' standing, of a papular type, has been seen in my office apparently due to a preparation labeled as "milk weed cream." Outbreaks have been observed from "breast developers" and also from one of the proprietary iodin ointments. Lesions from the latter preparations had been present for some weeks when the patients came under observation.

Trade eczemas offer a large dermatologic field, and many pages might be written alone on this phase of our subject. In my former publication, twenty-nine different trade groups were tabulated in which various irritants handled were causative of an outbreak. The eczematous outbreak was found in the following occupations: houseworkers, laborers, woodworkers, photographers, printing trade, painters, millworkers, bleachers and cleaners, cloth handlers, tanners, coopers, physicians, dentists, nurses, attendants and those handling drugs and chemicals, workers in sugar, candy and chocolate, bakers, barbers, bartenders or liquor dealers, handlers of oils and greases, handlers of pastes, grocers, plastering, paper and building trades, tobacco workers, furriers and hatmakers, workers in metals and minerals, handlers of dyed materials, fruit handlers, ice and ice cream makers, soap makers, packers, farmers and florists. Recently a generalized outbreak of an erythematosquamous type has been observed in five workers in munition factories. These men were all exposed to picric acid, alcohol and ether. Their portion of the work consisted of putting the wet guncotton into cans. The outbreak in each instance had been present for two weeks or more.

Nomenclature is one of the greatest faults of our specialty, dermatology. There is no more chaotic subject than exactly what eczema is and the dividing line between this affection and dermatitis. The remarks made by Zeisler are pertinent to this subject. He said that he felt like presenting the etiology of eczema, in a rather paradoxical vein, something like the following: When we had a case of eczema of which we knew the cause, then it was not eczema; and when we had a case of dermatitis and did not know the cause, then it was eczema. Or again, when we had a case of eczema which readily responded to treatment, then it was not eczema, but simply a local dermatitis; and when we had a case of dermatitis which proved obstinate to our therapeutic efforts, then we were really confronted with an eczema.

Willan and Bateman, Biett, Cazenave and Schedel and Hebra assert without qualification the identity of dermatitis of external origin and eczema. Fordyce considers that the two are identical clinically and histologically. Pusey states that "our difficulties disappear if we accept eczema to be what it is in all of its clinical characteristics — a superficial, simple dermatitis such as might be excited by external irritants." Hartzell mentions that he did not believe that there was any real distinction between many cases of so-called eczema and many cases of chronic dermatitis. Hyde stated that "there is no 'eczema' in the absence of dermatitis; is there any dermatitis without some of the accepted symptoms of 'eczema'? The doom of the word is probably written. It will survive where it belongs and with no greater repute than attaches to the outworn and the discredited."

Anderson, Fox, Jacquet and Jourdanet add predisposition as a factor in dermatitis of external origin. Heimann has recently stated the conclusion that dermatitis and eczema are identical, having the same clinical and pathologic picture.

Bowen and, I believe, the majority of dermatologists consider that artificial dermatitis offers no histologic divergences from acute eczema, notwithstanding the view held by Unna that vesiculation is not uniformly characteristic of eczema in the manner that it is of acute dermatitis.

After a thorough study of hundreds of cases and a perusal of the literature bearing on the subject, the investigator is forced to the conclusion that it is practically impossible to distinguish between dermatitis and eczema of external causation. If the outbreak is caused by certain irritants, such as plants, we call it dermatitis; if by certain other irritants, eczema. If it be of short duration and of known cause, we call it dermatitis; if of long duration an eczema. The clinical picture may be the same in each, the histologic appearance identical, and yet we place the one under the heading of a dermatitis and the other is classed as an eczema. Is not our attitude inconsistent? Should we not take a firm stand and advance a step forward by classing all cases of known external causation, which have heretofore been classed as eczema, under the heading of dermatitis?[1]

CONCLUSIONS

Almost one third of all cases of eczema are of definite external origin. About one sixth of all cases of this affection are caused by the occupation of the individual.

Micro-organisms play only a secondary rôle in the causation of the disease.

Practically every occupation and every irritant may produce an eczema.

The portions of the skin exposed to the irritant determine the site of the outbreak.

The eruption not infrequently extends beyond the irritated areas, at times being observed on distant parts of the cutaneous surface and also generally in certain instances.

The usual type of eruption noted is the vesicular or the erythematosquamous.

The eruptions mentioned as occurring in the cases in this article have lasted for weeks, months and years, and showed a marked tendency to relapse.

It is rather hard to explain the susceptibility of some persons to certain irritants, while others are not affected, excepting on the theory of a pure idiosyncrasy, an anaphylactic tendency causing sensitization of the skin.

As dermatitis and eczema of external origin have the same clinical and microscopic appearances, they should be classed under the heading of dermatitis.

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TWO MODERN METHODS TO BE EMPLOYED IN THE TREATMENT OF CHRONIC ECZEMA *

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The etiology of chronic eczema remains still a subject of conjecture. Men have held decided views on this question since the disease was first recognized, and to those who seek the details of this historical controversy let me recommend the excellent summary of the subject recently published by Heimann.[2] Today there can be no doubt, I think, in the unbiased mind that internal as well as external causes play their respective rôles in the production of the disease, and I believe that at the present moment a good many men hold the opinion that the first etiologic step is the sensitization of the skin and that the second is the contact with an external irritant.

One might regard this theory as a compromise between the two earlier creeds, that is, the external and internal; but I myself find any other conjecture irreconcilable with the facts. All men admit that certain substances, too numerous even to mention, are capable of producing an eczematous eruption on the skin, but this apparent capability is limited, fortunately, to but a comparatively few skins; otherwise many occupations would have to be banished from the face of the earth. Granted, therefore, that certain substances are cutaneous excitants, how can we explain the fact that forty-nine men escape all outward inconvenience when the fiftieth man working under exactly the same conditions and handling exactly the same substance in exactly the same manner becomes affected, to such a degree, at times, that further subjection to this substance becomes an utter impossibility? Or, again, how is it possible that a pathologist who has for years dipped his hands into liquor formaldehydi with impunity suddenly becomes incapable even of entering a room where this chemical is stored? Or, once more, how does it come to pass that a botanist who has been poisoned by rhus toxicodendron for many years suddenly finds that he has become immune to the influence of this heretofore noxious oil? Something more than an external irritant is at work in these three not hypothetic individuals just cited. Something has happened in the economy of these three men to make them susceptible to a given chemical and again to render one of them no longer a victim to its influence.

What this thus far unexplained something is is the elusive x which men are now seeking so diligently, and this something has been the object of my quest for the last two years and more.

Following the lead of Schloss of New York, who worked on the urticarias of childhood in 1912, and of Towle and Talbot of Boston, who investigated the subject of infantile eczema in 1913, and of Goodale of Boston, who has studied so thoroughly the question of the pollens in hay-fever in 1913-1914, I have tried to solve this etiologic puzzle by means of cutaneous food inoculations and by the study of the feces.

At the end of my first year's investigations I made to the American Dermatological Association a preliminary communication[3] with the following conclusions, based on a study of sixty-four cases of chronic eczema:

> From the facts thus recorded and from other investigations not detailed we make the following deductions on the question of food in its relation to chronic eczema at various ages of life:
>
> A. Eczematous infants usually present in their stools an excess of fat or starch. An excess of the former element generally means a moist eczema; of the latter, a dry type.
>
> B. When eczema is present and neither fat nor starch appears in excessive amounts in the feces the physician should look for susceptibility to egg albumin or to milk, or, in default of all these more common causes, to a diminished thyroid secretion.
>
> C. Susceptibility to egg or to milk can be demonstrated by the new method of food inoculations—a procedure analogous to the von Pirquet test for tuberculosis and the Schick test for diphtheria.
>
> D. This cutaneous method can be extended to the study of the action of other food elements in eczematous individuals.
>
> E. Normal people, so far as we have ascertained, do not react to these tests.

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[1] All of the references mentioned will be found in the three following papers: Knowles, F. C.: The External Origin of Eczema, Particularly the Occupational Eczemas, as Based on a Study of 4,142 Cases, Jour. Cutan. Dis., January, 1913. See also the discussion on this article; Dermatitis Caused by Cosmetics and Wearing Apparel, Particularly Those Containing Paraphenylene Diamin, Pennsylvania Med. Jour., to be published. Heimann: A Critical Review of Eczema and Dermatitis, with an Analysis of a Group of Cases, Jour. Cutan. Dis., April, 1916.

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[2] Heimann, W. J.: Jour. Cutan. Dis., 1916, **34**, 259.

[3] White, C. J.: Jour. Cutan. Dis., 1916, **34**, 57.

> F. In chronic eczema the great majority of its victims seem to exhibit anaphylactic reactions to one or more types of food substances.
>
> G. This phenomenon, as evinced in the few instances investigated, seems to be present in other diseases, which have been associated in the past with food disturbances, notably urticaria and probably acne vulgaris.
>
> H. Approximately 20 per cent. of eczematous individuals do not appear sensitized to any of the common food types. These exceptions may denote that all cases of eczema are not due to food sensitization or that special individual articles of food, not tested by us, may be the causative factors. Such exceptions have been demonstrated by pediatrists where, for instance, one child's asthma is produced by English walnuts.
>
> I. In practically 30 per cent. of these eczematous patients one or more of the controls proved positive. This sign may be considered analogous to the symptom usually observed in urticaria, i. e., dermographism.
>
> J. In the few cases where both stool examination and cutaneous tests were made there was one contradictory finding. Fat was excessive in the stool and negative on the skin, while starch was present in the feces and negative cutaneously. Further combined examinations must be prosecuted in the future to strengthen this whole present theory of the relationship of food poisoning to chronic eczema.
>
> K. One cannot apparently positively tell from the type of eczema present what food elements will give positive skin reactions.

About the same time Schloss read before the American Pediatric Society a paper founded on the results of his three years' labor in this field, from which I quote:

> It is unusual to find in one individual idiosyncrasy to one food substance alone.
>
> In nearly all cases of food allergy observed, eczema had existed at some time.
>
> Out of eighteen cases of pronounced eczema sixteen showed cutaneous reactions to the proteins of one or several foods (fourteen to egg, twelve to cow's milk).
>
> That the relationship of the food idiosyncrasy to the eczema may be causative is attested by the therapeutic results, but withdrawal of the toxic food is not always followed by a prompt disappearance of the eczema.
>
> A great number of people, subjects of food allergy, give cutaneous reactions to toxic foods, and, so far as determined, this reaction occurs only in cases of food allergy except in the case of those individuals in whom urticaria factitia is present.
>
> Eosinophilia may be present in cases of food allergy.
>
> In all cases where complete tests have been made the offending food constituents have been the proteins. Guinea-pigs can be passively immunized by the injections of blood or serum from an affected individual.
>
> Patients immunized to egg do not remain immune unless large quantities of eggs are eaten continuously.
>
> A severe attack of food poisoning renders a patient immune to attacks from the same substance for two to three months.
>
> Thus the attacks may be cyclic and repeated tests must be made.
>
> Family histories of similar allergy exist for several generations.

In the discussion of this paper, J. Howland stated that Blackfan had made cutaneous and intracutaneous tests in twenty-three eczematous children and had found them all sensitive to one or more proteins, almost all to egg, most to cow's milk, and two to breast milk. Dr. J. P. Crozer-Griffith remarked that in his belief other food substances than proteins could produce eczema.

Continuing my first year's plan of campaign, two of my house officers, Dr. L. T. Thaxter and Dr. L. M. Van Stone, have made intracutaneous food tests on many of the persons of both sexes and of all ages who have been treated for chronic eczema in the outpatient department or in the skin ward of the Massachusetts General Hospital during my service. The methods of procedure in these cases have been as follows: In a certain number the skin was delicately broken by the rotation of a dental burr, while in others an exceedingly superficial incision was made with a clean, sharp scalpel. The latter method was finally adopted because it produced less artificial disturbance in the controls of the factitiously urticarial subjects. The flexor surface of the arm of the affected individual was cleaned, two parallel rows of four or more incisions were made, and on four of the incisions were placed a drop of cow's fat-free milk, a drop of oatmeal water or of lactose, a small piece of salt-free butter, and a drop of egg albumin. (At times more detailed tests of many substances were made). The other four incisions or abrasions were untouched and left as controls. A positive reaction consists in the reddening and infiltration and, in rarer instances, of the papulation of the skin. If the control incision manifests the same reaction, the test is not considered positive.

In this connection I want to emphasize two facts of omission. I regret these facts, and in future work shall endeavor to correct them. We did not work with the pure proteins of the various foods, and, as a rule, only one test in each individual was made. It will be remembered that Schloss stated that food allergy may be cyclic, and for this reason he made many tests in his cases. This serious omission on my part may account for the many wholly negative examples which will be noted in the following individuals tested — a condition which at one period last winter proved so disappointing that I nearly abandoned further prosecution of this theme.

Strickler and Goldberg,[4] who injected various sterile extracts (egg, cow casein, fish, pork, beef, tomatoes and clams) into the skin of normal patients and patients suffering with several different skin diseases, state that no reaction should be considered positive which does not consist of infiltration to the point of papule or wheal formation which must persist for at least forty-eight hours — any reaction of shorter duration they consider spurious and representing only hypersusceptibility. They conclude that when confronted with a positive reaction they are forced to believe that the foodstuff employed for injection is in some way concerned with the causation of the affection in question.

This is another method, and perhaps from a purely scientific point of view the most exact one to adopt in the future study of this whole question of the etiologic rôle of food poisoning in the production of eczema.

WHOLLY NEGATIVE CASES

Case 1.—G. C. T., aged 23, stenographer. Face and neck crusting and fissured; arms, hands, thighs and ankles show papules. Food tests negative, October 16 and 26.

Case 2.—K. M. C., aged 68, laundress. Skin dry, red and covered with fine scales.

Case 3.—J. L., aged 65, rubber refiner. Duration of disease, two months. Neck, face, forearms and lower legs are red, infiltrated, excoriated and crusted.

Case 4.—L. W., aged 14, schoolboy. Duration of disease, three years. Thickening, lichenification and excoriation of body generally. Food tests negative, Jan. 21, 1915, and again, Nov. 2, 1915.

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[4] Strickler, Albert, and Goldberg, J. M.: Anaphylactic Food Reactions in Dermatology, The Journal A. M. A., Jan. 22, 1916, p. 249.

Case 5.—G. T., aged 79, clerk. Eruptions of disease off and on for ten years. Skin more or less universally dry and infiltrated and the thighs badly excoriated.

Case 6.—F. L., aged 66, housewife. Disease present to our knowledge during twenty years. The forehead, cheeks and chin are dull red, dry and scaling.

Case 7.—M. K., aged 42, housewife. Eczema for twenty years. Elbows red, infiltrated and excoriated.

Case 8.—W. F., aged 13, schoolboy. Treated by me off and on for eleven years. Present eruption consists of small pinhead papules with punctate excoriations. Chest, axillae, abdomen and groins affected.

Case 9.—J. M. J., aged 34, housewife. Disease present during eleven years. Present outlook developed five months previously. Right ear and cheek and neck are pink-red and finely scaling. Hands are red and fissured (uses borax soap and powder and occasionally sulphonaphthol).

Case 10.—J. B., aged 6, schoolboy. Disease six years in duration. Pubes and adjacent thighs are red, papular and thickened; flexures of forearms are red, fissured and oozing.

Case 11.—B. E. G., aged 7, schoolgirl. Both ears are red and oozing.

Case 12.—M. J. C., aged 41, housewife. Used borax and soapine much. Sides of fingers are red, fissured and crusted.

Case 13.—B. P., aged 23, woman stitcher in shoe factory. Backs of hands moist and crusting.

Case 14.—M. H. S., aged 21, student. Moist, crusting patches on hands.

Case 15.—M. M., aged 16, schoolgirl. A dry eczema of both hands of two years' duration.

Case 16.—B. T., aged 42, cigar maker. Disease present off and on for eighteen months. At present, deep-seated papulovesicles (?) on both hands.

Case 17.—R. S., aged 2 months, a boy with nummular areas of erythema, infiltration and scales over head, trunk and limbs of four months' duration.

Case 18.—B. S., aged 1 year, a breast-fed and very fat girl who has had the disease practically since birth. The children's department suggests that some internal secretion is upset. The cheeks and chin show fine, pink papules and the groins are red and moist.

Case 19.—W. S. G., aged 40, motorman. Disease present for four years, more or less of the time. A previously dry and excoriated skin was simply erythematous at the time of the tests.

Case 20.—H. A. C., aged 42, rubber tire repairer. For one year hands have been rough, red and scaling.

Case 21.—W. H., aged 15 months. Disease began at age of 6 weeks and has persisted. There has been much oozing and crusting on scalp, face and arms.

Case 22.—G. E., aged 7 months. Eruption began six months previously, and at the time of the tests there were papules on the buttocks.

Case 23.—H. J. W., aged 4 months. Patches of infiltration, exudation and crusting on cheeks and extensor surfaces of the arms of several weeks' duration.

Case 24.—J. G., aged 6 months, breast-fed girl. Duration of disease, three months. The face is erythematous, oozing, crusting and fissuring.

Case 25.—W. F. C., aged 20, clerk. Fingers have been infiltrated, dry and scaling for seven months.

Case 26.—B. C., aged 15, schoolgirl. Disease has been intermittently present for ten years. Present attack is three months old and consists of redness and fine vesiculation with some crusting on palmar surfaces of right finger.

Case 27.—A. S., aged 38, scrubwoman. For eight months. September 1, palms and fingers show occasional vesicles and fissures. October 20, palms thick and dry.

Case 28.—E. D., aged 38, housewife. Uses naphtha and borax soaps. Duration of disease seven years. Palms red, dry and scaling.

Case 29.—S. U., aged 50, trained nurse. September 14, redness, excoriation, fissuring and crusting on top of three toes for two weeks. October 5, dull brown, sharply bounded, slightly infiltrated skin.

Case 30.—M. M., aged 62. Eczema for thirty years. Whole scalp and adjoining face and large part of body are infiltrated, dry, red and scaling.

Case 31.—E. M., aged 17, clerk. Fingers show patches of redness, oozing, infiltration and vesiculation.

Case 32.—G. H., aged 1 year. Disease present almost since birth. Now behind and under ear is an erythematous, moist, sharply defined area.

Case 33.—L. K., aged 54, housewife. Sixteen years' duration. Disease present at first on palms and for last two years on legs and thighs. At present the palms are very dry and scaling and the legs show excoriated papules.

Case 34.—N. A. H., aged 27, saleswoman. For five months there has been a crack behind an ear. Two weeks ago the process waked up, and now there are moist areas behind both ears as well as dryness and scaling of neck and upper chest.

Case 35.—S. F., aged 3 months. Duration, one month. Generalized erythema and mild exudation. Baby is breastfed.

Case 36.—S. R., aged 13 weeks. Breast-fed. For two weeks cheeks and forehead have shown minute papulation and furfuration.

Case 37.—L. J. P., aged 22, stenographer. Off and on for two years. At present, face and neck infiltrated, dry, scaling and excoriated.

Case 38.—A. G., aged 27, housewife. Backs of hands are dry, leathery and fissured.

Case 39.—S. G., aged 50, shoemaker. For one year has had redness, dryness, infiltration and scaling of hands and wrists.

Case 40.—G. W. M., aged 62, painter and wood finisher for last eight years. Eczema for last five years. Face is red, infiltrated and scaling.

Case 41.—D. B., aged 4 months. Disease present for three months and at present shows a mildly exudative condition of the face and neck.

Case 42.—T. G., aged 7 months. Dirty yellow crusts on both cheeks for last two weeks.

Case 43.—G. M. S., aged 18, schoolgirl. Skin of thumb dry, infiltrated, scaling and fissured for six months.

Case 44.—M. A. G., aged 48, housewife. Eczema "for years." Left hand and fingers edematous. Skin excoriated and shows many superficial pustules.

Case 45.—J. J. W., aged 9, schoolboy. Child painted himself red and eruption appeared and has persisted. Whole face and both arms are covered with an almost coalescent, excoriated, papular eruption.

Case 46.—J. C. F., aged 61, trolley car conductor. Large areas of redness, infiltration and scaling over major portion of trunk and extremities.

Case 47.—J. R., aged 1 year. Breast-fed. Face and ears have been red, excoriated and exuding for one month. Second attack.

Case 48.—M. G., aged 11, schoolgirl. Eczema "for years." Skin at present generally red, thickened and fissured. Face erythematous and scaling.

Case 49.—M. E. B., aged 26, teacher. For last three winters eczema has appeared. Now there are small papules on hands, forearms, face, neck and upper chest. Elsewhere the skin is dry and furfuraceous.

Case 50.—J. T., aged 20 months. Duration three months. Crusts and fissures on face and scalp.

Case 51.—P. S., aged 65, wool weaver. For one year scrotum has been itching, red and infiltrated.

Case 52.—W. S., aged 47, cigarmaker. Hands dry and scaling for previous five months.

Case 53.—L. R. S., aged 53, housewife. Four years' duration. Crusting lesions on scalp, neck and chest.

Case 54.—H. S., aged 3 months. Six months' duration. Forehead and cheeks are oozing and crusting.

Case 55.—H. L. S., aged 35, woolen weaver. Disease present for four months. At present occiput, palms, feet and toes show sharply defined areas of redness, thickening, fissuring and small superficial pustules.

Case 56.—J. S., aged 28. Housework. Eczema "for years." Palms now show irregular, ill-defined areas of mild thickening with erythema and tendency toward fissuring.

Case 57.—R. B. T., aged 66, housekeeper. Duration one month. A general erythema over trunk, limbs and face.

Case 58.—E. B., aged 6 weeks. Breast-fed and vomits after feedings. For two weeks there have been miliary papules over both cheeks and in scalp.

Case 59.—J. T., aged 62, cutter in shoe shop. Disease evident for four months, and at present face is dusky red, dry, infiltrated and scaling.

Case 60.—M. F., aged 23. Housewife who uses soapine and sulphonaphthol. Backs of hands and fingers are very harsh, thickly infiltrated, very dry, and covered with long, deep fissures.

Case 61.—H. W. D., aged 58, bartender. Five months' duration. Back of ears, neck, arms, hands and ankles dull red, infiltrated and scaling.

Summarizing these sixty-one cases of eczema which, on one examination, have given negative reactions to all the food substances inoculated, we find twenty-five examples, or 40 per cent., of the moist, oozing, crusting type, twenty-nine, or 47 per cent., of the red, infiltrated, dry or scaling variety, and seven, or 11 per cent., of the papular kind.

WHOLLY POSITIVE CASES

Case 62.—M. G., aged 9 weeks. Breast-fed. Cheeks finely papular.

Case 63.—A. B., aged 26, male stitcher in shoe factory. Duration one year. Process started with vesiculation of soles and skin and is now infiltrated and fissured.

Case 64.—J. F. K., aged 4. Eruption appeared one week after birth and now appears as fine, bright red papules on scalp, neck, chest and buttocks.

Case 65.—H. C., aged 40, barber. A few papules and vesicles are present on index finger.

Case 66.—A. S., aged 26, housewife. Five months' duration. Hands always worse after immersion in water. Pinhead vesicles persist on fingers.

Case 67.—M. S., aged 24, housewife. For nine months patient has had infiltration and vesicopapules on backs of hands and fingers.

Case 68.—S. T., aged 43. Pick and shovel. Eight months' duration. Skin of legs shows sharply bounded, red, glazed and dry infiltrations.

Case 69.—E. M., aged 6 months. For four months cheeks and scalp have shown deep excoriations and bloody crusts. Two months later the scalp was well and the cheeks dry, pink and scaling.

Case 70.—F. T., aged 6. Disease has persisted six months and at present the skin of eyelids, ears and scalp is infiltrated, crusting and excoriated.

Case 71.—W. C. C., aged 42, chauffeur. Eczema for seven years. The lower half of one leg is moist, red, and apparently without the horny layer.

Case 72.—L. S. H., aged 48, baker. Two months previously the lower leg was infected and now the skin is red, infiltrated and papular.

Case 73.—I. R., aged 3½ months. The first child had eczema also. Patient breast-fed and for two months the cheeks, forehead and anterior part of scalp have shown scattered coalescent papules, some of which are excoriated and oozing.

Case 74.—T. K., aged 7, schoolboy. Duration three weeks. A prurigo-like eczema.

Case 75.—F. L., aged 10 months and bottle-fed for last four months. Following an earache of one week without any applications the skin around left ear and of cheek broke out into papules and masses of redness and crusting.

Case 76.—M. C. S., aged 12, schoolgirl. Skin generally dry and harsh; scalp dry and finely scaling, and pinhead papules generally over the whole body.

Case 77.—I. S., aged 8 months. Bottle-fed. Two weeks' duration. Skin of back and flanks very red and finely papular.

Case 78.—H. M., aged 7 months. Breast-fed. Eczema for eight weeks. At first vesicular and now the skin of face is reddened and thickened.

Case 79.—L. M., aged 30, housewife. Disease present for four years. An attack observed after the use of soapine; and another, three months later, following the use of naphtha soap.

Case 80.—P. D., aged 26, barber. Eruption present for eleven months.

Grouping these nineteen cases which, on one examination, reacted positively to all the food types inoculated, we find nine, or 50 per cent., of the moist variety, two, or 10 per cent., of the dry sort, and six, or 33 per cent., of the papular kind. (The type of one case is not recorded.)

CONTRADICTORY CASES

Case 81.—E. G., aged 45, housewife. Uses naphtha soap, washing soda and soapine. Eczema comes and goes. October 21, fingers red and swollen and paronychia is present. Food tests are negative. October 27, food tests positive.

Case 82.—M. E. M., aged 18, stitcher in overcoat factory. Eight months' duration. October 10, both hands show large areas of reddened, dried and exfoliated skin. Food tests positive. November 10, treatment heals but does not cure. Food tests negative.

Case 83.—F. G., aged 1 year. Face, scalp, back and lower arms are red, infiltrated, oozing and crusting. October 20, food tests positive. October 22, food tests all negative.

These three cases are naturally too few in number to be of any value statistically, but for the sake of uniformity let us record two, or 66 per cent., moist examples, and one, or 33 per cent., dry and scaling.

CASES POSITIVE TO ONE OR MORE ELEMENTS

Case 84.—N. H., aged 5 months, breast-fed boy. Disease evident for five weeks. Face and scalp are a mass of excoriations and crusts. Albumin +.

Case 85.—H. K., aged 5 months. Breast-fed. Intertrigo for three months, general eruption for two days, consisting of flat-topped, small-sized, pink papules on forearms, trunk and legs. Fat +; starch +.

Case 86.—E. M. G., aged 73, housewife. Both feet show areas of redness, scaling and fissuring. Fat +.

Case 87.—J. M., aged 26, bricklayer. Palms are moist, oozing, crusting and fissuring. Fat +.

Case 88.—R. H., aged 16 months. Second attack similar in nature to the first, one year previously. Face, back of hands, and bends of knees are red, moist, oozing and crusting. Milk +; egg albumin +.

Case 89.—I. M., aged 3. Duration perhaps a year. Both arms are raw. Child much neglected. Starch +.

Case 90.—M. L. R., aged 8 months, breast-fed boy. Eruption present almost from birth. Buttocks show fine papules and excoriations. Mother says baby always breaks out after eating eggs. Egg albumin +; wheat +.

Case 91.—B. F., aged 45, housewife. One year's duration. Palms and fingers are infiltrated, exuding and crusting. Starch +.

Case 92.—J. T. C., aged 60, teamster. Ten months' duration. A similar condition two years previously. There is a small, oozing and crusting area on right palm. Fat +; starch +.

Case 93.—B. P., aged 17, woman cementer in rubber factory. For six months face, neck and hands have been red, rough, thick and scaly. Fat +; starch +.

Case 94.—R. K., aged 23, housewife. Duration one year. Fingers and palms are patchily red, vesicular, crusted and fissured. Fat +.

Case 95.—E. B., aged 33, housewife. Afflicted with eczema for twenty-five years, usually beginning in August and lasting until the advent of cold weather. Inspection shows oozing and fissuring of elbow and abdomen. Fat +.

Case 96.—T. M., aged 38, carpenter. For twenty years man has had, despite much treatment from many doctors, coarse, flat-topped, red papules on cheeks and nose. Albumin +; fat +.

Case 97.—P. F. C., aged 49, shipper. A similar attack one year ago. Three weeks previously man swept out a freight car and felt choked by the dust, and the skin prickled. Now the left face and neck are red, moist, and crusting. Fat +.

Case 98.—O. C., aged 10, schoolboy. There are infiltrated and excoriated papules on deltoid areas and on abdomen. Albumin +.

Case 99.—N. L., aged 16 months. Cheeks and ears are erythematous and mildly exudative. Albumin + +.

Case 100.—D. J. S., aged 3 months, breast-fed boy. Duration two months. Both cheeks show indefinite, pink, dry and scaling areas. Fat +.

Case 101.—J. M., aged 45. The face, neck and ears are bright red and infiltrated and in places oozing and crusting. Fat +.

Case 102.—M. L. P., aged 1 year, breast-fed boy. Scalp and face red and moist. Albumin + + +.

Case 103.—R. M., aged 7 months. Duration six months. A generalized vesicular eczema, most emphasized on face, scalp, neck and upper chest. Albumin + + +.

Case 104.—M. S., aged 6 months. The skin of face, ears, trunk and arms is brilliant red, oozing and excoriated. Albumin +.

Case 105.—I. S., aged 3. This girl has spent more or less of her life in the skin ward. Whole body red—at times moist, at others dry and scaling. Albumin +.

Case 106.—M. C. S., aged 12, schoolgirl. Skin is generally dry and harsh and easily irritated. There are pinhead papules over whole body. Fat +; starch +; milk +.

Case 107.—T. J. G., aged 21 months. Eighteen months' duration. Right side of face is pink and moist and shows a few papules. Albumin + +.

Case 108.—S. H., aged 3 months. For two weeks scalp and upper part of cheeks have been erythematous, vesicular and crusting. Albumin +.

Case 109.—H. V., aged 8 months. Duration three months. Subacute exudative condition of face, scalp, neck and upper chest. Albumin + +; starch +.

Case 110.—R. C., aged 2 months, breast-fed girl. Vulvar region is claret red, edematous and moist. Fat +.

We find, therefore, in this partially positive group, nineteen, or 75 per cent., of moist cases; four, or 15 per cent., of dry, and four, or 15 per cent., of papular. Studying these cases over more in detail, we note in the nineteen moist examples of eczema ten anaphylactic to egg albumin, seven to fat, four to starch, and one to milk. Of four cases of dry eczema, one reacted to egg, four to fat, two to starch, and one to milk. Of four papular cases, two proved sensitive to egg, two to fat, and two to starch. Thus we find that out of thirty-six positive reactions in these twenty-seven sensitized individuals, thirteen, or 36 per cent., were due to fat, and thirteen, or 36 per cent., to albumin — in other words, we must conclude that 72 per cent. of our eczema patients are susceptible to egg albumin and butter fat, while only 22 per cent. react to starch and barely 6 per cent. to milk.

These various percentages differ considerably from those recorded in my first year's communication, but perhaps we have not progressed far enough in this work to make our tables of any permanent value as yet. There is, however, one very striking and to me inexplicable and rather discouraging fact in comparing my work of the previous two years, and that is the great proportion of wholly negative results recorded this year, that is, 55 per cent. against only 20 per cent. last year. I have no reasons to offer for this disappointing discrepancy. I cannot believe that the reason lies in the fact that different men made the tests, for this part of the work of last year was done by two or three men, while the same holds true for the present series. Nevertheless, I have not lost faith in the procedure or in its probable value, which I believe will be proved in time. Let me repeat that the pediatricians state that the test to be of conclusive value must be performed more than once on the same person.

Before leaving this part of my theme, I wish to state that I am not trying to prove that all cases of eczema are due to food idiosyncrasy. My intent is to bring to notice the fact that in certain persons this anaphylactic phenomenon is present and in the course of time to be able to prove that this state is responsible for the susceptibility of these persons to external irritants which remain innocuous to their fellow workers and fellow men.

STOOL EXAMINATIONS

There is perhaps another method of attacking this question. I refer to the macroscopic and microscopic examination of the feces. From this procedure we can learn whether or not the digestive and assimilative powers of eczematous individuals are on a par with the normal standard. These examinations have been made by Dr. Lewis Webb Hill and by my house officers, Dr. Thaxter and Dr. Van Stone.

The methods of fecal examination are too well known to require any explanation on my part. I shall merely state that the usual procedures have been followed in the following cases:

CASES WITH NORMAL STOOLS

Case 111.—J. A. T., aged 51, vice president. Duration of disease fifteen years. Attacks appear whenever patient is overworked. At present a widely distributed, very red, almost confluent, papular eczema.

Case 112.—J. M., aged 45. Face, neck and ears are bright red, infiltrated and in places oozing and crusting. Fat +.

Case 113.—T. J. A., aged 53, bottle washer. Disease present for four months. Face, ears, neck, chest, abdomen, thighs, buttocks and soles of feet are red, infiltrated and scaling.

Case 114.—D. F., aged 5. Eczema has been present for seven months and is rather generally distributed. Skin is slightly reddened, roughened, infiltrated and fissured and a few papules are evident.

Case 115.—M. J. D., aged 74, housekeeper. Skin shows areas of redness, roughness, infiltration and excoriations.

Case 116.—J. C. F., aged 61, street railroad conductor. Duration nine weeks. Large areas of redness, infiltration and scaling are present. Food tests are negative.

Case 117.—J. R., aged 20 months, breast-fed girl. Child observed in second attack. Face and ears are red, excoriated and exuding. Nits are present. Food tests negative.

Case 118.—M. L. P., aged 1 year, breast-fed boy. Face and ears show pink-red papules. Albumin + + +.

Case 119.—M. S., aged 11, schoolgirl. Eczema "for years" and at present the face is red, dry and furfuraceous and the skin of the body is generally red, thick and fissured. Food tests are negative.

Case 120.—H. M., aged 9 months. Duration of disease eight months. Breast fed. Skin is reddened and thickened and in places moist. Food tests are all positive.

Case 121.—R. M., aged 7 months. Disease present for six months and consists of generalized vesiculation, especially on scalp, face, neck and upper chest. Albumin + + +.

Case 122.—J. T., aged 62. Cutter in shoe shop. Duration four months. Face is dusky red, dry and furfuraceous. Food tests are negative.

Case 123.—M. F., aged 23, housewife. Patient seen in second attack of disease. Backs of hands and fingers are thickly infiltrated, very harsh, very dry and covered with long deep fissures. Food tests are negative.

Among these thirteen persons with normal stools, seven, or 54 per cent., exhibited eczema of the dry type; four, or 30 per cent., of the moist variety, and two, or 15 per cent., of the papular sort.

CASES WITH EXCESSIVE FATS OR SOAPS IN THE STOOLS

Case 124.—P. F., aged 11 months. Disease present for ten months. Breast-fed for 3½ months. Face and left shoulder show a few persistent areas of red, slightly infiltrated, dry and slightly scaling skin.

Case 125.—A. C., aged 49, clerk. Four months' duration. Palmar surfaces of fingers are red, dry and scaling.

Case 126.—A. C., aged 60, physician. Disease has been present intermittently for six years, and for the last three months the patient has observed a dusky edema of eyelids, pink-red maculopapules on forehead, and redness, infiltration and scaling on several fingers.

Case 127.—H. W. D., aged 58, bartender. Five months' duration. Ears, neck, arms, hands and ankles are dull red, infiltrated and scaling. Food tests are negative. The stool shows microscopically a rare globule of free fat, a small amount of soap and an occasional starch particle.

Case 128.—M. S., aged 6 months. Face, ears, neck, chest, trunk and arms are brilliant red, oozing and excoriated. Albumin +. The microscope shows a slight amount of fat and a considerable degree of soap.

Case 129.—I. S., aged 3. A frequent visitor to our skin ward. The whole body, including the face and scalp, is red and infiltrated, in places dry and in places moist. Albumin +. Macroscopically a typical soap stool; microscopically there is a considerable amount of neutral fat and an excess of soaps.

Case 130.—M. C. S., aged 12, schoolgirl. The skin is generally dry and harsh and easily irritated. The scalp is dry and finely scaling. There are pinhead papules generally over the whole body. Fat +; starch +; milk +. Microscopically the stool shows a moderate excess of soaps.

Case 131.—M. E. B., aged 26, teacher. Disease present for last three winters, absent in summer. Face, neck, upper chest, arms and hands show small papules some of which are excoriated and oozing while others appear dry and furfuraceous.

Case 132.—F. Q., aged 20, brick maker. Disease for sixteen months. Face, scalp, trunk and extremities show areas of infiltration, papules, excoriations and crusts. Some cellulose and a small amount of soap are present in the stools.

Case 133.—J. T., aged 20 months. Disease of three months' duration. Greasy crusts on scalp, and crusts and fissures on face. Food tests are negative. Microscope shows a moderate excess of soaps, but no free fat.

Case 134.—P. S., aged 65, woolen weaver. Man has had an itching, red and infiltrated scrotum for one year. Food tests are negative. Stools are not formed and gas fermentation is present. Microscope shows a moderate amount of soaps.

Case 135.—W. S., aged 47, cigar maker. Man has had previous attacks of eczema which disappear when occupation is given up. Present eruption apparent for five months. The hands are dry and scaling. Food tests are negative. The microscope reveals a very small amount of neutral fat.

Case 136.—E. G., aged 7 months. Breast-fed. Duration two months. Over the whole face are thick, dirty, heaped-up crusts and excoriations. There are also a few papules on both arms. November 30, and December 8 and 13, a moderate amount of soaps were found microscopically.

Case 137.—A. T. B., aged 43, housewife. A varicose eczema which has appeared also in 1908 and 1911. A small amount of free fat occurs microscopically.

Case 138.—L. R. K., aged 53, housewife. A recurrent eczema. At present there is crusting on scalp, neck and chest. Food tests are negative. The stool is foul, brothy, semisolid with neutral reaction. Considerable excess of soaps and moderate excess of starch are present.

Case 139.—T. J. G., aged 21 months. Disease evident for eighteen months. Right side of face is pink and moist and shows a few papules. Albumin +. Stool is strongly acid, loose, foul, brothy, and shows gas bubbles. A few neutral fat droplets are present as well as an excess of soap. A fermentation type of stool with moderate fat and sugar indigestion.

Case 140.—S. H., aged 3 months. Duration two weeks. Scalp and upper cheeks are erythematous, vesicular and crusting. Albumin +. Stool is soft, yellow, very acid and contains many soft small curds, considerable mucus and considerable fatty acids and soaps.

Case 141.—H. S., aged 3 months. Duration of disease the same. Forehead and cheeks are oozing and crusting. Food tests negative. Stools are rather watery, brownish-yellow, slightly acid and contain a small amount of fat.

Case 142.—I. S., aged 8 months. Bottle-fed. Disease two weeks old. Skin of back and sides very red and shows pinhead papules. Food tests are all positive. Five examinations of the stools revealed many soap suds, some soft curds, some mucus. The sixth test when the eczema was practically gone revealed a normal stool.

Case 143.—H. L. S., aged 35, woolen weaver. Duration four months. Occiput, palms, feet and toes show sharply defined areas of redness, thickening, fissures and small pustules. Food tests are negative. Stool contains a moderate excess of soap.

Case 144.—J. S., aged 28. Housework. Disease present for years. Palms show irregular, ill defined areas of mild infiltration with redness and tendency toward fissuring. Food tests are negative. Stool is musty and contains a large excess of neutral fat and of soap and of fatty acids.

Case 145.—R. B. T., aged 66, housekeeper. Duration, one month. General erythematous condition of face, trunk and limbs. Food tests are negative. Stool is black, foul, frothy, almost fluid, and contains a moderate excess of soaps.

Case 146.—E. B., aged 6 weeks. Breast-fed girl. Two weeks' duration. There are minute miliary papules over both cheeks and on scalp. Diaper region is generally reddened. Food tests are negative. Stool is spongy and yellow; contains curds and a moderate increase of neutral fats and soaps.

Case 147.—J. E. H., aged 80, manufacturer. A mild but very chronic and persistent erythematous and infiltrated eczema of the feet. Stool is foul, alkaline and pasty and contains a slight excess of soap.

Case 148.—A. W. S., aged 31, physician. An infiltrated, rather cornified condition of the palms of three years' duration. Stool shows a very large excess of neutral fat and an enormous excess of soaps and fatty acids. The microscopic field seems to be composed of fat.

Case 149.—C. F., aged 6 months. A girl breast fed for six weeks only. Eczema present for three months. The cheeks are fiery red and moist. The hands, forearms, lower legs and feet show intracutaneous papules. The stool shows a very rare neutral fat droplet and a moderate excess of soaps and fatty acids.

Case 150.—R. F. G., aged 6 months, a breast-fed girl. Duration 3½ months. Cheeks show small areas of redness, moisture and excoriation. Stool is very acid in reaction and shows a moderate excess of neutral fat and a very large excess of soap and fatty acids.

Case 151.—H. K. P., aged 59. An eczema of many years' standing. Palms and soles thickened and cornified in definite areas. Stool is liquid, foul, brothy, strongly acid and contains a large amount of cellulose and a slight excess of neutral fat.

Case 152.—E. L. Y., aged 2 years. Duration, approximately eighteen months. At first marked egg anaphylaxis was present but eventually outgrown. For last few months disease has been present in scalp, which at present is buried under a mass of white, granular scales. Stool shows a large excess of soap.

Of these twenty-nine patients exhibiting an excess of fat or soaps in the feces, fifteen, or 51 per cent., showed a dry type of eczema; nine, or 31 per cent., a moist, and eight, or 18 per cent., a papular.

CASES WITH AN EXCESS OF STARCH IN THE STOOLS

Case 153.—F. G., aged 1 year. Scalp, face, lower arms and back are red, infiltrated, oozing and crusting. Food tests are all positive, October 20, and all negative two days later. Stool shows a large excess of undigested starch.

Case 154.—H. V., aged 8½ months, a breast-fed boy. Duration three months. Scalp, face, neck and upper chest are mildly exudative. Albumin + +; starch +. Stool is green, loose, strongly acid and contains a moderate excess of starch—"a typical stool of carbohydrate indigestion."

Case 155.—R. C., aged 2 months, a breast-fed girl. Disease present since birth. Vulva is red, moist and edematous. Food test is positive to fat. The stool shows a typical fermentative diarrhea due to excessive carbohydrate fermentation.

Case 156.—L. R. K., aged 53, housewife. Disease four years old and shows crusting on scalp, neck and chest. Food tests are negative. Stool is foul and brothy and contains a considerable excess of soaps and a moderate excess of starch.

In the four individuals whose stools contain an excess of starch, all displayed the moist variety of eczema.

Summarizing eczematous individuals from this point of view, we find that 28 per cent. passed normal feces, 63 per cent. stools containing an excess of fat, and 8 per cent. stools exhibiting a surplus of starch. These are significant figures.

Analyzing the last group of patients, do we find, when both skin tests and fecal examinations have been made in the same individual, that these two methods of study always reveal similar results? I regret to say that we do not. In the patients with normal stools one showed a positive cutaneous test to all the types of food inoculated, and one a test positive to fat. In the fatty stool group, ten patients showed cutaneous tests negative to all types of food inoculated, and two positive to starch. In the starchy-stool group, one individual exhibited tests wholly negative. These discrepancies are regrettable rather than vitiating to the object of our study — mere inability to digest and assimilate all types of food ingested does not necessarily mean that the individual has become sensitized to these foods; and yet the same inability may possibly play a rôle in the cause of the individual's eczema.

CONCLUSION

From the detailed results it is evident that a goodly proportion of persons affected with chronic eczema show sensitization to the various types of food and that a much larger percentage are unable wholly to digest all the elements of the foods they eat.

I cannot present exact figures showing the comparative percentage of improvement or of cures resulting from the correction of errors of diet in these eczematous patients as revealed by these two methods of examination — I can merely assert that chronic eczema should no longer be the bugbear that it was; in fact, with the aid of these two methods, one should expect to cure and cure reasonably quickly the great majority of these patients who present themselves for treatment. I believe that this assertion could not have been made with equal truth two years ago.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HEIMANN, KNOWLES AND WHITE

Dr. Ernest Lewis McEwen, Chicago: The sources from which the medical student gains his knowledge are, first the teacher, and, second, the textbook. I have always found the teaching of the subjects of dermatitis and eczema extremely difficult, largely because the textbooks handle them in an unsatisfactory way. They make the chief distinction one of etiology; eczema is caused from within, and dermatitis from without. As a matter of fact, these cutaneous disorders both have external and internal factors of origin, and in the absence of clinical differences the student is wholly at sea as to what constitutes eczema and what dermatitis. I have been on the lookout for some one to write a textbook on dermatology who will have the courage to abandon the old methods of discussing these subjects and to strike out along new lines. One or the other of these two terms will have to be abandoned in the interest of clearness; and despite the fact that the term eczema has been used so long and so extensively I do not feel that we must necessarily retain it. I believe Dr. Heimann's conception of these two disorders is very close to what will eventually be accepted. If eczema and dermatitis are identical then we must correct the nomenclature; one or the other term must be eliminated. If such a change were made for the sole purpose of helping the student to a better understanding of a difficult subject it would be amply justified. In searching for the causes of these cutaneous disturbances we have a wide field to cover and much earnest work must be done. Dr. White is following a promising lead and I believe we may expect valuable findings from his work. The internal factor is the great unknown quantity which all must seek in these diseases, if we are to put them on a truly scientific basis.

Dr. Jay F. Schamberg, Philadelphia: I agree in the main with the propositions expressed by Dr. Heimann. We are all instinctively worshippers of tradition, particularly medical tradition, and we reluctantly give up such a term as eczema. We have, however, during the course of many decades, gradually lopped off from this a comprehensive group of diseases like scabies, eczematoid, ringworm, etc., and this pruning will continue. The most scientific classification of skin diseases is that which is based on etiology. If it is definitely determined that a certain type of eczema is due to the poisoning from ivy or primula, that another is due to food, it is clear that they are separate and distinct conditions, although we may not be able to differentiate them always clinically. The etiologic factor, it seems to me, is the dominant one, for through its recognition the cure is effected. For the past year or two, through the activities of Dr. Strickler, one of my associates, we have been trying to study the question of food sensitization and its relation to eczemas. We must be prepared to realize that with some food substances, such as cow caseins and egg white, we are dealing with very pure proteins, and one must be warned against regarding all reactions with such rich protein substances as necessarily indicating a relationship to the eczema under consideration. We not infrequently see reactions from milk, and yet on the exclusion of milk no favorable result. On the other hand, remarkable results are sometimes achieved. To produce an adequate protein extract of meat it is necessary to use an alkali, and it is important to determine that the alkali does not induce of itself a reaction in the skin. These protein extracts must later be subjected to analysis for the determination of nitrogen to make sure of the amount of protein they contain. We must be certain of our methods and technic before we can expect to arrive at results which will be really indicative of the true state of affairs. Many persons are susceptible to certain external irritants by reason of an inherent susceptibility which others do not possess. One man may be highly susceptible to poison ivy, for example, while his neighbors may be insusceptible to it. I recently saw a girl of 14 who for three or four years has suffered from several severe attacks of ivy poisoning each year; perhaps three months of each year were spent in recovering from these attacks. I determined to try to immunize her and ordered a 1 per cent. tincture of rhus toxicodendron in 100 c.c. of menstruum, of which she was to take 3 drops after each meal, gradually increasing the dose. At the end of one month she was taking 60 drops after each meal. Since then she has not only been able to pass poison ivy at close range, but also to touch it without bad effect. The result was so striking that I expect to follow this method in other cases and I hope that some of those present will give it a trial.

Dr. Henry Truman Byford, Chicago: Formerly I suffered from patches of eczema on the lower limbs, sometimes lasting for weeks, sometimes only a few days. I began experimenting with my food and found that I would usually improve rapidly by cutting out the starches, and subsequently I found that by eliminating the fats the eruptions would always disappear very promptly. After trying various diets, I concluded that milk and eggs were the causes, but that they did not act except when the stools contained fat or gave evidence of carbohydrate fermentation. Hence, in my case the cure consists in keeping the alimentary canal in a normal condition and in eating the offending proteins in quantities that the system needs and is prepared to metabolize. Acting on this belief I have no more trouble except about once a year or so when I grow careless and get caught with a beginning eruption. In these rare attacks the itching subsides as soon as I begin to act on this belief, and the unoffending rash rapidly fades away. Hence, I consider the cause of my former attacks of eczema to have been deranged digestion that interfered with the complete digestion of certain proteins and thus resulted in anaphylaxis.

Dr. Richard L. Sutton, Kansas City, Mo.: Dr. Heimann and Dr. McEwen suggest that we discard the term eczema, and consider all lesions now grouped under that heading as instances of dermatitis. I wish to arise to a point of order. After all of the various interlopers, such as scabies, infectious eczematoid dermatitis, ringworm of the palm, and a host of other diseases have been thrown out, I believe there still remains a small group of cases, reflex if you like, but entitled to be considered as idiopathic nevertheless, which belongs in this category. Dyer's preputial type, and Whitefeld's flexural variety may be taken as more or less typical examples. Following Dr. White's suggestions regarding the rôle excessive fats and starches and anaphylaxis play in the causation of infantile eczema, my therapeutic results in this disorder have been much better during the past two years than they were prior to that time. It would be extremely unwise to consider all cases of eczema as examples of dermatitis, pure and simple. Clinical observation, research, and frequent discussions will go far toward clearing up the obscure points in question.

Dr. E. D. Sager, Cleveland: I think that in many instances these eczematous eruptions are the result of faulty metabolism, and my routine treatment in many cases consists of salicylate of mercury, in combination with taraxacum and an alkali in order to overcome the acidosis that is almost invariably present. Tests of the blood and stomach contents should first be made. Externally, I have had very good results with the Finsen light.

Dr. Michael Leo Ravitch, Louisville, Ky.: In regard to the classification of eczema, I agree with Dr. Schamberg, and I do not think the term should be discarded. Rather, I would divide the eczemas into two classes, i. e., those due to internal causes I would call true eczema, and those due to external causes, such as occupation, mechanical or chemical irritants I would call dermatitis. I believe that faulty internal secretions have much to do with the production of true eczema. The sensitization of food tests carried on under Dr. White ought to be commended. While nothing definite has yet been established, we may yet learn a great deal from such experiments.

Dr. Andrew P. Biddle, Detroit: I would call attention to the treatment of chronic eczema from another point of view. I agree with Dr. White that the food element has much to do with its causation, but I have studied the subject from a different angle. I have associated with me men who are specialists in other lines, internal medicine, gynecology, roentgenology, etc., and in as many cases of chronic eczema as possible have submitted the patient to a thorough general examination. Our investigations have shown almost invariably some degree of ptosis or stasis of the bowel, and frequently, in women, a displacement of the uterus. In short, we have usually found some evidence of stasis in the ileum or colon, and, when we have succeeded in correcting this condition, we have aided materially the cure of eczema. I am firmly convinced that the only way that we shall be able to cure chronic eczema is to find the underlying predisposing cause and have the condition corrected.

Dr. Ernest Dwight Chipman, San Francisco: I was much impressed with the parallelism of the papers of Drs. Heimann and Knowles. They both lead back inevitably to the doctrine of cutaneous reactions which indicates that the same cause may provoke different reactions in different individuals and that the same eruption may be provoked by most diverse causes in predisposed subjects. One of the older French writers aptly remarked: "There is no eczema, only eczematous." Dr. White's paper was of particular interest to me because it emphasized one of the points which I tried to bring out in my paper on dietetics, namely, that while not every skin disease demands dietetic treatment those which do require such care do so for some definite reason and every contribution to our knowledge of fundamental dietetic indications relieves us by so much of the tendency toward haphazard feeding.

Dr. John G. Burke, Pittsburgh: I should like to mention two instances where one of twin babies had a vesicular eczema, the mate in both cases being entirely free from an eruption. The first set were nursed at the breast and the second set were both receiving the same modified milk mixture. As both these children received the same care and attention and the same food as its mate, if eczema is due to an external irritant or to an inherited weakness of the skin, or to the skin being sensitized by the food, why did one child have the eczema and the other twin escape it?

Dr. James Moore King, Nashville, Tenn.: Several years ago I was very much impressed with the effect of milk on a child. The patient was a boy with recurrent attacks of eczema; the milk would be withdrawn from his diet and he would get almost well; then he would resume his milk and have a prompt recurrence of his eruption. Diet unquestionably plays a great part in eczema. Whether the cause is due to the waste products of the food or to a separation or dissociation of the food molecule we do not know, but it will probably be found to be a split protein which produces anaphylaxis or sensitization. Urticaria is the result of various causes, and I see no more reason for giving up the term eczema than that of urticaria. Many years ago Dr. Isadore Dyer called attention to a form of eczema associated with adhesions about the prepuce in male infants: in these cases I have found that circumcision gives almost immediate relief.

Dr. Lloyd Warren Ketron, Baltimore: I should like to ask Dr. White if he has used the intradermal method of testing the sensitiveness of the skin to these proteins? I did this with milk in about twelve or fifteen cases of skin diseases as well as normal cases and found that they all reacted.

Dr. Isadore Dyer, New Orleans: I have views on this subject somewhat divergent from what has been said. Eczema has always appeared to me to be in most cases a condition rather than a distinct entity, and that if we take that view of it we could handle it better. One difficulty is that the term eczema, almost ever since its origin, has been used as an omnibus both by the profession and the laity, and we have come to regard it as a generic term. To my mind the word implies a catarrhal condition. Our conception of a catarrhal condition in other organs than the skin is very clear, and my conception of eczema is that of a catarrhal condition in the skin itself. That there are conditions of the skin which properly fail under the term of eczema has been generally appreciated. I refer especially to the types of eczema which are called reflex, such as the type we see in infants which appears shortly after birth and lasts weeks or months, where the eruption will disappear and recur, presenting all the evidences of a catarrhal condition. To me, no other term than eczema can be employed to define the condition, and we can find no excuse for calling it a dermatitis. Its causes are varied, but nearly always the cause is reflex. The adhesions of the foreskin causing reflex eczema have already been referred to by Dr. King, and that condition as a cause of eczema in male infants has been repeatedly verified by me during the past twenty-five years since it was first suggested by me as the chief cause of reflex eczema in male infants.

Dr. Samuel E. Sweitzer, Minneapolis: In the teaching of this subject it has been my custom to classify all cases of known origin as dermatitis and all cases of unknown origin as eczema. I sometimes have been inclined to believe that the cases I recognize as eczema differ somewhat from those I regard as dermatitis.

I was very much interested in Dr. White's paper regarding diet in infantile eczema. In our clinic, we refer every child with eczema to the pediatrist for dietary regulation, and we do not get any results in those cases until the diet has been regulated. In Minneapolis I have been struck with the increased number of cases of eczema which are due to a mild ichthyosis. These eruptions appear in the winter and disappear in the summer, and I have found that these cases have responded very well to local treatment and also to the administration of thyroid. We have also been on the lookout for alveolar abscesses in connection with chronic eczema and have endeavored to trace a connection between the two conditions.

DR. H. H. HAZEN, Washington, D. C.: I do not know whether we are justified in omitting all mention of external parasites, especially bacteria, as exciting factors in some of these cases. Drs. Ormsby and Mitchell demonstrated the existence of such cases. In children with discharging ears we often see a true vesicular eczema where the pus has run over the skin. In children who sleep together we often see a true eczema extend from one to the other, showing evidence of a definite contagion. There is another common type that begins with a small vesicle; if you will remove the top from one of those tiny vesicles and thoroughly cauterize the lesion, you will prevent the development of other vesicles. I have taken the contents of such a vesicle and inoculated myself with them and have been successful in causing an eczema. This has led me to the belief that in some of these cases there is a bacterial infection, while in others there must be a predisposing cause. In regard to the observation made by Dr. Biddle I would say that during the past two years we have roentgenographed several hundreds of patients, and in almost every instance we have found some degree of abdominal ptosis, so that I have come to the conclusion that we must not attach too much importance to this factor. In regard to the intradermal injection referred to by Dr. White, it would be interesting to try the final food products and see what they would do, as Dr. Ketron has suggested to me.

DR. H. C. BAUM, Syracuse, N. Y.: This question of nomenclature has brought out very divergent views. I myself do not see that it matters very much provided we keep the fundamental nature of the trouble in our mind. For years we have taught that all so-called eczemas were examples of dermatitis, and the latter we divided into two groups, one of known cause, the other unknown. Dr. Heimann has crystallized these thoughts in his paper and fortified them with pathologic evidence. Dr. White and his associates have opened up a new field, and I think we are all hopeful that its further development will aid greatly in the care of these patients. There is one aspect of the subject to which I would like to refer, namely, that of diet. Some patients cannot tolerate starches unless something is given to aid in the digestion of the starches and the same is true of certain protein substances. After all, Nature is the best physician and if we go back to Nature and put our patient in a high state of physiologic health, he will do better than if we eliminate this and that article of diet and neglect his general condition.

DR. FRANKLIN W. CREGOR, Indianapolis: Possibly the physiologist might help us in clearing up these so-called anaphylactic reactions. Years ago Crocker called attention to our inability to explain the blush areas anatomically, while the more recent theory is that anaphylaxis may be attributed to the blood platelets producing a partial thrombosis and thereby exciting a trophoneurosis. It is a fruitful source of investigation, and we must depend on the physiologist for some aid in its solution.

DR. ROBERT A. C. WOLLENBERG, Detroit: We must consider not only quality, but also quantity, i. e., caloric values. We know that most Americans eat too much meat, and considering the excess food in the light of a waste product, we can readily see that as such it may give rise to some of the phenomena which we describe at the present time as eczema. Working along these lines, I have been cutting down the fats and starches, having in mind both quantity and quality. Most of the children we see have been fed too much starch, and by carefully regulating their diet we have been able to get some very satisfactory results.

DR. WALTER J. HEIMANN, New York: In spite of the apparently divergent views expressed by the various speakers, I think we are not so very far apart. Dr. Sutton did not think it right to abandon the term eczema because it represented a group of cases the causes of which are unknown. I agree with the latter portion of his remarks. As a matter of fact, it does not make much difference whether we call it eczema or dermatitis of unknown origin, but for the sake of common sense, when we definitely know that a certain condition is a pathologic entity and when we know its etiology, let us call it a dermatitis of such or such an origin, or, if we do not know its origin, let us admit it frankly in our terminology, favoring dermatitis of undetermined causation to eczema.

In regard to the statement made by Dr. Biddle, I am inclined to agree with Dr. Hazen's view. I cannot conceive of a gastric ptosis causing eczema, although if there is intoxication associated with the intra-abdominal condition it may act as a predisposing cause. Dr. Burke spoke of twins receiving the same diet and living under similar conditions, one suffering from an acute vesicular eczema and the other entirely free from the disorder. Of course, such instances are difficult to explain; it comes down to the individual reaction of the child to a general cause, or to some local precipitating cause.

In connection with Dr. Dyer's remarks, I think he agrees with my conception of eczema, for I said that I regarded it as a condition rather than a disease. As an inevitable corollary it follows that it becomes the duty of the physician to try to determine the underlying cause of the condition. It would be as appropriate to call colitis of unknown origin an eczema of the colon, as it is to call a dermatitis of unknown origin eczema.

DR. CHARLES J. WHITE, Boston: I am perfectly in accord with what Dr. Heimann said in regard to the etiology of these disorders: the only point is the question of terminology. We have so many causes of eczema that it renders this question a very difficult one, and before coming to any definite conclusion as to the nomenclature of these disorders I would like to emphasize the statement that it should be settled by an international board of dermatologists; not by a purely American board. Dr. Schamberg mentioned an interesting observation in the treatment of a case of poison ivy, and I think we should follow up that line of treatment. It is in accord with the approved method of treating hay-fever and other affections, the object being to render the patients immune. I would like to add one other possible factor in the production of dermatitis venenata, namely, the spruce tree. My father spoke of it in his book merely as a possibility in connection with the use of spruce gum, but yesterday I saw a case of undoubted spruce tree poisoning. In regard to diet in psoriasis, while most physicians have been restricting the protein intake, my associates have gone on with the idea that by excluding the starches in psoriasis, the patients would improve, and their results thus far have been very encouraging. These patients have been put on the Allen dietary. Dr. Ketron spoke of the intradural method of testing proteins. I have had very little experience with it, but the more one wounds the skin in these cases, the more likely one is to produce these reactions. Dr. Sweitzer spoke of leaving the diet in eczema to the pediatrist. I am not in favor of that. Only a few days ago I heard a pediatrist say that all cases of eczema in infants should be treated by the pediatrists. As to the thyroid treatment of eczema, it might be beneficial because we know that the administration of thyroid extract increases the perspiration. When Dr. Hazen referred to eczema in children with discharging ears, I wondered whether he was not getting into the impetigo class; this is a larger group than we appreciate.

DR. FRANK CROZER KNOWLES, Philadelphia: I have been extremely interested in this discussion and I think it is a great pity that some decision cannot be reached on the subject of eczema. We had a discussion on the subject before this section in 1908 and before the American Dermatological Association four years ago, but it is still, apparently, as far from being settled as ever.

Superstition and Medicine.—Born in ignorance, nourished on superstition, clothed with mysterious rites and ceremonies, medicine has had a hard task to free itself from hereditary and environmental influences. Attempts to break away from these adverse and retarding conditions has marked the highest efforts of the race. During nearly every century since recorded history began, there have been some superior men, intelligent and far-seeing above the masses, who have contributed something to science. Such were Hippocrates, Galen, Pare, Servetus, Harvey and others whom we now delight to honor as contributors to knowledge and benefactors to the race.—V. C. Vaughan, M.D., *Science*, Dec. 8, 1916.

SUMMARY OF THE PENNSYLVANIA STATE WORK IN POLIOMYELITIS

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The geographic range of poliomyelitis, as I know it, includes England, beginning in 1838, Norway, Sweden, Denmark, Germany, and on this side of the Atlantic ranging from Cuba to northern Alaska. In the last twenty-two years, several epidemics have appeared in different sections of the United States.

The first to occur in Pennsylvania was in 1907, when 131 cases were reported by the grace of the physicians, the disease not being as yet reportable. Seven counties (Elk, Forest, Jefferson, Clarion, Venango, Warren and Lawrence) shared in this outbreak. The next year there was a similar outbreak, but altogether limited to Adams County, which had been untouched the year before. Here, as later, the mapping of the cases shows that the disease is not more likely to reappear in a center previously infected than it is to appear in some new center.

In 1909 our commonwealth suffered but slightly from poliomyelitis. The progress of the disease elsewhere led me to call the Advisory Board of the State Department of Health together. The result of our conference was the promulgation of a regulation placing poliomyelitis among the diseases reportable in Pennsylvania; thus our first comprehensive morbidity and mortality statistics began in 1910.

Up to July of that year, few cases were reported, but then came a rapid increase. In the month of August we had 275 cases, while September showed 378 cases. In October the fall began, the month bringing only 197 cases. In November there was a further fall to 95 cases, and during December it went down to 15 cases. This visitation totaled 1,112 cases in six months.

During the year 1910 there had occurred 269 deaths from this disease. From this eventful year for Pennsylvania, we looked forward to the next year with anxiety, yet 1911 passed away leaving a record of only 177 cases. Then came 1912 with 267 cases, while in 1913 there was a drop to 141 cases, and in 1914 to 113; but again in 1915 a rise to 162 cases.

The cases in these years were very much scattered throughout our territory of 45,000 square miles: the scattering, however, was not uniform. Whole counties were free, and we really have been unable to collect data to account for this distribution. In some of the cases, in remote, isolated homes in the mountains, there was not much else to hold responsible except the United States mails, if there was an independent micro-organism or a host in which the organism was spending part of the cycle of its life, or possibly a mere carrier to be transported from place to place.

The only real nestling notable in 1914 was in the southwestern section of Washington County, where we had thirty-two cases. The concentration of 1915 was in the northwest corner of the state, in and adjacent to the city of Erie, where there were about a hundred cases.

The year 1916 opened well, and as late as July 1 only twenty-two cases appeared in our statistics. This condition existed notwithstanding that Greater New York had an unprecedented number of cases during the latter part of June. So severe was this outbreak that, after a visit to New York, I had a full realization of the hysterical condition of the public over the sudden visitation of the disease with its high mortality.

Dr. John J. Mullowney, assistant chief medical inspector, was at once detailed to Brooklyn to live, and to observe and report everything connected with the epidemic, from the environment to the subjects, both alive and dead. A letter to Commissioner Emerson of New York brought Dr. Mullowney every facility to study the situation in a comprehensive way. His reports soon made plain that a considerable number were driven into the hospitals by the regulation calling for a quarantine of eight weeks.

In certain sections, however, in districts in which the disease prevailed, there was a tendency to stampede from what was called the "plague," and Pennsylvania was already being infected by those in the acute stage of poliomyelitis, as well as those who were infected and went down on their arrival in our commonwealth in one, two, three, four, five or six days.

While I do not intend going into the details of the work done in Brooklyn, I wish to mention the fact that we collected flies of different species from the infected rooms. These we ground up and soaked in a neutral salt solution, using the filtrate to inoculate monkeys, altogether with negative results.

With the facts already mentioned before me, and letters, telegrams and telephone calls from our people, asking and even demanding that some radical measure be taken to prevent the plague, raging in New York and New Jersey, from spreading into our state, and in my ignorance regarding the etiology of the disease and its methods of transmission, together with the information that along the railroads leading from the infected centers of New York and New Jersey the disease was rapidly increasing and showed a marked difference at these points over other places in the state, I immediately called the Advisory Board of the State Department of Health to consider the advisability of quarantining Pennsylvania against other states. The result was the unanimous carrying of a resolution to quarantine. This meant the guarding of a thousand miles of boundary line.

The department, which had been confronted by other emergencies, had no trouble in selecting the geographic points necessary to guard against various methods of travel from our sister states.

Men were equipped, instructed, and on duty within about forty-eight hours after the call for mobilization. The absolute quarantining of the sick was fixed for thirty days. These radical measures were, as I have said, demanded by the public, and our want of knowledge forbade our resisting the wish of those whom we represented, and whose health and lives had been entrusted to our care. The county medical inspectors, the health and special officers, numbering all together about a thousand men, were instructed to caution every one against the introduction of the disease among us and to report by wire to the central office of the department of health in Harrisburg every case discovered.

Officers were instructed to arrest on sight and quarantine suspects against coming in from other states. Circulars were distributed giving careful instructions how to nurse the sick. Medical men were requested to visit the patients in the townships, villages and smaller boroughs. Nurses had their instructions to visit the poor patients and have the homes cleansed and screened against insect life. All foodstuffs for children were ordered cooked, and the acutely sick were gently cared for until the active poison had played its part, and then nurses sought hospital beds for the crippled children that they might receive the proper treatment to restore mobility.

All railroad coaches coming from infected districts were disinfected; all second-hand furniture coming from other states had to have a clean bill of health, as did all incoming children under the age of 16 years. These measures kept thousands of sick and infected children out of our commonwealth, and I shall leave it to those present to determine what relation that had to our fortunate escape from a repetition of what happened in New York and New Jersey.

You must remember that when this was done, and today, the medical men in charge of the epidemic in New York thoroughly believed that they had abundant proof of transmission of the disease by contact and by third persons. With this belief so thoroughly grounded in those who were dealing with so many thousands of cases, there necessarily came up the question of the advisability of moving the educational machinery of this commonwealth on a short period to get it out of the danger zone, by taking in a portion of the safer season of the coming spring time. The result was that the advisory board voted to postpone the opening of all schools until Sept. 29, 1916. This moved the entire piece of educational machinery on in one solid block without interfering with its organization by breaking cogs out of the wheels here and there through the limiting of the postponement to those under 16. The people, however, lost sight of the organization of the schools and demanded that they be put on the same ground with moving picture shows and other places of amusement, where only children under 16 years of age were forbidden to congregate. The first order, therefore, was rescinded and the general rule passed forbidding all children under 16 years of age to attend school until September 29. This left the organization of the school system entirely to the educators, and they wisely ruled to keep the schools closed to those of all ages, and in many cases later than September 29.

The curve of the insect life runs closely parallel to the curve of poliomyelitis. The disease is essentially a disease of warm weather. The few exceptions are to be found very far north where the custom of living in huts in great filth and heat, and amid insect life is common. The environment in the very northern and cold climates must be thoroughly understood by us before we conclude that it contradicts our belief that we are dealing with a disease of warm weather.

When we turn to our statistics, the analysis of the mortality of poliomyelitis by sex and age adds little or nothing to our previous knowledge concerning the occurrence of the disease or the fatality. Nearly a fifth (19.8 per cent.) of all deaths occur under 1 year of age; a little more numerous (20.6 per cent.) are the deaths between 1 and 2 years. For each of the periods from 2 to 3 years and from 3 to 4 years the proportion of deaths is close to 13 per cent., and for the next year of life drops to somewhat over 8 per cent. Taken together, the deaths under 5 years make up almost three quarters of all. For the next quinquennial period, between 5 and 9 years, the percentage falls to nearly 15 (more exactly 14.7). For the next it is a little over 5 (5.3), and the same percentage remains for all patients over 15. An influence of nativity on the morbidity or mortality is nowhere evident.

An exhaustive report, including all phases of the epidemic in Pennsylvania, will appear in our annual report to the governor.

FURTHER OBSERVATIONS ON THE CONNELLAN-KING DIPLOCOCCUS THROAT INFECTIONS

THEIR SEQUELAE, WITH ESPECIAL REFERENCE TO ARTHRITIS *

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NEW YORK

The Connellan-King diplococcus is a small gram-negative organism. It was first observed in my cases in the latter part of 1914, Connellan having found it a little earlier around the roots of teeth extracted by Hasbrouck and Palmer. We have never found it outside of the mouth. There, we have found it either in a tonsillar crypt or in some sinus in the tonsillar fossae after the tonsils have been removed. Such cavities are partially anaerobic chambers. Cultures have been made from the ear, the nasal chambers, and the nasal accessory sinuses, but so far they have all been negative for this micro-organism. It grows slowly on most of the solid culture mediums, preferably on veal serum agar in the presence of moisture at about body temperature. It is not pyogenic, but is a powerful toxin producer. We believe it to be a local infection, non-pus-producing, highly toxic, and noninfectious for the general blood stream. Numerous blood cultures have been made from patients in whom this organism has been found, but so far all of them have been negative. Likewise, many arthritic or so-called rheumatic joints in which this focal infection was believed to be the cause have been aspirated and cultured, with negative results. In these respects it is analogous to the Klebs-Loeffler and tetanus bacilli.

The clinical appearance of the throats in which this diplococcus has been found is characteristic, if this term is permissible from the comparatively small number of several hundred cases which have been observed by the author. The color of the mucosa is purplish, distinctly darker than normal, and decidedly unhealthy in appearance. The mucosa of the nose and nasopharynx is similar in appearance. It looks lifeless and as if it had been the seat of disease for a long time. The tonsils of the patients who have suffered from the more serious complications, as rheumatism, arthritis, nephritis, and cardiac lesions, have usually been rather small and submerged, with a brownish-yellow serum exuding from their crypts. This serum has given such tonsils a distinctly moistened appearance. This clinical observation coincides with the laboratory experience that this organism grows best in the presence of moisture. Most cases in which this moistened appearance over the tonsils was found were seen by me months after the initial tonsillitis, and all of the patients consulted me because of an intractable arthritis, nephritis, or some such systemic condition that had resisted the ordinary treatment. It has also been found in the large cryptic tonsils and in some pockets in the tonsillar fossae after the tonsils have been removed.

We believe that the absorption of chemical toxins from this micro-organism is capable of producing serious pathologic lesions in the nervous system, in

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

the heart, kidneys, joints, muscles, glands, blood and respiratory tract. These symptoms or sequelae may be so serious that life itself is endangered. All of these complications have been observed in my clinical experience with this diplococcus. Improvement and cure have followed the removal of this infection in numerous patients who had previously resorted to every known means for the alleviation of their symptoms, whether it was an obstinate asthma, arthritis, endocarditis, myocarditis, or nephritis. By this it is not meant that every patient in whom this organism has been found has been cured, but that we have a record of at least one such case in each type in which the eradication of the focal infection by this organism has stopped all symptoms. The typical clinical history of such cases is as follows:

The patient had a tonsillitis of greater or less severity and, sometimes, even no discomfort was felt in the tonsils, but only an infection in the nose and throat was noticed. Within a few days or a few weeks, some other symptom developed. The tonsillitis or infection of the upper respiratory tract may have been so slight that it was entirely forgotten by the time the complication developed. If the complication was arthritis, or the so-called rheumatism, it usually developed shortly after the initial tonsillitis. As a rule, the severer the attack of tonsillitis the sooner have the complications manifested themselves.

At the present time we have under treatment a patient who had a severe attack of tonsillitis three years ago, with a temperature running from 101 to 103 F. Within two or three days from the onset of the tonsillitis, she developed a myocarditis. She has not been out of bed since that initial attack of tonsillitis. She has had a temperature of over 100 F. and a pulse rate of from 110 to 120 every day for the last three years. Her blood pressure is now about 105 mm. of mercury. She is helpless, not being able to sit up in bed even for her nourishment. She is sometimes so weak that she cannot hold up a newspaper before her.

The first patient in whom this micro-organism was found, associated with much contamination, had a severe chill, followed by an elevation of temperature to 105.6 F. When his urine was examined the next day, it had albumin and hyaline and granular casts. The nephritis and extreme toxemia were his only complications.

Our observation has been that if the tonsillitis is severe, the complications generally ensue quickly; if mild, they develop later, in from one to eight weeks. In our own patients, who have been seen during the initial attack of tonsillitis and treated with vaccines, no complications have developed after the treatment was commenced. The complications have developed in all cases without a chill at the onset. As just stated, one patient with this infection, associated with a mixed infection of the accessory sinuses and tonsils, had a severe chill at the outset. This, however, has been the only patient who had such a chill.

The prognosis of acute tonsillitis in which this organism is believed to be the causative factor varies greatly with the treatment. All of my patients with acute forms of the disease who have been treated with autogenous vaccines have been relieved of all symptoms, and no complications or sequelae, such as arthritis and rheumatism, have developed. Patients who have been treated in this manner made unusually rapid recoveries from tonsillitis. In some of the acute cases there were nephritis and arthritis, but these also have been cleared up promptly by the treatment.

On the other hand, I have seen many patients in consultation, long after the initial tonsillitis, who called on me because of some obstinate complication, as arthritis or some cardiac conditions, and this organism has been found in the tonsils as long as five years after the initial sore throat from which the trouble dated. Many such patients have been relieved by the administration of autogenous vaccine and enucleation of the tonsils, as the case reports will show.

We are therefore led to believe that some of these complications might have been averted by the prompt administration of the autogenous vaccine during the acute tonsillitis. The pain and swelling in arthritis or rheumatic joints in a considerable number of cases of from one to five years' duration have been relieved by this treatment. In some cases in which great changes or bony ankylosis and exostoses have taken place in the joints, the treatment has stopped all evidence of activity, as pain, redness, and swelling of the soft tissues, leaving only the deformity. In a group of cases in which, in addition to the joint symptoms, there were cardiac and renal changes, great improvement in these conditions has taken place.

The symptoms, complications, and sequelae of this infection can best be described by reciting cases which illustrate types. These will follow after a few words on the treatment in a general way.

Treatment.—This consists in eliminating the infection. So far as we know at the present time, the focus is situated within the mouth, either at the root of a tooth or in a crypt of the tonsillar fossae. A culture is taken from the patient, and if it proves positive an autogenous vaccine is made. It is prepared so that 1 c.c. represents 200 millions of the diplococci. The vaccine is given three times a week until all activity of the infection has ceased, and then if the focus is in the tonsils, they are enucleated, unless there is some contraindication. Patients whose teeth need attention are referred to a competent dentist for appropriate treatment.

We believe that the administration of the autogenous vaccine not only stops the activity of the organism by overcoming the effect of the absorption of its toxins, but that it renders tonsillectomy a safer and more satisfactory operation. Frequently after a tonsillectomy there is a low-grade sepsis, which is not only annoying to the surgeon, but also may endanger the patient's life. For instance, we have seen several patients whose tonsils were enucleated for the relief of rheumatic pains immediately have a subacute exacerbation of the attack, which continued indefinitely, and the disease for the relief of which the tonsils were removed was not helped. My experience with the autogenous vaccine treatment of these patients leads me to believe that much of the trouble can be averted by their use as a preliminary step to the operation.

As there has been no precedent in the dosage of this vaccine, we have had to feel our way as we went along. The dosage of even well-known micro-organisms has not been definitely established. As first, 200 millions of the diplococci were given subcutaneously every four to seven days, and gradually increased according to the indications to be met and the reactions obtained. For some time now, 200 millions have been given three times a week. The dosage has varied according to the individual to be treated. In the aged and debilitated and in young children the initial dose has been much smaller and was gradually increased according to the reactions. If a severe reaction is produced in any one case, the dosage is reduced, and vice versa. The reactions manifest themselves usually by an elevation of temperature of one or two degrees, local pain and redness, slight pains over the body, and frequently by a slight exacerbation of symptoms. As a rule, these reactions become less and less until none are produced. In some cases the organism has persisted in the tonsil even after all symptoms had disappeared and the vaccine had been given until no reactions were produced. The reaction varies greatly with different individuals, and some patients complain of more pain in one arm than in the other.

In previous communications[1] I have reported a number of cases of arthritis, nephritis, anemia, endocarditis, and myocarditis in which the Connellan-King diplococcus was the causative factor. These patients have all been treated within the last two years, and it is now my purpose to add a further report on these cases.

REPORT OF CASES

The first patient who was reported in the preliminary report was treated in November, 1914. He had at that time acute tonsillitis and nephritis. All symptoms disappeared under the vaccine treatment. He had a recurrence of tonsillitis in March, 1915. He received more vaccine, but his tonsils were not enucleated. He made a rapid recovery from the tonsillitis. At the present time he is well and has had no recurrence of the nephritis.

Another patient mentioned in the preliminary report, and reported again later, consulted me in December, 1914, for the relief of a severe arthritis following an attack of tonsillitis ten months previously. She was relieved of all active symptoms by seven injections of the autogenous vaccine. In March, 1915, she returned to me for a tonsillectomy. At that time cultures made from the crypts of the tonsils again showed Connellan-King diplococci. She had, however, no symptoms either of tonsillitis or in the joints. The tonsils were enucleated and a few doses of vaccine given, but there were no reactions. She made an uneventful recovery from the tonsillectomy and has had no further activity in the joints. Her right knee is ankylosed, but she has no pains and can walk without a crutch or stick, whereas when she first consulted me she had great pain and had to use a crutch in walking.

Miss E. S., who was reported as Case 4 in a previous communication,[2] is perfectly well at the present time. She first consulted me about a year ago for the relief of multiple arthritis and endocarditis following a tonsillitis five years before. During the past five years, in spite of treatment, the arthritis was progressive, and this, coupled with her cardiac condition, incapacitated her for work. During the summer of 1915 she received vaccine treatment and her tonsils were enucleated. The conditions were relieved promptly. At the present time she is well, although her joints still show a slight deformity. Her heart has a slight murmur, but it is so much better that the damage can be detected only by a very careful examination. Her general condition has improved greatly, and she has been attending to her usual duties for the last six or eight months.

The following new case is striking, and is typical of a considerable number in my private records:

Miss D. C., aged 21, was seen by me in consultation April 2, 1916. Twelve weeks previously she had had a severe tonsillitis. A few days later she developed rheumatism in nearly all the joints of her body. The tonsillitis soon disappeared under the usual treatment. During these twelve weeks she was confined to bed under the constant care of her family physician, nurses, and various consultants. Her range of temperature was from 101 to 104 F. When I entered her room her condition inspired me with the greatest pity. She was lying there in bed with her arms folded over her chest in great pain, and she said, "Don't touch me." The fingers, elbows, knees, and toes of both sides were swollen, red, and exquisitely painful. Her heart action was very rapid, and while no murmur could be detected at that time, one was expected to appear at any examination. She had been treated with all the usual remedies without effect, and opiates were given to control the pain.

A culture was made from the crypts of her tonsils. It showed a pure culture of the Connellan-King diplococcus. An autogenous vaccine was prepared and was given by her physician three times a week. All other treatment was stopped when the administration of the vaccine was commenced.

As a result the temperature came down within a few days and the heart action improved remarkably and rapidly. The pain and swelling in the joints disappeared with equal rapidity. About three weeks from the time the culture was taken from her throat I saw her again, and she was in splendid condition. She was up and going about as usual, had no pain in the joints, and felt splendidly. It was most gratifying to see her so well and happy.

If space permitted, a great many more cases could be reported, but these are sufficient to illustrate types.

CONCLUSIONS

A study of these cases enables us to reach the following conclusions:

1. The frequent presence of the Connellan-King diplococcus in the crypts of the tonsils or at the roots of the teeth in arthritic patients suggests that it may be specific, and that a simple tonsillitis may be followed by very serious complications, due to an absorption of chemical toxins.

2. The danger of a general sepsis following tonsillectomy might be eliminated if a culture were taken from each patient.

3. If the focus of infection in arthritis exists in the tonsil, the treatment should consist in the injection of an autogenous vaccine until all infection is cleared up and then the tonsils should be removed by enucleation.

4. The blood changes in the Connellan-King diplococcus infections seem to be a simple anemia and, in a few cases, a slight increase in the eosinophils from 4 to 6 per cent.

5. In some cases symptoms other than those for which treatment was instituted have disappeared. For instance, in one patient with arthritis and marked ethmoiditis the culture was obtained from the throat. Within two weeks the ethmoiditis had cleared up, while the arthritis was only slightly relieved. Another patient with serious gastric disturbance, who had found it necessary to remain on a strict diet, was able to eat almost anything after she had received the treatment with the autogenous vaccine.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

DR. JOHN J. CONNELLAN, New York: About two years ago, Drs. Hasbrouck and Palmer of New York asked me to examine their extracted teeth and ascertain if *Endamoeba buccalis* was present. We were unable to find the endameba in any case. As several of the cases showed abscesses, cultures were made. The organisms found were the *Streptococcus viridans,* from the apex of the tooth and *S. hemolyticus* from abscesses. We also found in some of the cases a gram-negative diplococcus which I had not seen before, nor was there anything in literature calling attention to this organism. I then asked Dr. King if he would make cultures from other parts of the throat and mouth. The result of such work showed this organism present in the crypts of the tonsils and around the teeth.

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[1] King: Abstract of a Preliminary Report on the Connellan-King Diplococcus Infections of the Throat, Laryngoscope, 1915, **25**, 229; The Connellan-King Diplococcus Infections of the Throat, with Especial Reference to Rheumatism, Med. Rec., New York, 1915, **88**, 958.

[2] Second reference of Footnote 1.

Since that time we have found it in numerous cases at the apex of extracted teeth, some of which were decayed and others in good condition, but in which the roentgenogram showed abscess formation. The organism is a typical bean-shaped gram-negative diplococcus. It is slightly smaller than the gonococcus when it has attained its maximum growth on its best growing medium. I have been unable to find this organism outside the mouth and throat. Its best growing medium is human blood agar with a little veal serum added. The main point in its growth is the reaction of the medium. On not more than 0.2 per cent. acid will the organism grow. In preparing the medium it is absolutely necessary to use the titration method. Litmus paper should never be depended on. It does not produce acid as produced by other gram-negative diplococci, described by Dunham, from the nose and throat. In using the Hiss sugar serums, we get no reaction except coagulation of albumin, showing that it is not a gas producer; which brings to mind why when found in these apparently good teeth with abscess formation at the apex there was no history of pain by the patient. The organism is best grown at a temperature from 39 to 40 C. It has a characteristic appearance on the medium, colony being a light, dull yellowish-brown with a rounded contour. The size of the colonies is approximately that of the *Staphylococcus albus*. Dunham, Van Lingelshein and Elser and others have reported several gram-negative organisms found in the mouth and other parts of the body, but this organism does not compare with any that these investigators have reported. As to the animal injection, intraperitoneal injections of guinea-pigs, dogs and white mice produced no symptoms. Two cubic centimeters of sterile salt solution (a cubic centimeter containing approximately 100,000,000), were injected into the marginal vein of a rabbit, producing death in four days. The organism was recovered in the heart. Complement fixation experiments are now being worked out by an investigator in New York City.

Dr. Emil Mayer, New York: My own experience does not entirely tally with that of the speaker in that I cannot report anything like such a percentage of cures. I had one instance which was very interesting, a nurse in the Training School in Mount Sinai Hospital, who had been suffering for more than a year with a temperature ranging daily from 101 to 104 F., without any known cause. She came to me because her tonsils had been troubling her for some time and she wanted to have them removed, but I felt that that was not the thing to do in connection with her condition so far as this temperature was concerned. I then made a test and sent it to Dr. Connellan and he reported very promptly that it contained the Connellan-King diplococcus and sent me some vaccine. The vaccine was used and to my delight and surprise she lost her high temperature. This lasted but five days. At the end of that time the temperature went bounding on as before. The second case was that of a young woman who came to me complaining of a mastoid pain, but further examination revealed that she was suffering from a general periostitis. We found the same diplococcus-bacillus, and the result of the vaccine was all that could be desired. She got entirely well. The third patient was the most interesting who has come to me, and I am anxiously awaiting the results. A man complained of a rather slight pain in his throat. There was nothing much to be seen there. I looked on it as a little local infection, and made application of the usual remedies. With that he seemed to get entirely well; but in three weeks he came again with the same pain in the same place. I suggested that I take a culture, and the result was a most beautiful colony of these diplococci-bacilli. The question is, Is this one of the cases in which we probably have a forerunner of an arthritis, and shall we advise the man, in spite of the fact that he has had apparently few symptoms, to go through the vaccine treatment, or shall we wait and see? If this man should decide not to take that treatment and subsequently should develop rather a severe arthritis, I think we should be very much in the position of demonstrating that this was undoubtedly the causing factor in his arthritis.

Dr. Virgil P. Gibney, New York: I had been looking for a long time on the *Streptococcus viridans* in the roots of teeth or about the alveolar processes as a cause of many of the arthritides. On still further investigation I found that the Connellan-King diplococcus was a possible cause of arthritis. We have, therefore, two causes of infection in the buccal cavity, namely: *Streptococcus viridans* and the Connellan-King diplococcus. One of the cases shown by Dr. King I recall very well. It was a case of ostearthritis of the hip. I found restricted movements and history of slight trauma. Having acquired the habit of looking for the cause in the buccal cavity, I found some suspicious teeth, and had a roentgenogram made which confirmed my suspicions. I also found that the tonsils needed attention. Dr. King and a dentist took the patient in charge, and he made a fair recovery. He has still a little lameness, but he suffers no pain, and the outlook is very hopeful that he will be free from lameness and deformity. Confirming what the doctor has said about the progress of the patients under the use of vaccines and the removal of the focus, I wish to say that the cure of an ostearthritis is not always phenomenal. Recovery does not take place in a short time. You will recall that this disease is accompanied by osteophytes about the margin of the joints making movement painful and it requires some little time to get rid of these deposits.

Dr. Isaac H. Jones, Philadelphia: Dr. W. P. Conway of Atlantic City had frequent attacks of arthritis for eight years. He became progressively worse and developed a severe endocarditis and such a marked nephritis that at one time he had complete suppression of urine. His loss of weight was marked. Dr. King found his diplococcus in the tonsils, gave an autogenous vaccine and soon after removed the tonsils. Dr. Conway is now in perfect health. It seems to me that we should attribute the cure to the removal of the tonsils rather than to the vaccine, although it is important to note that the vaccine produced a marked improvement even before the tonsils were removed.

Dr. James J. King, New York: The patient Dr. Mayer spoke of as having the high temperature was afterward found to have a tuberculous peritonitis.

Dr. George F. Cott, Buffalo: Would you get the same results in removing the tonsils after using the vaccine?

Dr. King: That is a very important point. Occasionally after a tonsillectomy a low-grade infection may continue and even endanger the patient's life. By giving the vaccine before you operate you clear up that field and operate in a clean field and in that way avoid this danger. To be sure, we do not see these infections very often, but they come sufficiently often for us to give the vaccine, clear up that infection, and then operate in the interval, just as we do in appendicitis. By this means the operation is safer, and it is possible that all of these cases might be prevented if we would do this. I have had no infection following my tonsillectomies in cases in which I have given the vaccine before the operation. I have sometimes found the infection still in the tonsil, but it was inactive. I had one patient in whom the culture was taken for the second time about a year after the vaccine was given. We found the infection in the tonsil again, but there was no activity, whereas when I first saw her she had a great deal of arthritic pain and had to walk with a crutch. The vaccine stopped the activity, stopped the pain, the arthritis disappeared, she got rid of the crutch and was perfectly well when she came back to have her tonsils removed.

Bartholin's Tercentennial.—October 20 was the three hundredth anniversary of the birth of Thomas Bartholin at Copenhagen. After studying at all the universities of Europe except the German, which at that time were desolated by the Thirty Years' War, he settled in Copenhagen and in 1647 became professor of anatomy in the university. He changed to the chair of general medicine at the age of 40, and published a number of works on the history of anatomy and medicine besides reports of his own researches. He never cared to practice medicine, and fled from Copenhagen when the plague swept down on it, but his fame placed Denmark in the lead in science during his career. His works are in Latin, and his name is Latinized, his real patronymic having been Bertelsen. The University of Copenhagen had a festival gathering, October 20, in honor of his tercentennial, Professor Maar delivering the memorial address.

MEDICAL SUPERVISION OF STREET RAILWAY EMPLOYEES *

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The highly complex character of modern business, and by this I mean big business, demands a physical endowment that is commensurate with the high intellectual endowment which has made possible the great industrial establishments that control the business of the world. Such an organization requires diversified talent and as its growth is dependent on continuous existence, it is necessary not only that the general health shall be conserved, but that by continuous medical supervision, following elimination of defectives by preliminary examination before employment, the places of those whom disease or advancing age render inefficient shall be from time to time filled by trained subordinates. To meet these conditions and to preserve the traditions of the business is the problem that every large corporation is confronted with.

The aim of the employer is obviously to select from among those who apply a number who will give promise of developing after employment. The applicant, excepting in special cases, is raw material that must be molded into efficiency, and because of the specialization which is the very essence of modern business, every man is not found qualified.

Modern business differs from that of a quarter of a century ago in many particulars. Under the old order, the man was not considered an entity. He was merely a hand. He came and went as the needs of the business demanded. His relation to his employer was a negative one. His joy and his sorrow were shared by no one and the tenure of his position was dependent largely on the whim of his immediate foreman. When he became sick his place was filled by another. He was dependent on the cheapest, unskilled medical services for his recovery and during his disability no provision was made for his immediate financial needs. When he left the shop he lost all contact with the organization which employed him.

This deplorable condition undoubtedly was the result of the sudden expansion of business in the decade following the Civil War. The small shop gave way to the factory and every industry took on a corporate character. The "corporation was without a soul," and in the keen competition which necessarily followed the man was lost sight of. He was merely a hand at a machine and, by comparison, far less important than the machine itself.

In the mad rush to accumulate fortunes the managerial mind was centered on the results of the year's work only and the sum of human misery that was added to the account found no place on the balance sheet. Not only was business unmindful of the welfare of those whose life blood was poured out to create it, but it was also blind to the thought that the very essence of sound economic management was dependent on the welfare of the individual unit; and that unless that individual is physically and mentally alert, economic waste occurs.

The railroads were among the first to learn the value of taking a human interest in their employees. While the character of the occupation was necessarily hazardous in comparison with many other industries, it was by no means in a class by itself in this respect.

In the development of modern business with its very humane interest in the welfare of its employees, we find the railroads many years in advance of the other industries. Until within a few years no voluntary medical services were offered injured employees in our great American industrial establishments. The first aid rendered was given grudgingly and in most instances was rendered by a city-maintained hospital without expense to the manufacturer. The change of policy which has occurred is not altogether due to any softening of the heart, but rather to a combination of public sentiment expressed in the concrete form of industrial injury compensation laws and to more enlightened management; the result of education along public health lines by our government.

How different from the very beginning of their corporate existence has been the practice of the railroads in taking care of their wounded employees. They have recognized for more than a half century that injuries incident to operation were properly chargeable to the cost of operation. This thought is the basis of all welfare work, as it provides the capital which is essential to making welfare work practical rather than sentimental.

Railroad surgeons have been identified in the public mind with the operation of railroads ever since railroading began. In no other industry have they been deemed so essential. The general supervision of the health of the employees, which follows as a corollary to the general employment of surgeons throughout a large railway system, is a fact of importance that should not be lost sight of. The friendly suggestion by the doctor to the man who is in failing health is the human touch of the corporation.

Again, the general efficiency of railway employees is a matter of common knowledge. The underlying fact of this efficiency is that railway men are picked men. No one goes to work in the operating department of a railway until he has been examined by the company doctor.

Here then is the first important lesson the industries must learn; that any kind of efficiency that is not based on a sound, alert, well-balanced human machine is bound to be economically disastrous. The industries are just beginning to learn that the human mind is a wondrously complex mechanism and that machines cannot be adapted to men, but men must be sought out, by a process of elimination, who can adapt themselves to the machine. They are learning the lesson also that physical fitness is a prerequisite to efficiency. The matter of maintaining the average health of employees by physical examination, therefore, before and during employment, is in conformity with the advancement of modern medicine, which is distinctly preventive. In recruiting for the army and navy, how careful at all times has the government been in its selection of material. No matter how great the emergency, the culls are left behind. With our thoughts centered at this time on preparedness, it is gratifying to the managements of the great railways to know that the government recognizes, in the well-trained, selected and disciplined men who make up the vast army of railway employees, an auxiliary effective arm for the military service.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* This article and the one by Dr. Smith which follows are part of a symposium on "Industrial Medicine." The first two articles by Drs. Mock and Clark appeared last week.

The relation of human impairment to accidents is well known. They bear to each other the relation of cause and effect. It is therefore quite as important to save a man by a process of elimination from himself as it is to safeguard fellow employees who will be put to undue hazard by reason of his infirmities. The best safeguard against accidents is an alert mind in a virile body; on the other hand, the sure preliminary to accidents is an exhausted, devitalized human machine.

In a diversified business the man seeking employment will represent every possible variety of human activity, from the illiterate foreigner who applies as a laborer to the highly trained engineer and accountant. For the particular department or bureau that is applied to, certain characteristics of mind and body are required. The applicant himself, by a process of elimination, places himself in a particular group when he applies to a specific department for employment. It is true he may be mistaken in his estimate of his ability, but we must at least recognize that he has specialized in his own case. This type of man to my mind is highly desirable, because in all but the lowest types of labor, where the bare necessities of life force the man into activity, we have the elementary idea of fitness expressed.

The necessity of a preliminary examination of applicants for employment would seem to admit of no serious debate. Before the Milwaukee Electric Railway & Light Co. organized the Employees' Mutual Benefit Association no one was examined prior to employment excepting those who were to be employed in the operating department of the company. The advantage of a medical examination was obvious.

Had it not been for the industrial depression following the outbreak of the European war, it is altogether probable that these results would not have been attained. As men, one after the other, left their positions, the positions were not refilled, and the working force was reduced to the minimum. For months little change occurred in the personnel and a marked change occurred in the accident experience in every department. An improvement was also noted in the general health of the men.

Some idea of the extent of the accident reduction, involving not only accidents in the industry itself, but accidents to the public who rode on the cars or were brought in contact with them, may be had from the statement that in the year 1915 the cost for injuries and damages was nearly $100,000 less than in the preceding year. In the year 1915, also, the average sickness per man per year was reduced from eight days in 1913 to a little more than four days per man per year.

We have in these combined results the summary of two factors: (1) a campaign of education, both within and without the company for the prevention of accidents and (2) the result of a careful preliminary examination of employees, as well as a maintained high level of health incident to a very close supervision of the general health, by dividing the men employed into groups, in which they could be daily observed and in which the relief from the lesser ills which lead to greater could be had without delay. It may be argued that being a medical man I am looking through prejudiced spectacles and claim too much as the result of medical supervision. On account of the difficulty of obtaining labor at any price and almost under any conditions at the opening of the work this spring, the company was forced to abandon temporarily its examination in common laborers. Great stress had been brought on me as chief surgeon to relax the requirements in nearly every department. The management, however, took the position that such excellent results had been obtained during the past two years that unless some unforeseen contingency arose which might temporarily force a further abandonment of examination, nothing should be done to relax the rule which had given us such a good showing in the year 1915.

Preventive medicine has achieved a victory in convincing big business that medical science is an economic factor in conserving the health of those who are essential to the advancement of the business. Any factor which promotes efficiency by maintaining a high level of general health will interest the business men who are at the head of modern industrial establishments, and the more broad-minded and far-seeing these managers are, the sooner will they come to recognize the importance of medical supervision of employees.

I have been surprised at the results that have been obtained in our own company. The action of the management in insisting on the continuance of the preemployment medical examination at a time of great industrial activity, when men are at a premium, is to my mind an excellent endorsement of the things we are here striving to obtain. We are not theorizing in this matter, and when we can show results which make for industrial efficiency, we have taken the first step toward raising the general health of the community at large. How short sighted a business management must be which ignores facts like these. The more difficult it becomes to obtain employment, the more desirable that employment will become. The military establishment is founded on the theory of life employment of the physically fit for its officers. Modern business must follow this example, and the railroads particularly are interested in the matter of training men to fill the positions higher up as these become vacant. There are traditions in every business and every successful business has been true to its traditions. We know the percentage of those who succumb after careful physical examination. We therefore must meet the man who seeks employment with obstacles which put him to a severe test; and if he survives the test, we may look for returns on our investment in his employment.

We have seen that the employer will have to look about him to find the man suitable for the work in hand. We must assume that the head of a department has the best interest of his company at heart and will not employ a man who is manifestly incompetent or who by reason of manifest physical defects would cause undue hazard. When labor is scarce and the management, because of the necessities of the business, holds the head of the department to an average, rather than to a high rate of pay, the temptation will become great to employ men who are physically below the average.

We recognize that certain trades produce characteristic injuries to many who follow them and that in men working at a bench these deformities do not create a hazard nor do they lessen the efficiency of the individual. I would not think that such men would be employed when others who are perfectly sound are available, excepting in case the man who had lost a portion of one or more fingers was a man highly skilled at his trade. Among laborers, who for the most part are temporary employees, the loss of portions of the fingers, providing it did not interfere with the normal grip, could well be overlooked.

In a large business undue influence is frequently brought to bear to obtain employment in going companies for relatives who frequently are derelicts. A disposition to yield to these demands can bring forth nothing good. They are not emergencies, as far as the company is concerned, and they should be employed only after the most careful investigation into their fitness.

As an examiner of trainmen for many years I can bear testimony to the fact that men who have for a number of years worked for industrial companies and who from time to time have been laid off for lack of work have entered the service of our company with unbounded enthusiasm, because they were obtaining employment which would give them a fixed income. In a going concern like ours this fact should not be lost sight of, for the man we are employing, it is fair to state, is receiving a greater benefit than we are obtaining in his employment. This fact, in itself, by relieving the employee of worry about the support of his family, enables him to concentrate his mind on his work. I know of no greater incentive to good and efficient service than the thought that your employment is permanent and that the officers of the company are interested in your personal welfare.

That every business must make an analysis of its own conditions is illustrated by the following experience. In the year 1914 in an effort to discover the cause of a loss in efficiency of trainmen, amounting to 15 per cent., because of alleged sickness, our company decided to place a medical man for a period varying from one half to one hour each day, excepting Sundays, in each of our car stations and large car shops. It was hoped that by giving aid to men who reported sick, before the sickness became disabling, this percentage of lost efficiency might be materially reduced. It was suspected also that there was a definite amount of malingering on the part of the younger employees, whose desire to get rid of their last pay check was an obsession with them. At the same time it was feared that the men might feel that a censorship was being maintained, and before putting this into effect, the matter was submitted to the directors of the Employees' Mutual Benefit Association, who represented the trainmen and other workmen. To our gratification it was received as intended, and immediately put into effect. The beneficial effect of this personal contact between medical man and the employee was immediately noted.

For the month of January, 1916, two years after the inauguration of this system in one of our largest stations with over 600 men, there were but 623 days of sickness. I mention the month of January, 1916, because throughout the eastern portion of the United States in that month, as well as in December, 1915, we suffered from a severe epidemic of the grip. Notwithstanding this, with thousands of cases in our city, only 623 days were lost through illness during the month by more than 600 men. But we must not claim for medical supervision only the general good health of our trainmen. The company has cooperated with us in the matter of better cleaning and ventilating of street-cars, the building of sanitary car stations and by increasing the average wages of its employees with the increase in the growth of the business. This has enabled employees to live at home under far more sanitary and healthful conditions than were brought to my attention twenty years ago, when I first became associated with the company.

In the general office building, where approximately 400 clerks and other employees are housed, spring water only is used, which is brought nearly twenty miles to the city from a spring owned and developed by the company in the famous Waukesha district.

The more regular hours of duty brought about by a more intelligent study of schedules is also a large factor in health conservation, because these men work in the most inclement weather and under conditions frequently in which exposure to the elements becomes a positive menace.

That any city railway employing a staff of surgeons can undertake large welfare activities for the betterment of the health of its employees, their wives and dependents at comparatively little expense is illustrated by the experience of the Milwaukee Electric Railway & Light Co. during four years. With a contribution of $6 per year per man for each member of the association, and an additional $6 per man per year contributed by the company itself; together with the voluntary services without pay of the officers and other employees of the company; in addition to paying $1 per day for 100 days of continuous sickness, and 50 cents per day thereafter for a second 100 days, and $300 for a death; the giving of all medical and surgical services free to its members, including the services of a welfare secretary and a visiting nurse, in a short period of four years the Employees Mutual Benefit Association has accumulated a reserve fund amounting to approximately $50,000.

So great has been the reduction in the average days' disability per man per year, and so great is the confidence of the management that this ratio can and will be preserved by the effective organizations which we have, that in January, 1916, without further expense to the members of the Employees' Mutual Benefit Association the company increased its medical service so as to include the wives and dependents of all members. This necessitated the increase of the medical force and added largely to the expense for medical supervision, but in a most comprehensive manner it has endeavored to relieve the financial burden of its employees for medical and surgical services to their dependents, and by the making of these services available it has encouraged health conservation, by enabling the employee to call the doctor with the early manifestations of disease, when for financial reasons he would otherwise delay the call.

The importance of this service I have but to suggest to this gathering. Would space permit, a summary of the work performed during the first five months of this year would be most interesting. I hope, however, at some future time when the work is more advanced to present an analysis of this work, of which we have a complete record. It embraces the entire field of medicine and surgery and offers to those who are members of our surgical and medical organization a most interesting and instructive clinic. There are exceptions to all rules and we note an exception to this medical service. We do not do obstetrics and we do not treat the eye and ear. We do, however, remove tonsils and adenoids.

May I close this paper with a brief statement of the activities which as a corollary have come as a result of the organization of an Employees' Mutual Benefit Association, which has served as a melting pot into which have been poured the burdens of the employer as well as those of the employee, and out of which has come a record of health, happiness and prosperity which I do not hesitate to say, because I have looked into the matter thoroughly, will not be found in any other similar or large corporation in any part of our country?

We have a savings and loan association, additional life insurance, sick and accident insurance, a provident loan fund, where money can be had without interest, old age pensions, a women's auxiliary, indoor baseball, bowling, outdoor baseball, a band, a dramatic club, and all the auxiliaries which go to make up healthful recreation and promote happiness.

It is the combined result of these various activities, which cements together the body of employees and holds them to their work, improving the condition of their health and teaching them the wise practice of economy.

In the words of our welfare secretary:

> In the work of caring for those who are sick the women's auxiliary, which was organized during the past year, has proved extremely beneficial and is unique. There are innumerable cases in which the regular benefit provided by the Employees' Mutual Benefit Association does not completely meet the requirements of the case. When the mother of a family of small children is sick for a long period of time, it is a great relief to have the friendly services of members of the women's auxiliary, who step in and perform some of the household duties, taking from the mind of the patient much worry, and making the conditions most favorable for a speedy recovery. In cases in which a mother must be removed to a hospital the care of small children becomes imperative, and if there is no relative who can step in to perform this duty, members of the women's auxiliary have very generously assisted to solve the problem. This organization has also provided baby outfits for needy infants, when proper provision has not been made for the new arrival in the way of clothing, and a number of poor families have been provided with Christmas cheer through this same organization.
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> Beginning in 1912 with the Employees' Mutual Benefit Association, which was organized primarily to create, manage and distribute a fund to provide free medical assistance for members unable to work because of sickness or because of accident, when not within and subject to the provisions of the Workmen's Compensation Act, the association has become a most efficient machine for conserving the health of those who work for this company, as well as by caring for their dependents whenever disease or accident necessitates medical or surgical aid. We have seen this association expand far beyond the limitation contemplated as its field of operation when it was first organized. Its greatest field of usefulness has not been the payment of sick benefits or death claims, but rather the conservation of the health of its members. Through the opening of doctors' offices at places of employment, it has been possible to reduce the amount of time lost on account of sickness by fully 40 per cent., making a total annual saving of something more than 10,000 work days.

Once a year, divided into two days of fun and recreation, 12,000 people, including employees, their wives and families have a picnic with a 20-mile trolley ride.

The electric industry today is attracting to itself a better and more educated class of men, because the requirements of the business with its diversified interests demands a high degree of intelligence. In a large corporation it is possible to have a feeling of intimate relationship, and the medical man perhaps above all others comes closer to bringing about this happy condition. We feel in Milwaukee that few corporations will be found whose gifts to their employees in the matter of health are so comprehensive and far reaching.

The very best that industrial life holds for any individual under ideal conditions is employment by which he may earn a living for himself and his family, in work that is at once congenial to himself and useful to his fellow men, and that gives him an opportunity to rise to higher places of responsibility; that provides him an income sufficient to permit of his putting aside a surplus large enough to care for him, both in sickness and in old age; and that permits his work to be wholesomely interspersed with periods of rest and recreation.

BAD TEETH AND THEIR EFFECT ON THE LABORING MAN'S EFFICIENCY *

CARL E. SMITH, D.D.S.
AKRON, OHIO

Efficiency from a health standpoint is difficult to determine. We know, for instance, that if the water supply of a community is pure, the community is saved economic loss from typhoid; the same can be said of the milk supply and of all the precautions necessary to keep a community in health.

This is true from a dental standpoint. If we teach a large body of people mouth hygiene we cannot say how much better their health will be, or how much we have saved them through the prevention of mouth and systemic diseases.

In the past sixteen months I have made 30,000 mouth examinations, for 17,000 Americans and 13,000 foreigners. Of this number, 96 per cent. are in need of dental service; only 4 per cent. have clean, healthy mouths; 9 per cent. are without cavities and could be made healthy by a thorough cleaning; the balance have all the pathologic conditions known to dentistry, pyorrhea pockets, decayed and abscessed teeth, mucous plaques with all the virulent bacteria ready to cause disease the moment there is a lowering of the resistance. The danger from a dirty mouth is quite generally recognized, practically all contagious diseases being transmitted by the nose or mouth and the mouth is the more dangerous of the two. In a mouth free from caries, but with deposits of calculi and mucous plaques, gingivitis develops, and because the gums are painful and bleed the man gives up mastication, and food passes to the stomach carrying pathogenic organisms. The stomach cannot do double duty and in time disease results. And so by teaching oral hygiene to the laboring man and he in turn carrying the idea to his family, we are cutting down disease, not only in the factory, but in the community.

Suppose an epidemic of scarlet fever breaks out in a city. The health authorities find these cases along a certain milk route, and they look up the farms on which this milk is produced and find a case of scarlet fever. I have never heard a satisfactory explanation of how that first case started, apparently spontaneously. Could it not be a case of lowered vital resistance from some cause and a dirty mouth, in which the germs of scarlet fever predominate? Whether this be true or not, the teaching of oral hygiene to the laboring man is important if it does nothing more than prevent caries, pyorrhea, and other mouth diseases.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Now in 30,000 mouths we find about 60,000 cavities, and I intend to show what one cavity means to the average laboring man. First, there is the slight opening of the interdental space; food packs into the space, irritating the gum. Quite naturally he gives up mastication on that side of the mouth; caries progresses until the pulp is exposed, the tooth aches, and he goes home from work, often purchasing a bottle of whisky on the way. I have had cases in which the patients have admitted spending their last cent for whisky and had to borrow money to go to the dentist.

The pulp in the tooth may die in twenty-four hours, or it may stop aching, only to start again in a few days. If the pulp dies, in a period of time we have the acute alveolar abscess and at last in desperation he goes to the dentist and has the tooth extracted. During this period of time, due to disuse, quantities of filth have collected over the other teeth on that side of the mouth, caries has started in the tooth next to the one extracted, and within a few months he again goes through with the same experience. By this time the other teeth have become decalcified, and within a comparatively short time he loses every tooth on that side of the mouth, and it is easy to understand this man could not be marked 100 per cent. in efficiency during this period. If we admit the teeth to be necessary to mastication and digestion, we know that the employee cannot enjoy the good health he would have had, had we been able to prevent that first cavity or at least to persuade him to have dental service before it was too late.

In 30,000 mouths we find about 18,000 extractions necessary, and experience shows these teeth to be practically all abscessed. This is a difficult problem in efficiency, especially so if the findings of the research commission of the National Dental Association in regard to the relation of infections of the mouth to general systemic disorders prove only part truth, but the indications are at the present time that these apparently unimportant foci of infection are the cause of many disorders.

The average dentist knows little at the present time regarding the effect of these foci of infection. If it is arthritis, stomach ulcer, heart lesions, pernicious anemia or any of the nervous diseases of a neuralgic type, the medical man is consulted. If it is true that these foci of infection are causing these obscure diseases, it is time for the dentist to learn more of medicine, so that he may hold intelligent consultation with the physician, and the physician should seek the consultation of intelligent dentists. One case along this line I wish to report. After working for the company for six years this man laid off in November, 1913, to have a mastoid operation. In July, 1915, he applied for reemployment. Physical examination showed ankylosis of the knee and poor physical condition. The mouth examination showed a very bad case of pyorrhea and several abscessed teeth. His mouth may not have been the cause of his trouble, but the surgeon overlooked the possible cause, and the patient should have been sent to a dentist. Had this been done, he might at this time be an efficient workman. On the other hand, there are no doubt a good many of your patients whom you are burying on account of poor dentistry.

I wish to report a case which to my mind shows how bacteria are carried by the blood stream. A man injures a tooth in such a way as to kill the pulp. After a period of time an alveolar abscess develops. I have seen a number of these cases without a cavity in the tooth, no pyorrhea, and gums in a healthy condition. There is only one way that infection could occur. The bacteria were carried there by the blood stream from some focus of infection. If they are carried to the teeth, it follows naturally that they are carried from these blind alveolar abscesses.

If a man presents himself to our physical examiners with a suppurating toe-nail or infected finger nail, he is promptly rejected as being unfit for employment, likewise if he has an acute alveolar abscess with a swollen jaw he is rejected until the cause has been removed and the swelling subsides, but we cannot reject these men with 18,000 necessary extractions, knowing or at least suspecting the effect on their efficiency; if we did, it would mean the rejection of 25 per cent. of all people applying for employment. The best we can do is to advise the removal of these teeth. In 30,000 mouths we find 40,000 teeth extracted, and that tells its own story, the inability to properly masticate the food, and you medical men know better than I the results of improper digestion which are bound to follow.

One way we can estimate the loss of efficiency due directly to toothache is by watching the piece-worker. Very often a man engaged in piece-work will say: "Doctor, this tooth has ached for a week." The loss of money to these men runs from $3 to $7 for the week. Men suffering for a day report losses of from 35 cents to $1.50.

In 30,000 mouths we find 60,000 cavities and 18,000 extractions necessary, 78,000 in all. If each one causes an average loss, through waste of time and cost of repair, of $2, it means a cost of $156,000. In New York City last year 67,000 children failed to be promoted to higher grades because of absence, 80 per cent. of which can be laid to defective teeth, and it costs New York $1,037,696 to duplicate a year's schooling to these absentees. These same children in a few years will be employed by our industrial concerns and a large percentage will fail of promotion on account of poor health due to bad mouth conditions.

What can be done by way of prevention? The first thing necessary is the cooperation of the medical man; he is the first to see the pregnant woman; he should instruct her regarding what to eat to supply the necessary mineral salts to build bone and teeth, and send her to the dentist for instruction regarding the care of her mouth. The dentist should instruct her regarding the mouth of her child when it arrives, also regarding the care of that mouth after the teeth begin to erupt. It is possible to take a child at this time and prevent the formation of cavities, and it is most important that this should be done.

We find at the present time a great many dental clinics in the public schools. This is a good work, but the child is 6 years of age when he starts school and a great deal of damage has already occurred, so the work of the clinics is largely reparative, but still it is not too late to teach the children oral hygiene. They should be taught how to live, which is vastly more important than certain subjects which have been a part of the school curriculum in past years. If this were done, they would leave school and enter our industrial institutions better equipped to earn a livelihood.

During the past two years dental clinics have been established in a number of large manufacturing concerns. These clinics are operated along different lines, but all with the same general idea in view, that of cooperating with the medical departments in bringing about more satisfactory health conditions.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MOCK, CLARK, LEMON AND SMITH

Dr. Joseph C. Bloodgood, Baltimore: I am interested in this question from an academic standpoint, from the standpoint of the teacher. We must apply our knowledge of first aid in the introduction to the industrial worker of the larger problem of prevention and the care of his health and efficiency. The industrial worker will see quickly a diminution in the long period of disability and a diminution in the number of cases of loss of function from bad results, not of bad surgery, but of the late application of good surgery. It is important for the industrial surgeons to know the established rules of surgery today. If they wish to influence the laborer their results must be such that there will be no question in the minds of the ones who are helped that it is for their good. Along with that, in industrial surgery as in preventive medicine, there must be something else, otherwise our interest will lag, and our efficiency will decrease, and that something else is a research for the solving of the unsettled problems. Not one single bit of progress has been made in the treatment of infected wounds for a quarter of a century. Surgery of infected wounds was developed twenty-five years ago, but as soon as surgical bacteriology developed clean surgery, we lost interest in it. For sixteen years there has been no research on the treatment of infections. The development in medical bacteriology led to the protection against typhoid fever. Why? Because there was an immediate need for protection. We have not any typhus now, but there are some infections that might creep into this country in the future, and those are the ones that you should study so that we will be prepared.

Dr. J. W. Schereschewsky, Washington, D. C.: I would like to emphasize the wonderful educational effect which is bound to result from the personal relation of the industrial physician to the worker. Everybody is agreed that community sanitation, as represented by state and municipal boards of health, has proceeded almost as far as it can go, and the reason for this is that we cannot influence the people, individually, by community sanitation. The great importance of personal hygiene in enabling the individual to reach the maximum of his efficiency is being demonstrated from day to day by the data which are being collected. It is evident, therefore, if we want to make substantial advances toward our ideals, we must be able to impress on the individual the vital necessity for the care of the body, besides securing the maintenance of a sanitary environment around him all the time, not only in the shop, but in the home.

The development of industrial medicine and surgery offers advantages to educate the individual in these particulars which cannot be excelled in any other field. The workers, surrounded in the workshop by ideal sanitary conditions, are able to contrast those conditions with the conditions which obtain in their homes. In this way they are unconsciously led to desire a higher standard of environment. The personal relation of the physician to the worker in the workshop is a means by which the principles of personal hygiene may be so inculcated that they are applied and not regarded as fads of the medical profession; for every day around the worker there will be shining examples of the results of the application of principles of personal hygiene. In this way we see that when this science of industrial medicine and surgery is properly developed, we will have at our command a means of popular education which can hardly be excelled. There are about 30,000,000 industrial workers in the United States, very nearly one third of the population. Probably 90 per cent. of the population should be influenced by these means of personal education. I think the industrial physician and surgeon has it in his power to influence, more than any other body of men in this country, the consistent development and progress in this country toward ideals of sanitation.

Dr. W. H. Price, Detroit: If I heard right, Dr. Clark tells us that the examinations he has made take, on an average, ten minutes. I disagree with Dr. Clark. From an experience of 15,000 medical examinations, I know that it takes much longer, and I am afraid we do not make as careful an examination as Dr. Clark has made. I know that last year Dr. Fiske reported they took an average of twenty minutes. A number of physicians disputed that such a thing as a thorough medical examination in twenty minutes was possible. A blood pressure examination will take a minimum of five minutes, and then sometimes it is not accurate and we have to take it two or three times. I know that Dr. Schereschewsky and his assistant spent forty minutes or forty-five minutes on an average in 30,000 examinations they made in cooperation with our board, so that I believe that ten minutes is rather a short time. This brings me again to the question of the absolute unworthiness of statistics based on a nonstandardized examination. If one examines in five minutes, another in ten, another in forty-five, etc., and all those figures come together, how can we compare the results? I believe that nothing better can be done by this section than to appoint a Committee on Standardization of Industrial Medical Examinations, so that in the future we should be able to compare those examinations.

Dr. Frederick L. Van Sickle, Olyphant, Pa.: I feel that we have not ventilated the subject to the people on whom we must depend to carry out the very admirable suggestions that have been made by Dr. Mock and Dr. Clark. I practice in the anthracite coal fields of Pennsylvania, where we have a combination of traumatism and the introduction of foreign bodies. Wounds are made at quite a distance from the emergency hospital, so that the ideal measures that have been suggested by Dr. Mock and Dr. Clark are not possible. My point particularly is efficiency insurance in medical and surgical work as applied to social and the new laws that are coming into existence in the United States. Thirty-three states have workmen's compensation laws, and in five states health insurance measures will be introduced shortly. Some of the ideas introduced by Dr. Mock are Utopian, but it is necessary as a step in the progress of this work to have some educational propaganda made by which the men who are most vitally interested, that is, the local practitioner who receives the appointment for this kind of work, be brought up to some particular standard of efficiency. The medical examination is also made in a very superficial manner. It is evident that we must have some method of standardization of examinations of the workman. I feel grateful that the questions of social insurance have been taken up by the American Medical Association and it has seen fit to confirm the report of the Reference Committee on Legislation and Political Action which places the committee of the Judicial Council of the Association (which was appointed last year on social health and insurance), in a way to act, and it has been recommended to the various states that they appoint a like committee from whom this information can be obtained.

Dr. D. B. Lowe, Akron, Ohio: Dr. Clark made a plea for a complete examination. A complete examination to me means a stripped examination. In the organization which I represent, there were 12,000 examinations made on employees at the time physical examinations were instituted. These 12,000 examinations were made by part-time physicians who spent practically only two hours a day at the shop. In the 12,000 there is not one case of tuberculosis reported. The urinalysis may or may not be necessary in certain cases. Blood pressure may prove otherwise on general findings. I have come to the conclusion that it is best for all our examiners to make a complete examination, examine the urine and take blood pressures, and sometimes even examine blood. All of us lack sufficient training; however, if we do some laboratory work along with the physical examinations, it will tend to train us. I do not cast any reflections on the men we have in our employ because they must be graduates of a Class A school and have at least a year's training in a recognized hospital with six months' service on the medical side. Running through 150 men a day, an average of about thirty-six to the examiner, with a large organization calling for men that must be put to work, it is impossible at the present time to select men for the work. It may be possible in a smaller organization, but we cannot do it. As to the rejection for hernia, the laws of various states differ. In Ohio we do not have to reject every hernia case, if the company will stand behind us on the question of finance. We made arbitrarily three classes: those who have a small hernia, those who have a larger hernia, and those who have a complete hernia, if I may put it in that way; the first class without a truss; the second class with a truss, and the third class we reject. In two months we took 125 men. Seventy-five per cent. of those who applied with hernia we put into the shop, on any kind of work. Some are doing very heavy work. Of those eighty-six remained with us at the end of two months when this material was taken. We have had one whose hernia came down; that required a $5 truss. It costs our company $35 a man to train their men. If they are in our employ at the end of six months we will not operate on them ourselves free of charge, but we will operate on them and the fee will be made according to the family conditions, as to whether the man is in debt, as to whether he is paying for his home, etc. Maybe the company will, if necessary, underwrite those cases and pay the surgeon and the hospital bill, and the money will be deducted from the man's salary at about 10 per cent. of his pay on each pay day. It makes, probably, an average of about $5 a month, and it takes a man in the neighborhood of fourteen months to pay the whole bill. In the intermediate cases, out of the twenty-five we have operated on under this plan, it has cost the company, due to those who have left the company and refused to pay, and various other reasons, $14 a man. It cost $35 to put them in, $14 to keep them, so we consider it is quite a good investment. As to the time required in making a physical examination, since the first of November on stripped examinations made by full time physicians we have examined 12,000 men. Our turn-over is quite large. Of the 12,000 who passed into the shop, four have developed tuberculosis since that time.

Dr. C. G. Farnum, Peoria, Ill.: Some one said that Dr. Mock's paper approaches the Utopian. Possibly, it does, but it is absolutely practical. There is not one single thing that Dr. Mock suggested that cannot be done, and be done easily. One of the reasons it is easy is because he stands so strongly for personal contact with the men. You cannot be doctors alone in this work; you must be sociologists and you will be accused occasionally of being Socialists. There is not one thing that is more valuable in the work that Dr. Mock has done than his personal contact with the men. When these men come to know that they have the privilege and the opportunity to come in and talk with you they will do so not about their hernia, not about their scratched fingers, but with regard to their habits of eating and drinking and sleeping and housing and sanitation and all of those things that come into the daily routine of a man's life. I want to speak particularly of physical examination. I do not care how many legs or hands a man has, if I can put him where I want him in the shop. And, if there is any man who is falling short in the work of placing his men, he has taken but a part of one small step in this work because that is the most valuable thing to the company, and it is the biggest thing to the man. People are writing me constantly "What is your standard of rejections," and I tell them, "We are not running an athletic club nor turnverein; we are running a manufacturing institution." If a man has but one leg, I put him in a one-legged man's job. And if a man has one arm, I do the same thing. When it comes to the matter of eyes, the problem is bigger. It does not matter about the condition of a man if you tell him what is wrong and get him headed right, and put him at work that he can do and do safely. That is what he wants, and that is what he is there for, and that is our obligation to him, and to the company. There is another thing that has not been brought out in the discussions and that is the matter of age, and physical condition and their relation to responsibility and reliability. Where is our labor turn-over coming from? We have worked out some statistics that show that our physically perfect men, and there were not very many of them, were the worst aggregation we have, from the standpoint of labor turn-over. This matter of fitting men to jobs is wonderfully important and the matter of coming intimately in contact with the men is also important. Your position in your department and your work must be absolute; if it is not, then your work is not going to carry. The department of employment, the department of safety, and the medical or sanitary departments are so intricately interwoven, that if you try to separate them, you are going to curtail the most valuable portion of the work of each one of them.

Dr. Charles J. Hastings, Toronto, Ont.: It seems to me that we have been "found asleep at the switch." We have been doing many things that we ought not to have done, and we have left undone many things which we ought to have done, and we are just waking up to it now. I was glad to hear the former speaker refer to the social problems in public health administration. We realize, however, that no organization of public health administration is at all complete without a division of social service and without a division of industrial hygiene. Public health administration at the present time stands for race betterment, for the developing of a fitter race. The control of communicable diseases only constitutes a fractional part of public health administration.

Dr. Eugene L. Fisk, New York: The time consumed by the Life Extension Institute in making physical examinations has been mentioned. It should be explained that the history taking is done in advance of that examination. History blanks are filled out by the employee in advance of examination, so that a lot of time is saved. Then the examiner concentrates on the physical examination, and he takes from twenty minutes to half an hour, depending on his training. It is important that we should standardize this work. A very valuable examination can be made in ten minutes, even in five minutes. No reflection whatever should be cast on the great value of the work done by Dr. Clark. His examination was a most valuable one; it brought out most interesting things, but I think that perhaps in the same space of time, other things could be added and a complete physical examination made. For example, the lymphatics are mentioned, the heart, and various organs of the body, but no mention is made of the arterial system or the examination of the radicals and brachials. An examination of these structures, and even the eyegrounds, with modern instruments could be made very quickly, and surely there is no more important part of a man's body than his arteries. There is one fact which is brought out in our service, and that is the unreliability of blood pressure as a guide to the condition of the arterial system. There is a common impression that if a man's blood pressure is normal, his arteries are normal. The majority of individuals with definitely thickened arteries have either normal blood pressure or low blood pressure. I cannot speak too strongly of the possibility of this work in a sociologic way, of the opportunities to teach these men how to live. Like Dr. Farnum, I have been out among these people and I have put my ear down to their naked, sweaty chests. I have tried to carry to them this philosophy of right living. They respond, and they respond more readily and more intelligently than even men in the higher walks of life who are supposed to have more intelligence. They are not so cynical or so skeptical, and you can explain to them the fundamental principle that the human machine needs inspection and care just the same as the inanimate machines that are under their charge.

Dr. C. A. Lauffer, Wilkinsburg, Pa.: For eight years I have been associated with this work in the capacity of medical director. The Westinghouse Electric and Manufacturing Company has a works dispensary, known as the Relief Department, in the East Pittsburgh plant. We are taking care of about 450 patients a day. We treat an average of 110 new traumatic cases each day. I have been extremely interested in these papers because their solutions correspond very closely with the way we have met these same conditions. About one third of our traumatic cases are eye cases; another third fingers; the balance are miscellaneous. It might be well to define under five heads the different types of work which come to the surgeon in individual practice:

First of all is the examination of new employees. We have recently entered this field. We prepared a list of fourteen different classes of conditions in which we think we should reject prospective employees. However, we have taken care of all men who have been in the employ of the company previous to the inauguration of the physical examinations.

The second type of work is surgical cases, chiefly accidents occurring within the plant. We get patients immediately after the accident. We think it is a misfortune to have first aid work preceding the work of the physician. We have surgeons on duty twenty-four hours each day; and we instruct injured men to come to us immediately. The work of the first aid man is generally mischievous; we want to have the patient immediately, while his wound is still bleeding. The third type of work we have to do relates to sickness. All employees who are not feeling well are encouraged to come to us. We give them emergency medical treatment. We send home those employees whose temperature is elevated, also those whose temperature is subnormal. The fourth service of our department is a "diagnostic clearing house." Many of these men, who may be sent to hospitals for herniotomies, or various other operative conditions, are given advice as to the proper procedure. They are referred to specialists in various lines of work. The fifth line of our work is with relation to our relief fund. Employees of our company may pay a certain proportion of their wages to secure disability benefits for periods of disability arising from accidents occurring at home, and in consequence of sickness. We are paying about $15,000 a month out of the relief fund, and it requires much labor to review the diagnoses that are presented to us, and to pass on the statements that are brought to us by the employees, and the certificates which are presented from their attending physicians. Proof of claims for compensation insurance for periods of disability resulting from accidents occurring within the plant must also be adjusted. These are paid out of the company's compensation fund. The field of the surgeon in industrial practice is a wide one. We have entirely too little available time for the stupendous work at our disposal.

Dr. W. H. Lipman, Chicago: Regarding the time for the examination, I believe it would be well to establish a standard for general work, that is, have a standard that can be applied generally, as to what to look for. But I do not believe it is possible to say how much time we should take and how much time we should not take to examine a man. We might want to take forty-five minutes to examine one man and two minutes and a half to examine another. When a man or woman comes in looking anemic, or with a flushed face, one would naturally make a longer examination. I have been doing this work in Chicago for one of the large packing houses for eleven years, at the beginning very superficially, and I am free to admit very inefficiently, but we have gradually developed and finally, after studying the methods which have been in use all over the country and their results, we reject men for just one cause, and nothing else, and that is contagious diseases. When a man presents a case of a contagious disease of short duration, we ask him to call again in a reasonable time, and if he has been cured, or is well, we will accept him, but outside of that we will reject for absolutely nothing. We find a man with a certain defect; we put him to work. Later on we advise him what to do for himself. Industrial medicine and surgery is perhaps attracting more attention than anything else. Some of the papers and some of the discussions have dwelt on the advisability of telling the employer what a fine investment this medical work among their employees is. Some have gone so far as to figure out in dollars and cents just how much money they are going to save by saving the lives of their employees, by reducing pain, by prolonging life and so on. I believe that is a great mistake. In the first place, it is wrong, because nobody can tell us how much a human life is worth, or how much pain and suffering cost. And, second, I believe that the average employer is — if I may use that expression — a mixed culture. It is true he has a very great affinity for the dollar, but I believe that he is a man after all, and I think when he comes to the final issue he is more easily approached when you appeal to his humanity, rather than to his love for the dollar. Furthermore, if you insist on showing him just how much money he is going to make, the time will come when you will not be able to do that, and then if you depend on your work to convince him that he is going to make money, you will lose out in the end.

Dr. Harry E. Mock, Chicago: As to the length of time these physical examinations should take, ten minutes is entirely too short a time for the ordinary physical examination where the history, temperature, pulse, blood pressure, height and weight, eye test, etc., must be taken by the examining physician. But the men actually doing this work are engaged by great industries who demand that their employees be returned to work in as short a time as possible; therefore, it is necessary for the company surgeon to work out very efficient systems, in order to make this examination as rapidly as possible. We have nurses who do the preliminary work of eye test, ear test, pulse, temperature, weight, etc., and then the employee enters a dressing room, strips, and comes before a doctor for his examination. This routine examination can be done in from ten to twelve minutes. If a man is found with a very badly diseased condition, he is sent to the chief of staff for further study, and it may take an hour to complete this examination. But any one engaging in this work will find ten or twelve minutes sufficient time for the routine examinations. The second point is that these examinations are not made for the purpose of throwing out those too old to work, those with slightly diseased conditions, and those with chronic diseases that interfere with only certain types of work, namely heavy work. They are made for the protection of the old working force against contagious diseases and for the protection of the applicant himself if he has a disease that makes work of any kind detrimental to him. Every industry should assume its share of responsibility toward society until the state takes up that burden. We have no right to reject old men, or any one else except those mentioned. There are just two things to reject on, contagious disease that affects your working force, and a very bad heart, or blindness, or some condition that makes it impossible for that man to work for his own good.

Dr. W. Irving Clark, Jr., Worcester, Mass.: The preciseness of my paper was to answer a great many questions which I have had written to me in the last two or three years on our work, and is simply an answer with regard to what we are doing, and how we are trying to do it. We place all our men just as carefully as we can. We would rather have a deaf and dumb man than anybody else. They mind their business, and they never make any trouble. We take all the one-armed men. They are the finest fellows for work, if they can do it, that I know of. If we can find a job for a one-legged man, we will take him. I think it was Dr. Farnum who brought out the question of cooperation; the safety engineering department, the medical department, and the employment department should actively cooperate; they should be in one building and should form a separate department, with these three subdivisions. Dr. Fiske spoke about the completeness of examination and the time required. I would rather take forty-five minutes to make an examination than ten. But, what are you going to do when there are 100 men lined up, and the employment clerk says "We will have to get these men through," and there are more behind them. We must realize that our business is to get men into the factory and to keep them working, if we are factory physicians. We would like to be sociologists, but unfortunately, we have to work in a factory, and there are certain things in a factory that have to be recognized. Time is one of the most important elements in factory work.

Effect of the "Movies" on Eye Muscles.—When looking at a motion picture the pupil is contracted to a somewhat smaller opening than when viewing a still picture having the same illumination, and when the flicker in the motion picture is pronounced, the pupil of the eye can be seen to tremble slightly as if attempting to follow each fluctuation of light. This may lead to overstimulation and permanent injury. One investigator, in writing on this particular phase, concludes by stating that this constant contraction and dilation must gradually strengthen the muscles of the eye and so eventually develop them to the point were strain would not be caused. From this opinion, however, leading ophthalmologists differ, and believe that the fatigue caused by overstimulation due to flicker frequently passes beyond physiologic limits and must eventually produce deterioration.—Gordon L. Berry, *Public Health*, November, 1916.

THE SANITATION OF PUBLIC MARKETS *

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Out of an income of less than $1,000 a year, the average urban family of five in most large American cities has to spend from 40 to 50 per cent. of their income for food. Undoubtedly an important factor contributing to this large percentage is the cost of municipal food handling and distributing, as was indicated by a recent study in New York City, where it was ascertained that about 37 cents out of every consumer's dollar went for the cost of municipal food transportation. Public markets are considered by many an essential factor in combating the high cost of foods resulting from the present individualistic methods of municipal food handling. The past few years have seen many experiments along market lines, either under public, semipublic or private control, either temporary or permanent in character. It would seem that the most effective results might be expected with the highest degree of municipal control, including a regulation of rents, or retail food prices and consequently of profits. Obviously, if a public market is properly situated, it can effect still further economies to the consumer by the elimination of the cost of delivery and the loss resulting from the operation of the stores on a credit basis.

The establishment of public markets, especially when of a temporary and experimental character, introduces into the community life many problems of intimate sanitary and hygienic importance, problems which the public market has in common with the retail store to a large extent. Concentration, however, of retail business in certain areas, possibly under one roof, increases the magnitude of the problem and at the same time enhances the directness and simplicity with which a sanitary control can be established. In any event, whether under private or public auspices, any municipality must meet the responsibility of establishing and maintaining adequate sanitary and hygienic regulations in connection with the city's food distributing system.

Sanitary food control is of interest from several points of view. In the first place, there are the representatives of the municipality, usually the health department officials, who have the responsibility of inspection and law enforcement. Of great significance in this connection are the recent findings of health departments, perhaps especially the New York City department of health, to the effect that intelligent, educational inspection is tremendously more efficient, from the point of view of accomplishing results, than is any amount of uninstructive visiting, legal prosecutions and insignificant fines.

Further, the dealer himself is intimately concerned in sanitary law compliance. It is essential that he should be made to realize the economic importance of sanitary food protection and waste prevention, in addition to the health hazards of careless food infection.

Finally, there is the consumer, the purchaser, who is interested in food protection and desires food protection, aroused to the necessity by motives of disease prevention, cleanliness, decency, and estheticism.

From whatever point of view the problem is approached, however, those interested soon realize that the special problems of market sanitation are, in the main, three in number. In the first place, because of the perishability of ordinary food products, and because of the risks of disease transmission, there are dangers of contamination and possible infection, by means of dust, dirt, flies and dirty fingers. It is certainly conceivable that tuberculosis, typhoid fever and other diseases may be, and perhaps frequently are, transmitted in this way. Further, there are the special dangers of decomposition, the rare development of genuine ptomains, the more frequent pathologic bacterial infections, etc. Finally, there must be mentioned the comparatively insignificant hazards resulting from adulterated or preserved foods, a problem in fraud prevention largely of economic, rather than of sanitary, significance. Such a classification does not, of course, include certain other possibilities, such as the presence of natural poisons, as in mushrooms; the presence of animal parasites, as in pork; the development of a specific poison, such as solanin in potato sprouts; and special individual idiosyncrasies, as pathologic reaction to egg protein. It ignores entirely what would seem to be the most important food factor in health conservation, namely, proper dietary food selection, a factor of hygienic rather than of sanitary importance and one which is, therefore, not apropos at this point in the discussion.

To confine the discussion largely to the sanitary aspects, it might, perhaps, for the sake of clearness, be best to adopt a rough classification of the major points in market sanitary control and to discuss these very briefly under the following headings:

PRODUCTS AND THEIR CARE; LABORATORY CONTROL

Chemical Analyses.—It is, of course, possible nowadays to find in most large cities adequate facilities for the chemical study of foods offered for sale in municipal markets, and therefore, more or less under municipal guarantee. Such analyses should be made to detect illegal adulterants or preservatives and to insure protection against the sale of deteriorated or decomposed products.

Bacteriologic Analyses.—Routine procedures of this kind are, of course, essential if milk and dairy products are permitted to be handled in the market. Bacteriologic analyses to detect contamination of foods from various sources may, from time to time, be worth while. Consequently the necessity for municipal equipment to meet demands in this field should be recognized when market plans are being developed.

Calorific Analyses.—This is the type of analysis and check which cities will have to recognize in the future. Eventually governmental authority will have to take the responsibility for food standardization, and if this standardization is to be on a rational basis, calorific values will have to be employed. Further, if the purchaser is ever to be educated to the extent that she can buy her food supply on an intelligent food value basis, there will have to be mechanism for routine, calorific food analyses. In the present state of development an equipment of this kind cannot, of course, be considerered a prerequisite to a market establishment. At the same time, its need should be emphasized, so that in the future it may become an essential part of municipal market control. Again, it must be pointed out that this is, of course, of hygienic rather than of sanitary importance.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

THE STAFF

Living Wage.—As Dr. Gorgas has recently emphasized, essential to the hygienic welfare of the worker is a sound, economic status. It means for the industry a higher degree of intelligence and cooperation from the employees, factors which are essential in the enforcement of the rules of personal hygiene. This is perhaps of greater significance in food handling establishments than in almost any other industry.

Selection of Healthy Employees.—This is of the greatest importance in food industries, if we are to avoid a constant succession of "Typhoid Mary" catastrophes. Modern health departments are requiring that food handlers be free from communicable disease. The proper place to inaugurate a check is at the beginning of the period of employment. This can be done only by an initial medical examination resulting in the selection of healthy employees.

Periodic Medical Examinations.—This is now being required by modern health departments for the detection of disease carriers or individuals suffering from communicable diseases. Here, of course, municipal laboratory equipment is essential for the conduction of Widal and Wassermann tests, the examination of sputums and throat cultures, the bacteriologic study of excreta, etc. These requirements are, of course, applicable to small retail food establishments and, indeed, to restaurants, boarding houses, hotels, etc. On the other hand, the city, if it maintains municipal markets, has a special obligation for guaranteeing that the food products under its control shall be handled by individuals free from communicable disease.

EQUIPMENT AND METHODS

In this field the details are numerous and it is impossible in this paper to discuss them at all fully. The major points might be enumerated as follows:

It is absolutely essential that there be adequate and sanitary toilet and handwashing facilities for the market and stall employees. Hot water, individual towels, and soap from a holder, are essential. Toilets should be equipped with automatic flushes, so as to avoid a series of constant contacts. Washing facilities should be readily accessible in conjunction with toilet facilities.

Food should be protected from animal contamination by at least a 2-foot elevation from the floor.

Receptacles with covers should be provided for rubbish and garbage, satisfactory arrangements being made for emptying and cleaning, and the rules of the market should prohibit the cleaning of fowl, the accumulation of refuse, etc.

Adequate refrigeration is essential. This applies to storage refrigeration facilities in conjunction with the market, and to special refrigeration for local stall ice-boxes, or for enclosed display cases. The proper draining of ice-boxes, especially in case ice is used for refrigeration, is required by practically all market codes.

The laws regarding spitting should be strictly enforced.

Most municipal ordinances require that food establishments should be properly screened from flies during the fly season. In addition, it is usually required, to quote the sanitary code of New York City, that "no food intended for human consumption should be kept, sold, offered for sale, displayed or transported unless protected from dust, dirt, flies and other contamination." This is usually interpreted to apply particularly to foods eaten without being cooked or peeled.

Efficient janitorial service, with an arrangement with the stall occupants for cleaning, is necessary if decency is to be maintained.

Public markets, particularly when under municipal control, should take advantage of every opportunity, by the use of placards, leaflets, etc., for the education of the public regarding the dangers of food infection as a result of unnecessary handling, the risk in promiscuous coughing and sneezing, etc.

THE BUILDING

Adequate light and ventilation are not only necessary for the physical welfare of the employees, but are tremendous instruments in the maintenance of cleanliness and in increasing the commercial attractiveness of the market.

Floors should be impervious, waterproof, properly drained, and maintained in cleanly condition.

A plentiful water supply for flushing and other general purposes is absolutely necessary to market operation. Incidently, in this connection, drinking fountains should be provided for employees and patrons.

ADMINISTRATIVE CONTROL

It would seem, judging from experience in many American and foreign cities, that a concentration of authority and responsibility is an asset in the operation of municipal markets. This implies the establishment of a market department or at least of a market division in an existing department. The necessity for coordination in this field is most strikingly illustrated by the administrative situation arising subsequent to the establishment of the temporary curb markets in New York City a year or more ago. While these markets were established by the borough president's office, on street area under the control of that office, a superficial survey of the diffusion of responsibility indicated that in addition to the borough president's office there were also concerned, from diverse points of view, the department of health, the department of street cleaning, the department of water supply, the department of docks and ferries, the bureau of licenses and the department of police. Certainly if New York City is to take further steps in the direction of municipal market development, a concentration of authority is essential. From the point of view of sanitary control, there can be no doubt that responsibility should rest with one office, rather than be distributed as was the case in New York City, where the health department inspectors were supposed to enforce the rule regarding food protection, the street cleaning department provided janitorial service of a kind, the borough president's office was responsible for cleanliness as regards the toilet facilities, etc.

Historically, most cities attempting to deal with the necessity for municipal retail markets have paid some attention to the economic aspects of the situation, have attempted to control prices in a greater or less degree, but have, to a large extent, ignored the necessities for special sanitary regulations and particularly for specific education measures in food hygiene. The markets of Philadelphia and Baltimore, while attractive structures, and while apparently serving a useful purpose, by no means take full advantage of the opportunities for food control and food education. In this field, so far as the observations of the author are concerned, the city of Cleveland is unique. The Euclid Avenue Market in Cleveland, in addition to being a model establishment from the point of view of construction, light, ventilation, refrigeration, food protection, and toilet and hand washing facilities, has taken advantage of many opportunities for educating the consumer along lines of food sanitation. Of course even in this market much remains that could be done in increasing popular knowledge regarding food selection, the economies of food purchasing, and the essentials of food care in the home.

In conclusion, it cannot be too forcibly emphasized that in modern public health work, and particularly in the field of food sanitation, we are at the point where we are ready to drop the word "public" and to talk primarily about health. Paradoxical as it may be, the keynote of modern sanitation, and especially food sanitation, is personal hygiene. This means personal cleanliness. From the point of view of disease prevention it is undoubtedly of much greater importance for any city to teach its food handlers to wash their hands before they eat than it is for that city to solve its sewage disposal problem, even though it may maintain an indecent and unesthetic crude disposal by river dilution. From a health point of view public market control, while it must be founded on a sound, sanitary basis, is to be effected essentially through a program of personal hygiene. If eventually municipalities would meet the responsibility of having this program of personal food hygiene include, not only the infection preventive and disease suppressive factors of food protection, but also the positive, health creative, educational factors of dietary food selection, the public markets would then be utilized in something like their full potentiality as creative, social forces.

ABSTRACT OF DISCUSSION

Dr. J. N. Hurty, Indianapolis: The doctor is right in laying emphasis on the fact of personal cleanliness of the food handler. One of the best regulations that could be enacted would be to require that food handlers restrain themselves from introducing their fingers into any of the body cavities. In this city, and in other cities, too, I have noticed that food handlers in the dairy lunches, for instance, are very prone to introduce their fingers into their noses and into their ears and into their mouths and then handle food with the same unwashed fingers. The possibility of disease transmission in such instance is very great, and the habit is repulsive and repugnant. In Indiana, and especially in Indianapolis, we have spread the propaganda among the food handlers, especially in restaurants and in hotels, that waiters must be instructed to keep their fingers out of their body cavities. We had a very severe outbreak of typhoid fever last fall at Lake Wawasee. All the typhoid fever at this lake occurred at one hotel. The disposal of sewage was not ideal, but was passably good. Bath water was pumped from the lake not very far from the bathing place, but the tank was never filled, except at night time when there was no bathing going on. The whole outbreak was attributable to a single handler of food, a woman, who was a typhoid carrier. Very shortly after her appearance, within twenty days, typhoid commenced to appear. She handled the salads and the pastries.

Dr. John Dill Robertson, Chicago: Dr. Armstrong speaks of personal hygiene. This is very important and one of the oldest sanitary teachings. Moses was one of the world's first and greatest sanitarians and he laid especial emphasis on personal hygiene. He made it a fundamental rule that no man could offer up a prayer to God until he had washed his hands. This must have been a custom of the Egyptians from whom Moses received his education and training. This world-old sanitary teaching is no less important today. In oyster contamination we have the dirty hands of the oyster shucker; in milk contamination, the dirty hands of a milkman, and so all along the line of food handling.

Dr. Harold B. Wood, Charleston, W. Va.: The educational standpoint is the main one on which to develop the food question. It is very largely a waste of effort if men are sent into grocery stores and other food establishments to make inspection, if the health officer does not go further back and take up the question with the producer, and with the general public. The general public, of course, can be reached most effectively through the newspapers, which in their progressiveness and their high ideas, are always willing to assist the health officer in instructing the public along these lines. The general public should be instructed in what constitutes poor food, what constitutes good canned foods and what swelled cans mean. The grocer should not simply be told to send the foods back to the original man, but the canner should be instructed how he can produce better foods. Many swelled cans are being sent from one state to another. The health authorities of the states should take it up with the canners and teach them that there need be no waste in canned foods if a little more sugar, or, the proper amount of sugar, and the proper amount of heat for sterilization are used. Canning clubs are being established throughout the country, and these need public support because they are the educational part in the canning industry of the future. But they need supervision, they need sanitary inspection just as much as any other school, and if they are permitted to send out canned foods which spoil before they reach the consumer, as they do in many cases, then the consumer and the general public will turn a deaf ear to the canning clubs and mark them as failures. The cooperation that should be urged on the general manufacturer is the labeling of canned foods.

Dr. Mary Dunning Rose, New York: I visited one of the automobile factories here. The noon hour came and the food was delivered to the employees in sanitary receptacles, individual sanitary paper maché or paper boxes and cups. Farther on we saw men eating with hands filthy black. Not one man had made any attempt to wash his hands. Then we passed a number of stationary wash basins but not a towel was visible and the basins were dry. If they are not teaching factory workers the necessity of washing their hands before they eat, what hope can we have out in the field work to educate the public that they must wash their hands before eating? As to the examining of food handlers, we make a Widal test on a servant either in our homes or in our institutions. We find it positive. That person is a wage earner of the family, she or he is a menace to the community, and must be isolated if the community is to be safeguarded. What are we to do with the dependents? If we find them tuberculous we must isolate them. I cannot but feel that the way we have dealt with tuberculosis, allowing the consumptive to go free in the community, infecting more and more people, is not intelligent or sensible. They should be isolated the same as we isolate smallpox patients. The paper urged the examining of our food handlers, but it gave no means to take care of them and to safeguard the community. This phase of the problem is important whether it means state insurance for the family, as well as for the sick individual, or federal insurance.

Dr. W. W. Tompkins, Charleston, W. Va.: I want to say in reply to Dr. Robertson that if we again quote Scripture and from the New Testament we are told that to eat with unwashed hands defileth not a man, it is the things that proceed from the heart, from within, that defileth him. In this age in which we are now living we must confine ourselves more to modern bacteriologic teaching than quotations from Moses or a greater than Moses in the discussion of modern sanitation.

Dr. Charles J. Hastings, Toronto, Ont.: Might I ask a question? How do they determine in New York whether a handler of food is a carrier, or suffering from a mild form of some communicable disease? Does the department of health take the responsibility and bear the expenses of the examination, or do they accept a certificate from the family physician, or the physician employed by the employer of the laborer? Those suffering from the milder forms of communicable disease or carrier can get employment that would be perfectly safe, in which they would not be a source of danger; but they should not be employed as handlers of food. That might probably be a compromise to help out.

Dr. Robert T. Legge, Berkeley, Calif.: I understand that in Chicago the food handlers who are employed in some of the large hotels must have satisfactory medical examinations and certificates from the medical men; that the food handlers must be free from communicable diseases and open tuberculous and syphilitic lesions. The health commissioner will accept these certificates. If we intend to prevent all syphilitic persons from handling food, we would have to deny, I should say, about 50 per cent. of the population. It is only the persons with open cases of not only syphilis but tuberculosis who should be denied the privilege of handling foods.

A REPORT OF AN UNUSUAL CASE OF CEREBRAL MALARIA

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PANAMA, R. P.

In view of the epidemic of anterior poliomyelitis in New York, and the constant travel between that metropolis and Panama, the case here reported is of unusual interest from a diagnostic standpoint because of the several exceptional characteristics it presented.

The health authorities of the city of Panama first discovered the case and sent the patient, a girl aged 11 years, into Santo Tomas Hospital for diagnosis and treatment. Accompanying the patient's admission, a history of illness for two days was given which began Sept. 9, 1916, with malaise, headache and chills, and continued with high fever. The following day the patient had two convulsions; paralysis of the right side of the body became evident, and she neither spoke nor took any nourishment. Communication with any one arriving recently from the United States was denied by the family. At the time of onset of the illness the patient was living in Panama, but she had moved into this city, Aug. 25, 1916, only sixteen days before the onset of the illness, from the town of Arrajan in the Republic of Panama. While there, the family stated, she had several times been stricken with prolonged and intermittent fever and chills.

On the second day of the illness a blood smear was sent to the laboratory of this hospital by the health officer of the city of Panama, and the pathologist reported the presence of crescents and many ring forms of mostly the estivo-autumnal parasite; but a few of them showed tertian characteristics. Therefore, before sending the patient to the hospital, the attending physician in the city administered 7½ grains of quinin hydrochlorid intramuscularly.

The patient was admitted to Dr. Preciado's service, Santo Tomas Hospital, Sept. 11, 1916, at 11 a. m., with a temperature of 38 C. (100.4 F.), which that same evening rose to 39.8 C. (103.6 F.). She was fairly well developed, but rather undernourished, and of about normal size for her age. She lay on her back with the head a little retracted, her eyes rolling upward, and could not be induced to speak, being in a state of semiconsciousness. As much of her family history as could be obtained was negative, and contained nothing of importance.

Physical examination revealed the head, scalp, ears, mastoid regions and nose negative. The pupils were equal and reacted to light, and were neither dilated nor contracted. The neck was found to be quite rigid, and the patient uttered a faint cry when one attempted to bend the neck a little.

There were no glandular enlargements. The jaws were not rigid and the teeth seemed negative, but the tongue bore a brownish coat.

The skin was clean. There were present neither jaundice, eruption nor discoloration.

The lungs were negative; there was no cough, and the respirations were even, normal in rate, and were not labored.

The heart was negative and the pulsations at the wrists were good.

The abdomen likewise was negative, and the spleen not palpable.

The reflexes were absent at the knees.

Kernig's sign of the left side was positive.

The right arm and leg showed apparent absolute flaccid paralysis, there was not the slightest motion in either right limb, and when dropped each fell flaccidly as if paralyzed, but there was no difference in temperature between the limbs of the two sides. The face gave no signs of paralysis; both sides moved symmetrically.

A blood smear was now taken which showed crescents and a very few ring forms, some of which, I believe, were tertian parasites because of the increased size of the erythrocytes, and the more or less characteristic features of the organism,

A lumbar puncture was done next. The fluid was found not to be under pressure, and was absolutely clear. The cell count showed 5 to the cubic millimeter. The pathologist gave a report negative for organisms.

On admission, 2 grains of calomel, followed by 1½ ounces of magnesium sulphate and 10 grains of quinin were given by mouth. Four 10-grain doses of quinin were administered daily for the first three days, and after that the quinin was reduced to 10 grains three times a day until discharge.

September 12, the second day in the hospital, the patient's temperature dropped rapidly from 38.8 C. (101.8 F.) to 36.8 C. (98.2 F.), and remained subnormal for sixteen hours. To our surprise the supposed hemiplegia had disappeared, though the limbs affected were still quite weak, and the child seemed brighter. In the afternoon the student nurse reported two slight convulsions, which she described as clonic. Accordingly, bromids were given.

At this time the urine and stool examination yielded negative results.

The white blood count was 12,800.

DIFFERENTIAL WHITE BLOOD COUNT

	Per Cent.
Polymorphonuclear neutrophilic leukocytes	70
Polymorphonuclear eosinophilic leukocytes	0
Transitional leukocytes	1.5
Mast cells	0.5
Large mononuclear leukocytes	3.5
Lymphocytes, large and small	24.5

During this count of 200 cells, only one crescent and one estivo-autumnal ring were found. Erythroblasts, achromia, polychromatophilia, poikilocytosis, anisocytosis, and basic stippling were not present.

The hemoglobin was 68 per cent., and the red blood count 4,240,000, making a color index of about 0.81 plus.

While the blood was being taken for examination, a tendency to coagulate with unusual rapidity was noted.

September 13, the patient's third day in the hospital, there was a rise of the temperature to 37.6 C. (99.7 F.), which soon dropped again to subnormal and remained there during the remainder of her stay in the hospital.

Because the neck still remained rigid, another lumbar puncture was done, but it likewise yielded negative results. The right limbs had acquired more power, and the patient showed marked improvement.

September 14 and thereafter there was almost absolute improvement. The child became bright and talkative; the temperature remained normal; the pulse became slower, and normal strength was regained in the limbs once thought to be paralyzed. Another urine, stool and blood smear examination gave negative results.

According to Manson, cerebral malaria was at first supposed to have been caused by the malarial pigment, which formed thrombi in the cerebral veins; but later investigation gave emboli formed by the parasites as the etiologic factor in this condition. Accepting this explanation, it seems rather unusual that these should have occurred only on the left side in this case.

The prognosis is of course very good for this attack, but experience teaches us that patients harboring the gametes within their blood are always subjected to repeated subsequent attacks of the disease. Tremendous doses of quinin have been unsuccessfully given in this hospital with an attempt to destroy these sexual forms, and even salvarsan has failed to produce the desired result.

Santo Tomas Hospital.

DISINFECTION OF WAR WOUNDS BY THE CARREL METHOD

AS CARRIED OUT IN AN AMBULANCE AT THE FRONT [*]

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The Carrel method of disinfecting wounds is based on the following conception: To render an infected wound sterile it is necessary to employ a suitable antiseptic in such a manner that the chosen antiseptic comes into contact with every portion of the wound, that the antiseptic is maintained in a suitable concentration throughout the entire wound, and that this constant strength is maintained for a prolonged period. If these conditions are fulfilled, every wound will show its response to the treatment by the diminution and disappearance of its micro-organisms.

The chemical destruction of the micro-organisms of a wound depends on the difference of resistance existing between the tissues involved and the bacteria present on their surfaces. Practically every surgeon will acknowledge the fact that the usual routine application of powerful antiseptics will not sterilize an infected wound. "The success of the Carrel method which enables us today to make an infected wound sterile is not due to any miraculous properties of any new drug. It must be attributed to a combination of processes which permit the employment of antiseptic substances determined under such conditions of concentration and of duration that their action becomes efficacious. These processes constitute a method in which all the details are interdependent. It would be impossible to alter the antiseptic without changing its mode of employment. Equally, a modification in the technic would demand an antiseptic endowed with different properties."

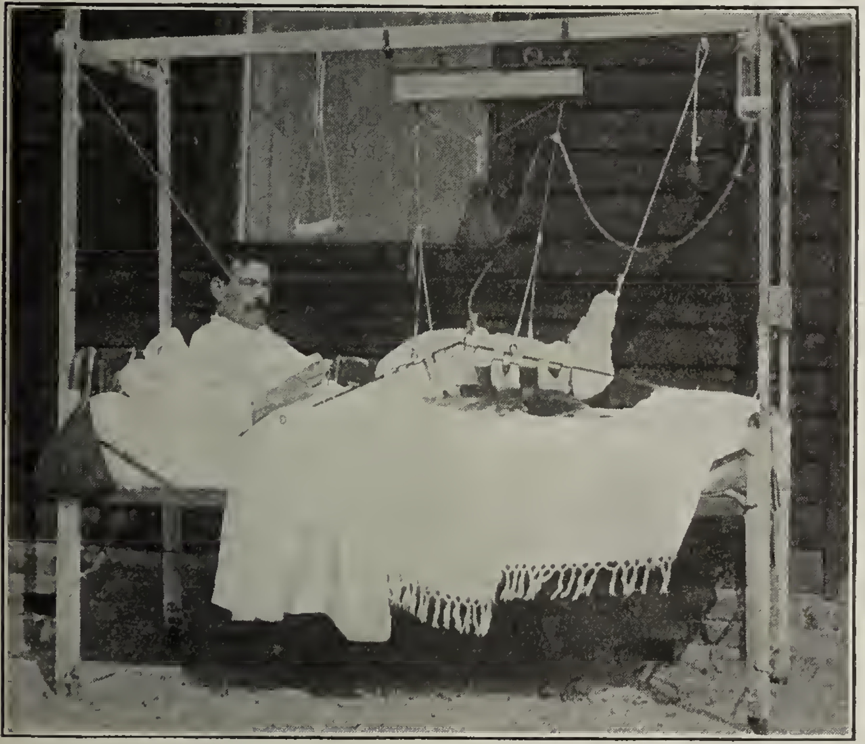

Fig. 1.—Balanced suspension treatment, with method of conveying Dakin's solution to the distributing tubes. It is comfortable, and greatly simplifies the dressings.

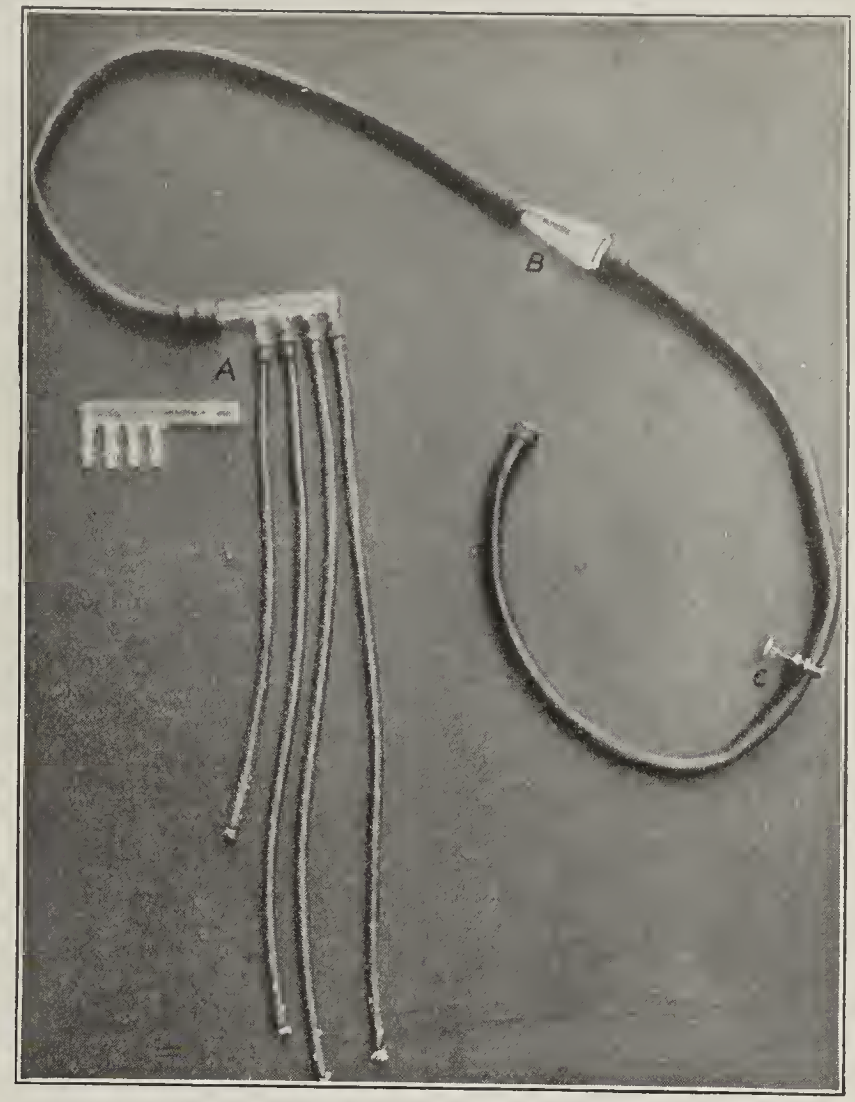

Fig. 2.—*A*, rubber instillation tubes with ends tied, and lateral perforation, size 18, French, attached to a four-way glass connection; *B*, glass drop-by-drop connection; *C*, adjustable clamp for controlling the flow.

The antiseptic employed is Dakin's sodium hypochlorite, 0.5 per cent. It is an ideal isotonic wound antiseptic of high bacterial activity and low toxic or irritating quality. The latter feature distinguishes it from Javelle water, Labarraque's solution, etc. The hypochlorites of commerce are of inconstant composition and generally contain free alkali or free chlorin. Such substances are irritating, and when used in moderate concentration may produce very unfavorable results. In addition to being a strong wound bactericide, Dakin's solution, because of its pyocytohemolytic powers, has the great clinical advantage of being able to dissolve pus, old blood clots, tissue débris, etc. The living tissues resist this dissolution, owing to the protection afforded them by the sodium chlorid of the serum.

OPERATIVE TECHNIC TO PREPARE THE WOUND FOR THE INTRODUCTION OF THE ANTISEPTIC

The future course of the wound is directly dependent on the thoroughness of the first surgical act. This should be carried out under the strictest aseptic precautions and at the earliest possible moment. It consists of a thorough, methodical, mechanical disinfection of the wound with the extraction of all shell fragments, particles of clothing, dirt, etc.

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[*] Read before the Surgical Section of the New York Academy of Medicine, Oct. 6, 1916, the paper being illustrated by colored photographs (Lumière) showing the wounds and their progress.

[*] A rather full description of the method of preparing Dakin's solution has been omitted, since a similar description was recently published in The Journal. It will appear in the author's reprints.

The operative field is painted with tincture of iodin, and the bruised and necrotic skin edges of the wound are trimmed away with a sharp knife. The knife and forceps are then put aside. With new instruments the wound is laid open like a book and gently explored for shell fragments, pieces of clothing, pockets, etc. Everything that could have been infected by the traumatism, or could become the source of infection, is removed. All noninfected tissues, and tissues unlikely to become infected, are preserved.

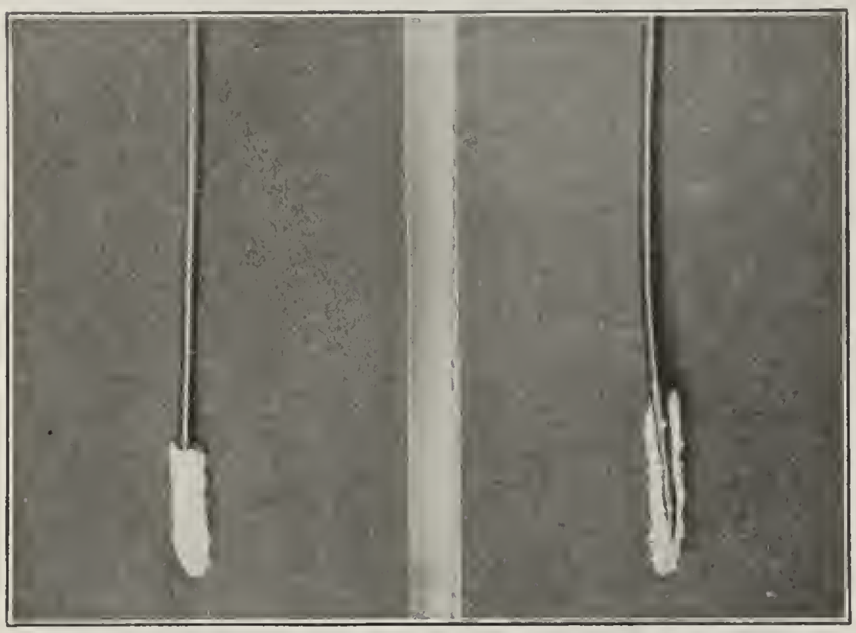

Fig. 3.—Perforated tube tied at end and dressed with toweling; on right, portion of toweling cut away to show lateral perforation.

Gentleness of manipulation is the keystone of the technic. Brutalization of the traumatized tissue is a technical crime. In many of the cases it will be found that fibers of clothing, dirt, grass, etc., are encrusted in the muscular surfaces of the wounds. To avoid overlooking this blood-stained débris, the tract of the projectile must be lightly but methodically resected. Great conservatism is exercised in the removal of comminuted fragments of bone. The same minute and careful mechanical cleansing is carried out in osseous wounds as in the soft parts. Before placing the instillation tubes a careful revision of the wound is made, and particular attention paid to securing a perfect hemostasis. Muscular tissue infiltrated with blood is difficult to disinfect. There is another reason special to the employment of Dakin's solution which calls for a thorough hemostasis. Owing to its hemolytic property, Dakin's solution has the power of dissolving recent blood clots. A poor hemostasis invites the danger of a secondary hemorrhage.

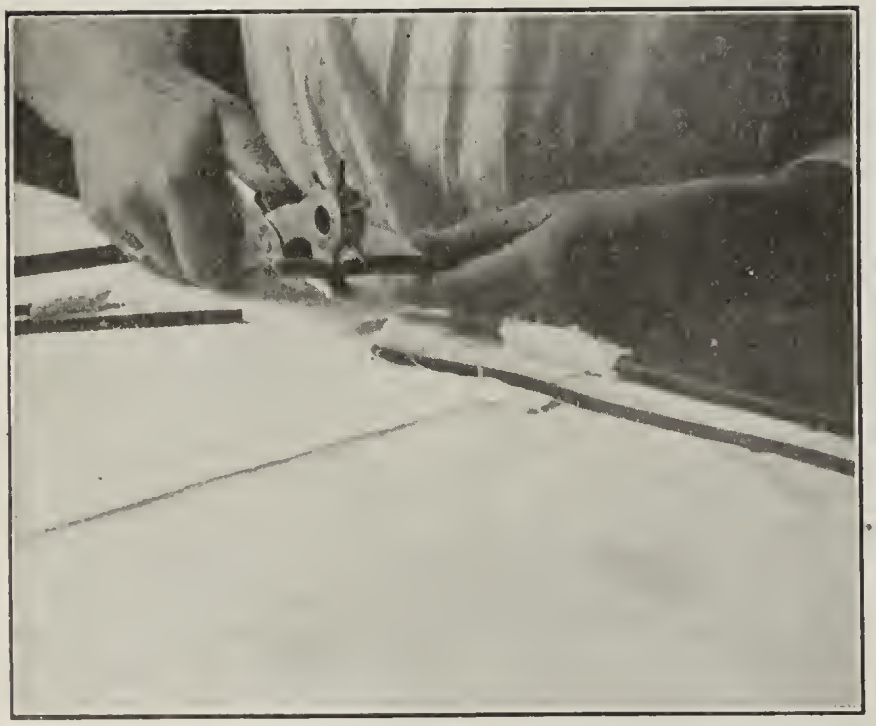

Fig. 4.—Punching of the lateral holes in the instillation tubes, and the prepared dressed tubes.

Counter openings for drainage are rarely employed. If the necessity for their use should arise, one should avoid making them at the most dependent point, as the goal of technic is to keep the liquid in contact with all the surfaces of the wound.

THE INTRODUCTION OF THE INSTILLATION TUBES

The guiding principle is to place the tubes so that the liquid will come into contact with every portion of the wound. The placing of the tubes will vary with the nature of the wound.

Superficial Wounds.—A thin layer of gauze is placed over the wound, and on this the requisite number of instillation tubes. The tubes are secured to the wound edges by a rubber cuff and suture, or a two-way-flow tube (Fig. 5) is used. If the tubes are placed directly on the surface they become encrusted, and the orifices are blocked with granulations. Too thick a layer of gauze should not be used, as it will become clogged with the wound secretions and prevent the solution from reaching the wound.

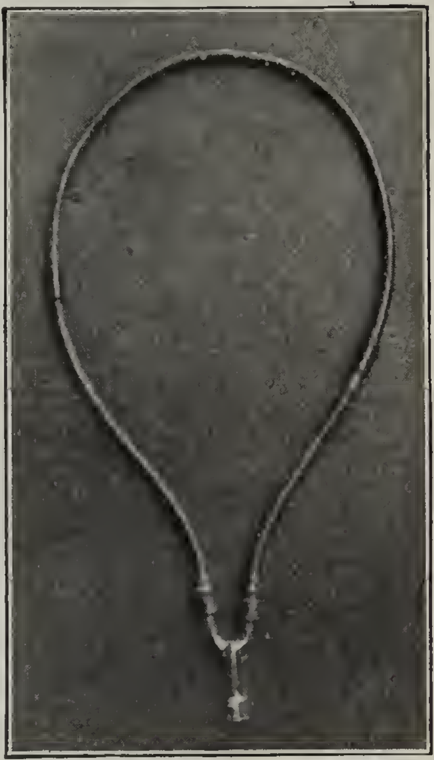

Fig. 5.—Perforated two-way-flow tube, with connecting tube and rubber cuffs for suturing to the edge of the wound.

Penetrating Wounds.—In the simple type, a tube without lateral perforations is introduced to the depth of the cavity and the solution allowed to well up from the bottom. In a large tract terminating in a cavity with irregular collapsible walls, a little gauze is introduced to support the walls of the cavity and allow a more thorough penetration of the fluid. Penetrating wounds with the point of entrance in a dependent position (as the buttock, posterior surface of the extremities, and the back) are treated with perforated tubes dressed with toweling (Fig. 3). These dressed tubes keep the antiseptic in contact with the wound. A suitable nonperforated tube can also be used.

Through and Through Wounds.—A perforated tube with the tied extremity uppermost is passed from the lower to the upper wound. The liquid, escaping through the small lateral holes, flows back along the tract to the inferior orifice, moistening the entire wound.

Wounds of the hand or foot, open amputation stumps, etc., are immersed in Dakin's solution for from ten to fifteen minutes every two hours until the wound is sterilized. The skin is protected by smearing it with sterile yellow petrolatum.

THE AFTER-CARE OF THE WOUNDS

The materials used are described above. In the care of the wounds a strict instrumental technic is employed, the gloved hands never coming in contact with the wounds or dressings.

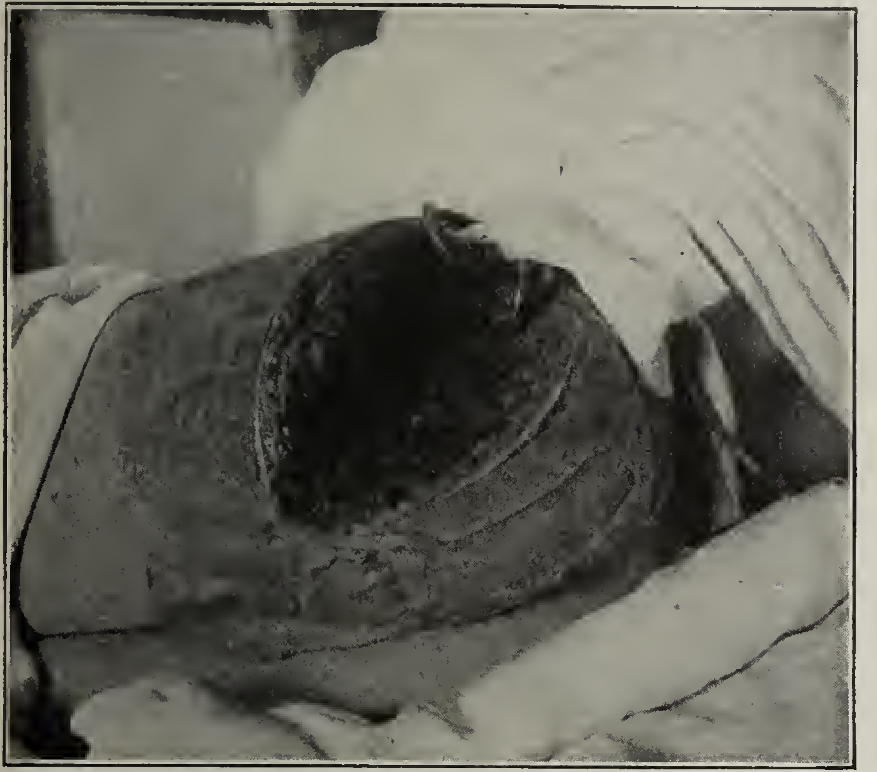

Fig. 6.—Large shell wound of the buttock, exposing the sacrosciatic notch. The necrotic edges and the surface of the muscles have been resected, and the wound is now ready for the placing of the instillation tubes. Gauze impregnated with yellow petrolatum protects the skin.

Instillations of the fluid are made every two hours by releasing the adjustable clamp (Fig. 2 *C*) controlling the flow. The amount of solution employed varies with the nature and extent of the wound; for the average wound, 10 c.c. are sufficient. This interrupted instillation is kept up until the wound is proved sterile. The tubes are then removed and a compress moistened with Dakin's solution is applied. Formerly a continuous instillation was the method of choice; if used at all it should be discontinued in from twenty-four to forty-eight hours. The rate of instillation is from 5 to 20 drops a minute, according to conditions. The object is to moisten the wound surfaces and not flood the bed.

Once a day, oftener if necessary, the wound, the tubes, and the flow of the liquid are inspected. Flushing the wound shows if the solution is being delivered as planned, and mechanically washes away the excess of wound secretion.

The Carrel method is not a continuous irrigation. It is a mechanical attempt to deliver an antiseptic of definite chemical concentration to every portion of a surgically prepared wound and to insure its constant contact for a prolonged period.

PROTECTION OF THE SKIN

In order to protect the skin from the liquid which may accumulate in the dependent portion of the dressing, gauze impregnated with yellow petrolatum is applied to the skin surfaces below the wound (Fig. 6).

BACTERIOLOGIC CONTROL OF THE WOUND

This consists in a regular determination of the number of microbes on the wound surfaces. This is done by transferring with a standard loop a portion of the secretion to a slide and counting the number of microbes per microscopic field. This is carried out every second day, and the results are entered on a suitable chart. When the microbes are absent from the wound on three successive days, the wound is considered sterile. Though not absolute, the bacteriologic control is of great practical value as a therapeutic guide:

> The determination of the cellular elements of the exudate, if taken along with the bacteriologic control, gives valuable information. For the first six days the exudate is essentially composed of polynuclears and enormous numbers of bacteria. Toward the sixth day the polynuclears tend to disappear and are replaced little by little by the mononuclears. At the same time the bacteria are diminishing. After the tenth day the macrophages appear, and only a few bacteria are found incorporated in the phagocytes. The appearance of the macrophages in the exudate is a favorable sign, being a forerunner of the approaching asepsis.[1]

A bacteriologic examination of the wound on the entrance of the patient to the hospital is, as a rule, negative. The charting of this finding would give a false impression because the germs are undoubtedly present, but the difficulty is in securing a smear from the infected area. It is better to begin the bacterial chart one or two days after the reception of the patient. As a rule the germs begin to appear after the ninth or tenth hour. There is an initial rise on the second or third day. This remains so for a few days, and then the descent begins. Wounds of the soft parts are sterilized in from five to eight days. Greatly traumatized wounds require a longer time. Fractures can be sterilized in from two to four weeks. If sequestrums are present, they must be removed to obtain an asepsis.

Wounds sterilized by the Carrel method are readily reinfected if the treatment is stopped.

Reunion of Wound.—When, on three succesive days, the bacteriologic control shows the wound to be sterile, it is closed by careful layer sutures. In the favorable cases this can be done on the fifth day. The average time for the soft parts is from seven to nine days.

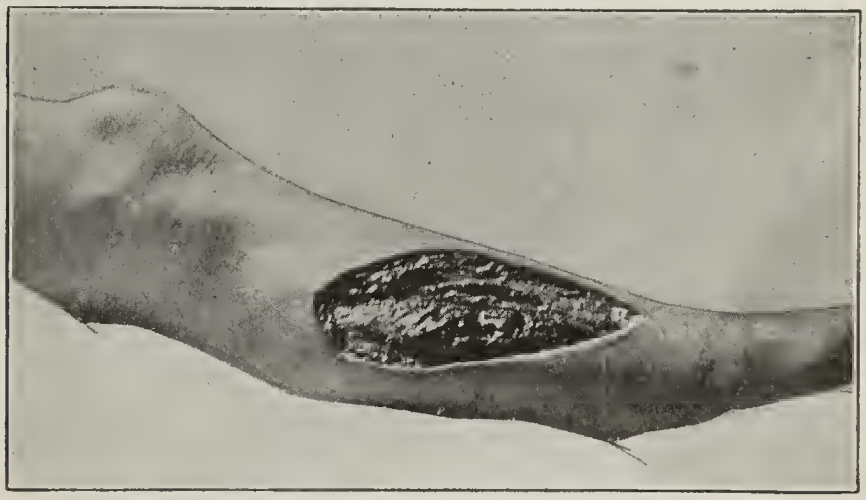

Fig. 7.—Shell wound of the soft parts of the leg with extensive loss of skin. All the traumatized tissue has been resected, and the wound treated by the Carrel method.

In cases in which sutures cannot be employed, the wounds are closed by adhesive straps passed in such a way that, besides pulling the edges of the wound together, they make a compression around the whole circumference of the limb.

For extensive wounds two Canton flannel bands are prepared, the length to be slightly longer than the wound, the breadth to be a little less than half the circumference of the limb. On the hemmed edges, shoe hooks are inserted every 2 cm. The limbs are painted up to the edges of the wound with a resin, varnished, and the woolly side of the Canton flannel applied. One should wait until the traction strips are firmly adherent before lacing them with rubber bands. The tension of the rubber bands rapidly draws the wound edges together.

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[1] Depâge, A.: Du controle bactériologique comme indication de la suture des plaies de guerre, Bull. et mém. Soc. de chir. de Paris, 1916, **42**, 1987.

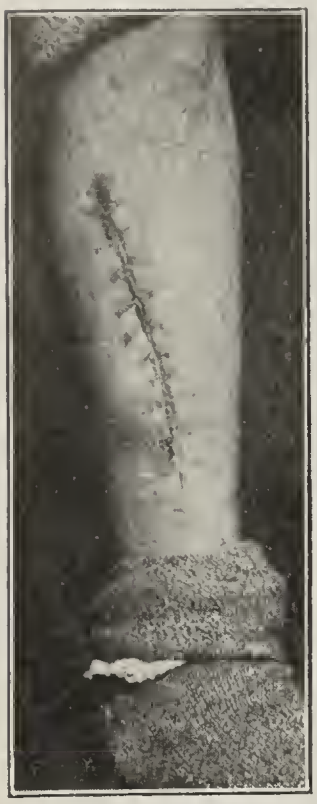

Fig. 8. — Secondary sutures; result fourteen days later.

Wound Healing.—The wounds treated by the Carrel technic are entirely different in appearance from those treated by the ordinary methods. The Carrel wounds have strikingly bright red vivacious granulations, a minimum amount of mucoid-looking secretion, and no odor. There are no redness, no tenderness, no induration in the skin edges. The wounds heal with the minimum amount of connective tissue, the scars are supple, the wound edges pliable, and epithelial growth is rapid.

RESULTS

In the early months of 1915 I was in charge of Hospital B, American Ambulance. This hospital contained 150 beds, and was situated at Juilly, Seine et Marne, 40 miles behind the firing line. The wounded were brought from Compiègne in automobile ambulances, arriving in Juilly about twenty-four hours after being wounded. This year my experience was gained while surgeon in chief of an ambulance situated 3½ miles behind the firing line.

At Hospital B the following procedure was immediately carried out:

1. Careful examination of the soldier's clothes to determine the absence or presence of clothing in the wounds.
2. Examination and dressing of the wound.
3. Localization by Roentgen ray of all bullets, shell fragments, etc., and their immediate extraction. The after-treatment was according to accepted surgical principles. We were well satisfied with the results obtained, as they compared favorably with those of similar hospitals. Today we should consider them failures. We had the usual number of pussing wounds, pyocyaneous infections, secondary abscesses, osteomyelitis, joint complications, amputations for infection, delayed healings, etc., along with the worries and uncertainties which are incident to such cases.

For the first ten days at the front we followed the old standard methods and the newer physiologic ones. Meanwhile we were tentatively trying out the Carrel method. At the end of this time the contrast in the results were so striking that we adopted the Carrel method for the hospital.

Our experience was that of Depage[1]: "The transformation which was established in our results was startling. The immediate complications became more and more rare, and suppuration disappeared from our services almost completely." In our service during four and a half months no secondary abscess developed, there was only one case of osteomyelitis, and this responded readily to treatment. There were no amputations for infection. The average stay for wounds of soft parts was fourteen days, for compound fractures from twenty-eight to thirty-six days.

The wounds treated were almost exclusively inflicted by high explosive shells, shrapnel, trench torpedoes, bombs, hand grenades, etc. Very few bullet wounds were received.

Depage[1] reported his results obtained at the Ambulance de la Panne from June 1 to August as 137 cases sutured, complete union in 112, partial union in 23, failure in 2 cases. These figures include 6 wounds of the knee, 12 amputation stumps, 17 fractures, and 102 wounds of the soft parts. On the date of August 2, Depage had eighty compound fractures without a drop of pus. In August the Ambulance Carrel[2] had closed 450 wounds with only six failures.

SUMMARY

The Carrel method is not a continuous irrigation. It is not dependent on the miraculous power of an antiseptic, or on any one feature of the method, but on the combination of the whole. It is a method of sterilizing wounds by mechanically delivering an antiseptic of definite chemical concentration to every portion of a surgically prepared wound and insuring its constant contact for a prolonged period. The progress of the sterilization is rigorously controlled by the microscope. Gentleness, thoroughness, and attention to detail are essential for success. I firmly believe that the adoption of this method is destined to save many lives, to reduce the gravity of the mutilations, and allow the rapid return to the front of many men who would otherwise be lost to the service of their country.

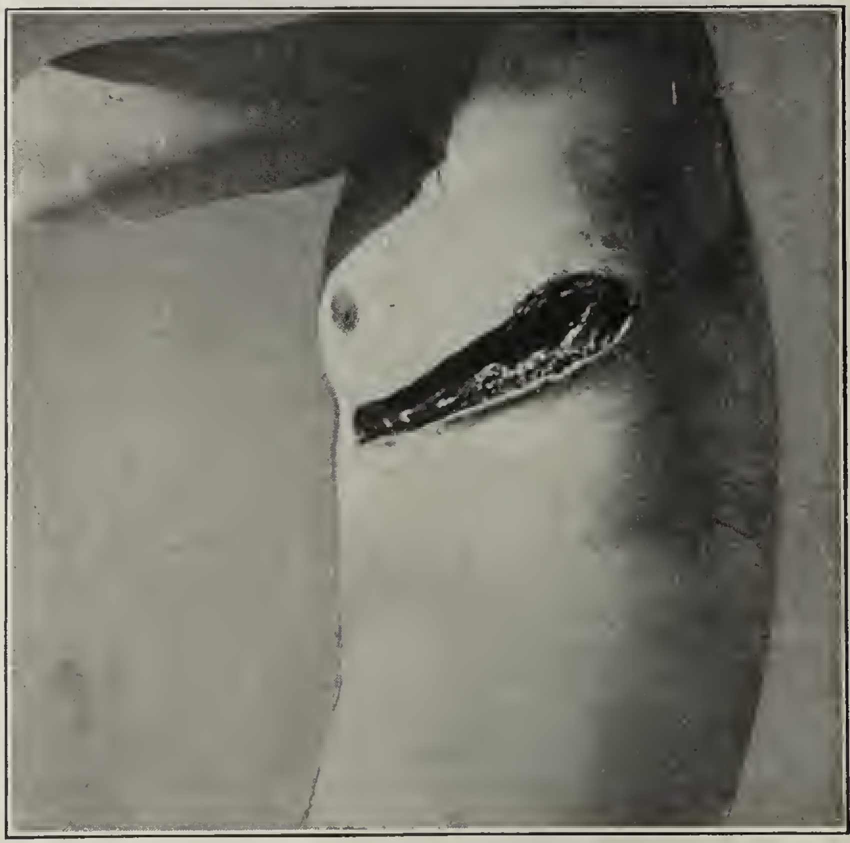

Fig. 9.—Extensive gunshot wound of chest; comminuted fracture of ribs; hemothorax. Sterilized in twelve days; sutured; completely closed in eighteen days.

50 East Fifty-Third Street.

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[2] Carrel, A.: Personal communication to the author.

Intellectual Ignorance.—Ignorance, which in all matters of morals extenuates the crime, is itself, in intellectual matters, a crime of the first order.—Joubert.

BISMUTH POISONING FOLLOWING BISMUTH PASTE INJECTION

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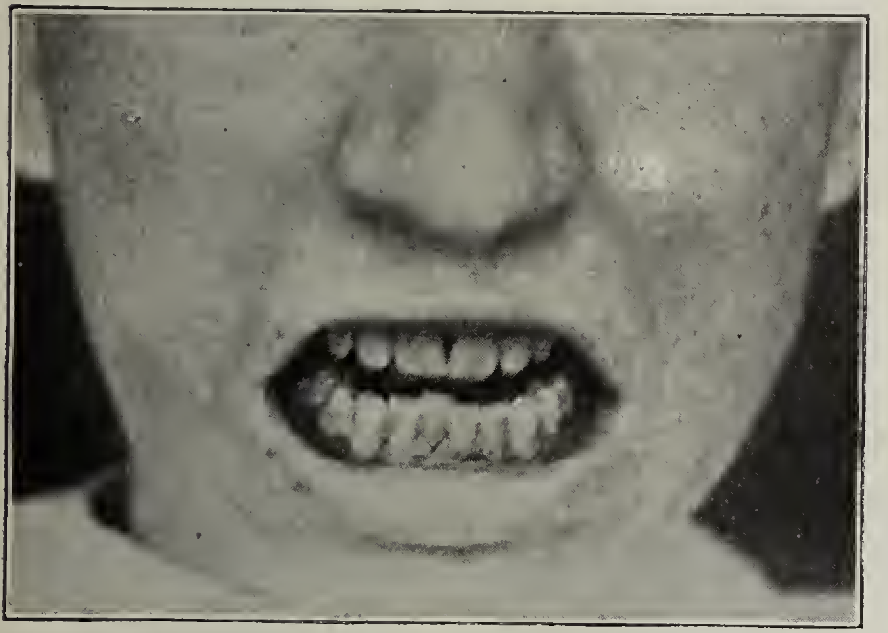
In 1912, when Mayer and Baehr[1] reviewed the literature of bismuth intoxication following the local application of bismuth to granulating surfaces, they collected reports of sixty-four cases of poisoning with twenty-four fatalities. Since that time there have been four cases of bismuth poisoning reported with two deaths.



Bismuth deposit on margin of gum adjacent to teeth.

The fact that there have been so few cases reported in the last few years, although the bismuth treatment has been used extensively, may indicate that, with improved technic and greater care in its use, the occurrence of this complication has become rare, or else instances of mild intoxication have not been recognized.

Dr. Beck[2] says, "The occurrence of this accident has deterred many surgeons from employing the bismuth treatment, and since poisoning can be avoided, it would be deplorable that an otherwise useful method should not be employed on this account." That toxic results cannot be entirely avoided is shown by Beck's admission[3] that in 30 per cent. of his cases there has been pigmentation of the gums. The report of sixty-eight cases with twenty-six fatalities serves to show the existence of individuals who have an idiosyncrasy against bismuth and are susceptible to its absorption with toxic effects.

In the case described below, the precautions and technic in the injection of the bismuth paste as advised by Dr. Beck were carefully observed and yet poisoning followed, indicating the unmistakable action of bismuth on a susceptible individual.

REPORT OF CASE

F. D., man, aged 22, had been well up to Jan. 10, 1916, when he developed an abscess of the left thigh above the knee. This was opened at the Cook County Hospital and the patient went home, returning in about eight weeks with an abscess of the left hip. This was opened, April 19, pus evacuated, and a drainage tube inserted. The sinus discharged for about three months. July 18, 2½ ounces of bismuth paste were injected into the sinus. There was no discharge and the patient went home to see some friends six days later.

On the eighth day following the injection, the patient returned to the hospital complaining of soreness of gums and tongue. Examination of the mouth revealed a line of bluish-black pigmentation about 2 to 3 mm. in width along the border of the gum adjacent to the teeth of the upper and lower maxillae. The tongue was swollen, and the pigmentation extended along the under surface of the tongue following the course of the ranine veins. On the buccal mucosa, most marked on the right side, were discrete as well as confluent spots of a similar character. The glossitis and gingivitis became more severe, and the salivation was so pronounced that the patient lay with his mouth over a basin to catch the flow of saliva. He also complained of diarrhea and weakness, but his general condition appeared good. The temperature was normal, and examination of the blood was negative. Urinalysis revealed a heavy cloud of albumin and many granular and hyaline casts.

The sinus was irrigated with warm olive oil and the bismuth removed, following which the stomatitis subsided, although the pigmentation on the gums and tongue still persist.

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[1] Mayer and Baehr: Surg., Gynec. and Obst., 1912, **15**, 309.

[2] Beck, E. G.: Bismuth Paste in Chronic Suppurative Sinuses and Empyema, The Journal A. M. A., July 1, 1916, p. 27.

[3] Beck: Illinois Med. Jour., 1909, **16**, 601.

A CASE BEARING ON THE FUNCTION OF THE PITUITARY BODY

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The pituitary body consists of two distinct parts, differing in development, in structure and in function. In this respect it bears a close resemblance to the suprarenal glands. The anterior part of the pituitary is developed from an invagination of the pharynx (Rathke's pouch), it is glandular in structure, and its function is that of a regulator of skeletal growth and sexual development. It is possible, moreover, that it may exert some influence on body temperature, for Cushing[1] points out that a rise of temperature follows

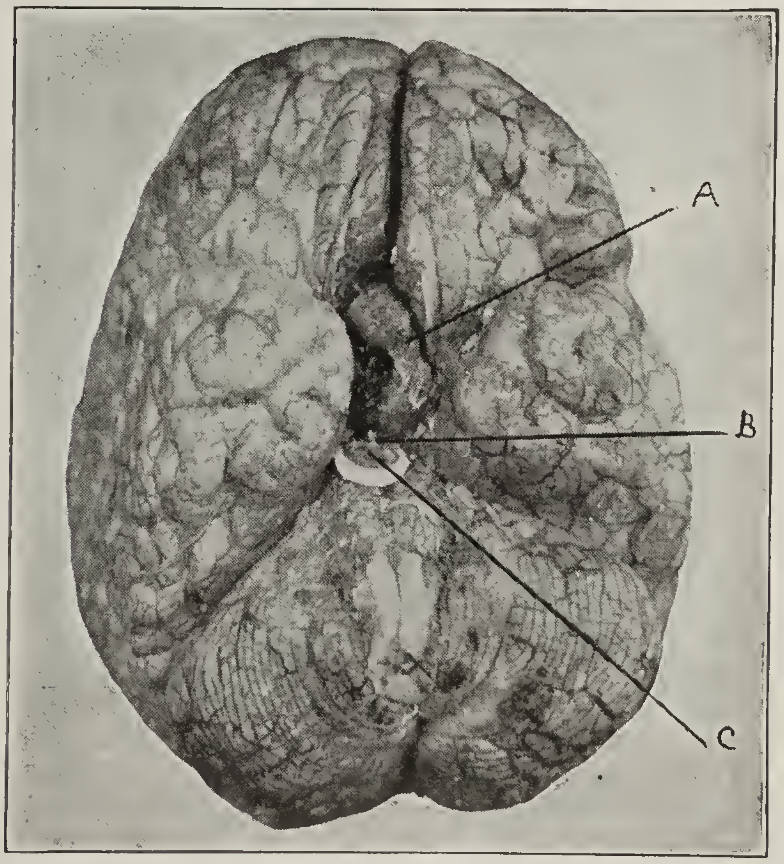

Fig. 1.—Base of brain, showing interpeduncular tumor surrounding infundibular stalk: *A,* tumor; *B,* infundibular stalk; *C,* pituitary body.

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[1] Cushing, Harvey: The Pituitary Body and Its Disorders, p. 14.

injection of extract of the anterior lobe in cases of anterior lobe deficiency. The posterior part, separated from the anterior part by the pars intermedia, is developed as a downgrowth from the floor of the third ventricle, shows in its structure traces of its nervous origin, and has a controlling influence over plain muscle generally, and also over carbohydrate metabolism.

There can be no question that the posterior lobe, or possibly its epithelial investment (pars intermedia), produces a secretion of great physiologic activity. Injections of posterior lobe extracts produce an extraordinary rise of blood pressure, owing to their stimulating effect on the plain muscle of the peripheral vascular system. Moreover, the posterior lobe is known to exert a profound influence on carbohydrate metabolism. If a condition of hypopituitarism be induced, either by experimental extirpation of the posterior lobe, or as the result of a pathologic process affecting that lobe, the normal process of glycogenolysis is interfered with, sugars are stored in the body, and there is a resultant accumulation of fat. In this condition it is possible for a patient to ingest very large quantities of sugar without a glycosuria being induced. Such a condition is described as a high sugar tolerance. But the question which presents itself is, How does this secretion, whether internal or external, reach the blood stream? It is in the hope that a little further light may be thrown on this question that the present case is described.

The histologic appearance of the nonvascular pars nervosa certainly does not suggest that a secretion is absorbed from it directly into the blood stream. The only other mode of such absorption, so far as we know, is into the third ventricle, in which case the cerebrospinal fluid would become the vehicle of the active principle. Several facts in our possession suggest that this may prove to be the correct answer.

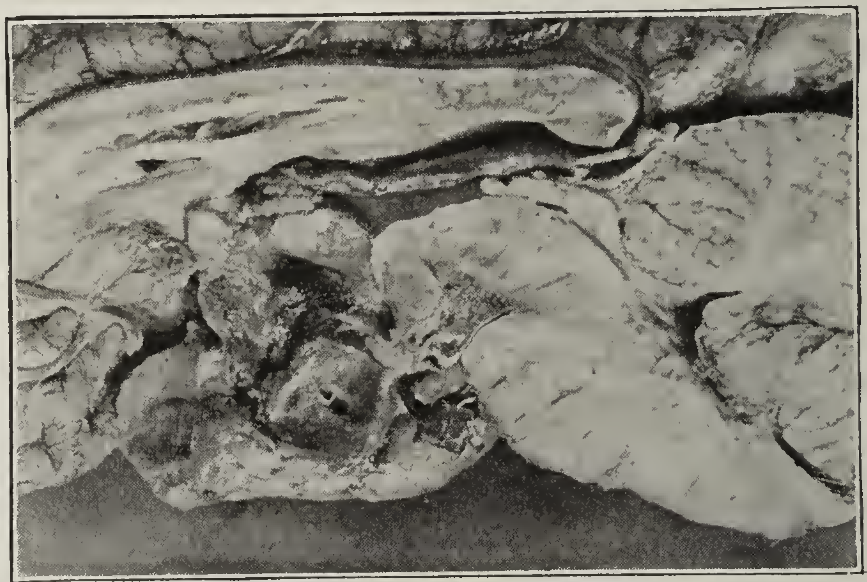

Fig. 2.—Sagittal section of brain, showing infundibular stalk emerging from tumor.

The infundibular recess of the third ventricle is prolonged for a varying distance into the infundibular stalk, which connects the hypophysis with the tuber cinereum. In some animals this prolongation extends right into the posterior lobe, so that any secretion produced by that lobe can readily pass into the third ventricle. If in some cases this is the normal course, it is not unlikely that in all cases it is the only course.

In the neurogliar network of the posterior lobe, globules, apparently of a colloidal nature, can be seen if a suitable histologic technic is adopted. Herring[2] demonstrated that these globules make their way from the pars intermedia through the substance of the posterior lobe toward the prolongation of the infundibular recess of the ventricle, into which they appear to discharge. It is highly probable that this colloid represents the active principle of the posterior lobe.

Another link in the chain of evidence was forged by Cushing and Goetsch,[3] who showed that injections of the cerebrospinal fluid produced physiologic symptoms similar to those obtained with posterior lobe extract. These observers were successful in producing their results with human cerebrospinal fluid, as well as with that obtained from animals. Goetsch[4] further found that by placing a clip on the infundibular stalk in animals he could produce a high tolerance for sugars, thus indicating that the route by which the posterior lobe active principle is absorbed had been interfered with.

Finally, in the case about to be described, it will be seen that Nature placed a ligature in the form of a glioma around the infundibular stalk, thus cutting off access to the third ventricle, with the result that a high sugar tolerance was produced.

History.—A well developed boy of average height and weight, aged 10½ years, in February, 1915, began to suffer from slight attacks of frontal headache, occasionally accompanied by vomiting. These, however, were never serious enough to prevent him from attending school. At the same time he complained to his father that he was able to see only one half of the clock. He was seen by Dr. Harvey Smith, who found that vision in each eye was normal, and that no refractive errors or structural changes could be detected.

Physical Condition.—In September, 1915, he again consulted Dr. Harvey Smith, now complaining of defective vision. The ocular condition was found to be: vision, right eye, 20/70 unimproved with glasses; left eye, only very feeble light perception. Distinct exophthalmos was present. The pupils were larger than normal, and reacted sluggishly to light and accommodation. There was less reaction when light was thrown in obliquely from the temporal side. No field of vision could be obtained in the left eye. In the right eye, temporal hemianopsia existed with reversal of the color fields. The retinal vessels were dilated and tortuous, the edges of the disks a little hazy, and the surface of the disks injected. These changes were more marked in the left than in the right eye.

The case now came under the observation of Dr. Chestnut. The eye symptoms naturally directed attention to the pituitary region. A roentgenogram of the sella turcica was taken, which showed slight enlargement of the sella, but thinning of the bony walls. The tolerance to sugar was tested, and was found to be markedly increased, there being a negative result to 250 gm. of levulose. There was no polyuria, and the urine was normal. The systolic blood pressure was 110. Extract of the anterior lobe of the hypophysis was injected, but without producing any thermal response. This, together with the absence of skeletal and sexual changes, suggested that the lesion was probably one involving only the posterior lobe.

The eye symptoms, probably beginning with bitemporal hemianopsia, the high sugar tolerance, and the apparent enlargement of the sella turcica, all suggested a tumor of the pituitary body, and the patient was referred to Dr. Harvey Cushing of Boston, who concurred in the diagnosis. Dr. Cushing operated on him by the transphenoidal route, Oct. 29, 1915.

At the operation, notes of which were kindly furnished by Dr. Cushing, "a soft, translucent struma began to extrude itself from the small incision in the sella floor. As much of the growth as was thought justifiable was removed."

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[2] Herring, P. T.: The Histological Appearances of the Mammalian Pituitary Body, Quart. Jour. Exper. Physiol., 1908, **1**.

[3] Cushing, Harvey, and Goetsch, E.: Concerning the Secretion of the Infundibular Lobe of the Pituitary Body, and Its Presence in the Cerebrospinal Fluid, Am. Jour. Physiol., 1910, **27**.

[4] Goetsch, E.; Cushing, Harvey, and Jacobson, C.: Carbohydrate Tolerance and the Posterior Lobe of the Hypophysis Cerebri, Bull. Johns Hopkins Hosp., 1911, **22**, 165.

Subsequent History.—The patient returned to his home two weeks after the operation, and remained well, although with no apparent change in the eye condition, until the evening of November 21. He then had an attack of vomiting, and complained of severe headache. Seen by Dr. Chestnut on the following morning, he was in a semicomatose condition, with a temperature of 102 F., pulse of 100, and evident signs of cerebral irritation and increased intracranial pressure. He remained thus all day, but during the night had several convulsions, and sank into a condition of coma with modified Cheyne-Stokes breathing. Death occurred on the morning of November 23.

Postmortem Examination.—Permission was obtained for examination of the head only. The cranium was not unduly thinned. There was no flattening of the cerebral convolutions, nor any excess of cerebrospinal fluid. The sella turcica was a little wider than usual, but of normal depth. The pituitary body appeared normal, and lay free in the sella. It was removed together with the brain. On the inferior surface of the brain, in the interpeduncular space, and apparently growing from the region of the floor of the third ventricle, there was a large, soft, grayish mass, which was at first mistaken for a tumor of the pituitary body. The left optic nerve was embedded in the mass. But the most important, indeed, the essential feature of the case was the fact that the infundibular stalk was completely surrounded by the tumor, passing right through it, and being apparently constricted by it. It was as if some ingenious experimentalist had placed a ligature round the stalk in order to determine the effect of such a procedure. The involvement of the stalk was even greater than appears in the accompanying illustration. On removing the brain and inspecting the floor of the sella turcica, one could not but admire the precision and perfection of the operative approach. The clean oval opening lay in the very center of the floor of the fossa, and exactly underneath the pituitary body.

Microscopic Examination.—The tumor is of an open reticular structure. In the meshes of the network there are considerable accumulations of hyaline material. The cells, which are large and round or oval, show in places a definite syncytial arrangement. Here and there are blood spaces, showing marked dilatation and engorgement. Specimens stained with phosphotungstic acid hematoxylin show coarse neuroglia fibers. There is no sharp line of demarcation between the tumor and the brain substance. The growth is an example of a glioma. Except for some increase in the number of eosinophil elements, the pituitary body shows no evident abnormality.

SUMMARY

1. The patient displayed symptoms of pituitary posterior lobe deficiency, in addition to pressure "neighborhood" symptoms.

2. There was no evident pathologic lesion in the pituitary body itself.

3. A tumor encircled the infundibular stalk, thus interfering with any communication which may normally exist between the posterior lobe and the third ventricle.

4. It seems not unreasonable to regard this case as an additional argument in favor of the theory that the secretion of the posterior lobe of the pituitary passes by way of the infundibular stalk into the third ventricle.

INNOMINATE ANEURYSM WITH RUPTURE

REPORT OF A CASE WITH TUBERCULOSIS OF ADJACENT TISSUES

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The arteries usually affected by aneurysm are, in the order of frequency of involvement, the thoracic aorta, the popliteal, the femoral-iliac, the carotid, the subclavian, the innominate and the axillary.[1] Aneurysms of the innominate are in themselves sufficiently rare to warrant recording their occurrence. The case about to be described presents, however, two additional features of unusual interest: (*a*) tuberculous involvement of the tissues adjacent to the arterial wall; and (*b*) external rupture of the aneurysm. Innominate aneurysms very seldom fill with clot and heal spontaneously. More often they gradually increase in size. They seldom perforate into the trachea, pleura, mediastinum or a vein. Still more rarely do they perforate externally.[2]

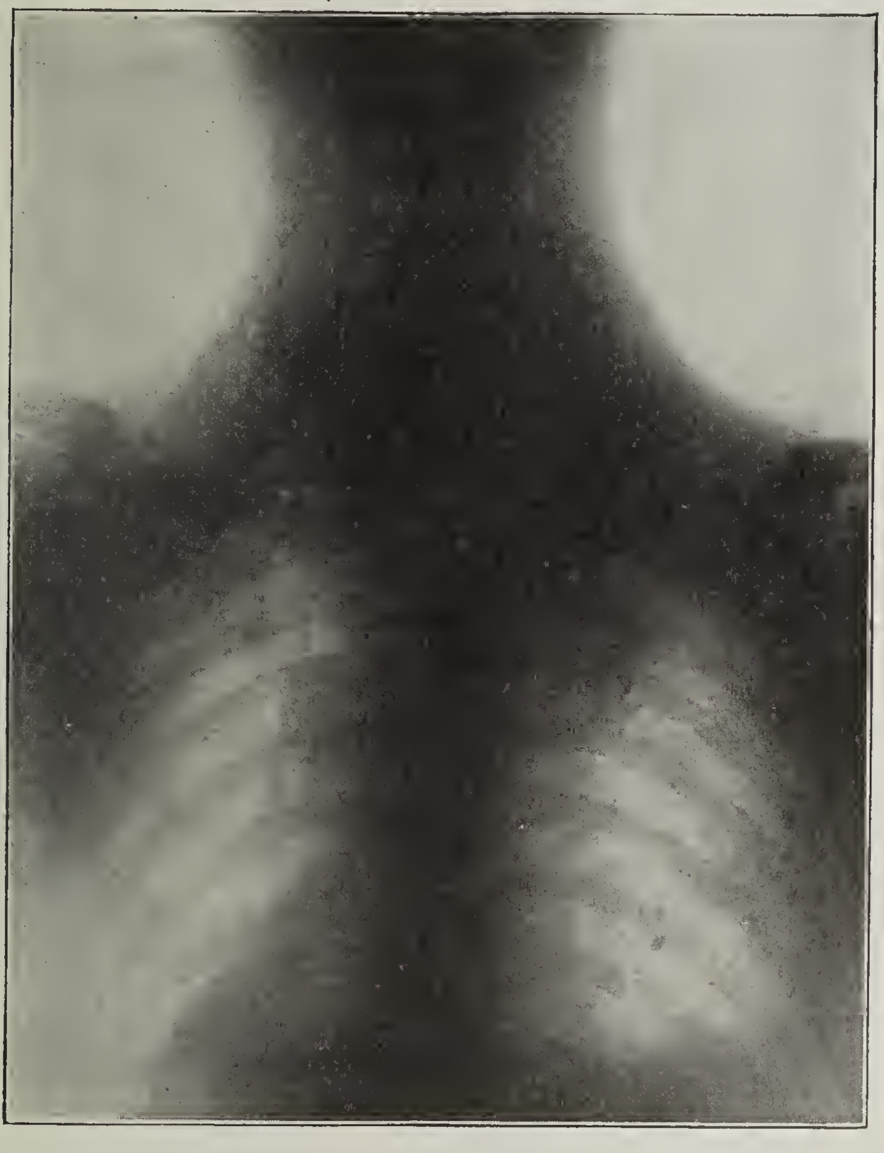

Fig. 1.—Roentgenogram taken in October, 1911. The enlarged innominate gives a definite shadow. It was thought that the aorta, too, was involved; the necropsy disproved this.

Tuberculous disease of arteries is in itself rather a frequent lesion, vessels being affected by inoculation with bacilli carried to them from distant points, or by direct extension of the process from adjacent foci. Numerous cases have been reported as proof of the former method. In some of them the arterial disease is a part of a general, acute miliary tuberculosis; in others there is a chronic tubercle of a large artery, such as the aorta, this being occasionally followed by an acute miliary tuberculosis, presumably arising from the chronic lesion.[3] The second method is by far the more common, and is often seen in the involvement of arteries in tuberculous lungs. Here the process is one of destruction of the external coat and, if the process is a rapid one, aneurysmal dilatation, with occasional rupture and fatal hemoptysis, may occur. The process, however, is usually and fortunately a more chronic one, so that from the beginning the inner coat reacts, thickens, and eventually, with or without the aid of a thrombus, leads to obliteration of the lumen. Ultimately the thrombosed area may undergo caseous degeneration.[4]

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[1] Osler: Aneurysm, the Principles and Practice of Medicine, Ed. 8, 1912, p. 849.

[2] Michanowsky: Das Aneurysma der Arteria anonyma und seine Therapie, Inaug. Diss., Berlin, 1910.

[3] Krumbhaar: Solitary Tubercle of the Aorta, Occurring in a Case of Generalized Tuberculosis, Bull. Ayer Clin. Lab. Pennsylvania Hosp., 1908, No. 5, p. 66. (Bibliography to 1908 given.)

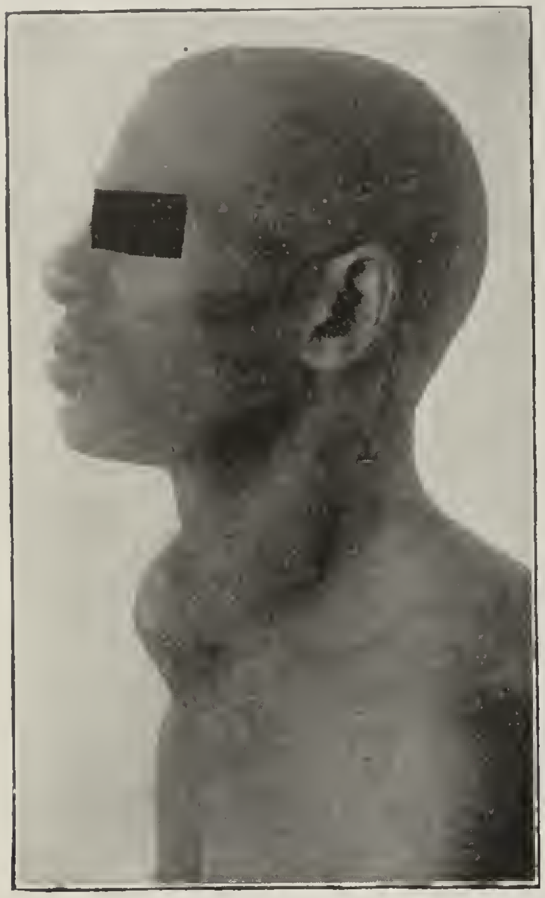

Fig. 2.—Side view of patient, showing tumor mass, arising on the right side but extending to the median line.

On the other hand, tuberculous disease of large arteries by direct extension is rare, probably because of the inherent anatomic resistance offered by the elastic fiber present. Even in cheesy tuberculous foci it is well known that elastic fibers resist the longest. Furthermore, tuberculous glands seldom extend beyond the capsule, and rather tend to mat and form a big mass, with the production of periglandular fibrosclerotic tissue.[5]

Tuberculous disease of large arteries being rare, it naturally follows that in the production of aneurysms, tuberculosis can play only an insignificant part. As a matter of fact, there is but one case on record in which tuberculosis seems to have been the etiologic factor. Curiously enough, in this case the innominate was the artery affected.[6] Here the patient was known to have tuberculosis. There were no distinct signs of aneurysm, no marked dulness, no pulse differences, and a recurrent paralysis was ascribed to the tuberculosis. The patient died of miliary tuberculosis. Postmortem examination revealed an innominate aneurysm the size of an egg, almost filled with laminated thrombi. Histologic study showed tuberculous disease of the vessel wall, the latter having led to the aneurysm formation.

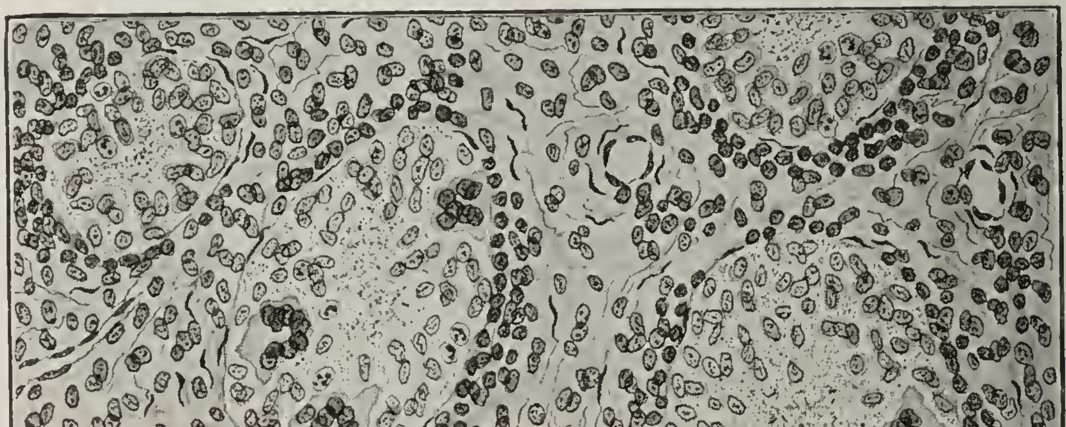

Fig. 4.—A drawing of a microscopic preparation made from a biopsy taken ten days before death. The tissue was fixed in 10 per cent. dilution of liquor formaldehydi, mounted and sectioned by the celloidin method, and stained with hematoxylin and eosin. In all three complete miliary tubercles are visible and a part of a fourth. The centers of the lesions have undergone caseous degeneration; giant and epithelioid cells appear more toward the periphery, and the outermost division of the tubercles is composed largely of small round cells.

In the following case the aneurysm was undoubtedly the result, not of a tuberculous process, but of syphilitic disease. There was a history of untreated syphilis, and the finding of a positive Wassermann reaction. There was history of pain over a period of two years before the mass appeared. This pain was not of such a character as could be referred to lung or pleura. Furthermore, sections made from the arterial wall showed, in spite of its close proximity, no involvement by the tuberculous process.

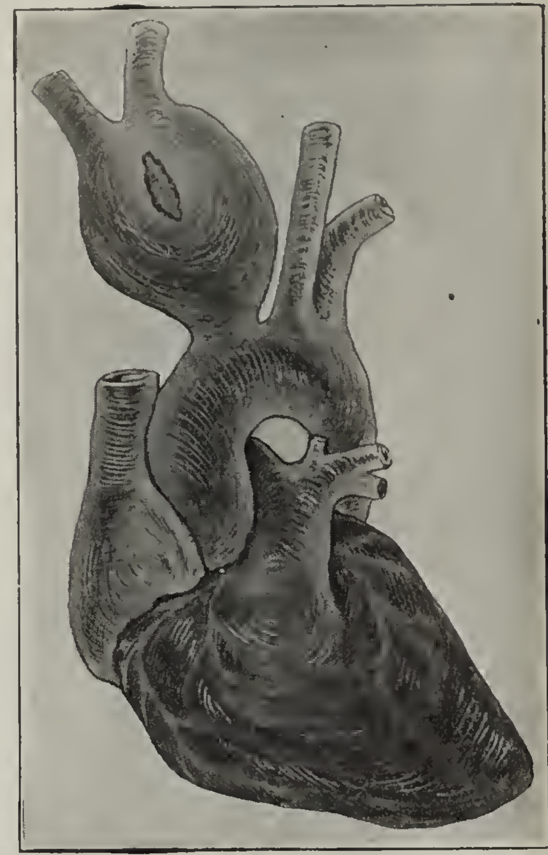

Fig. 3.—A drawing of the heart and a portion of the large vessels passing off from it. The superior vena cava has been removed in part to facilitate the delineation of the large fusiform aneurysm of the innominate artery. The rent in the aneurysmal wall which communicated with the sinus that opened on the cutaneous surface of the body above the inner end of the right clavicle is also shown.

REPORT OF CASE

History.—F. C., man, negro, aged 42, first sent for me on the evening of June 12, 1911, desiring relief from precordial pain. He told me that he had an aneurysm, and that this diagnosis had been confirmed by Roentgen examination six months previously (in December, 1911, at the Presidio).

For two years prior to this time he had suffered from occasional attacks of pain, at first rather localized to the region of the second right costal cartilage, but later of a sharp, lancinating character all through the right side of his chest, and at times in the neck and down the right arm, and at times he could scarcely raise it. March 1, 1911, he had noted the presence of a mass above the inner end of the right clavicle. He had no dyspnea except for a short time at the onset of the trouble, no cough, dysphagia or hoarseness.

The patient was well developed and nourished, 5 feet 7 inches in height, and weighed 155 pounds. He was comparatively comfortable the following morning, and nothing of importance was noted other than what was unmistakably an aneurysm. Except for pain, subjective symptoms were absent. The tumor, which was small, was visible above the sternum, extending just to the right sternoclavicular junction. At this time it was thought that the innominate was involved. (The examination was not complete and further observations were discouraged by the patient, who felt that more relief was obtained from "Dr. Munyon's XXX rheumatism and indigestion cure" than from iodids and from the morphin given for pain.)

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[4] Roger: Brouardel and Gilbert, Nouveau traité de médecine et de thérapie, **24**, 143.

[5] Schlesinger: Tuberkulöses Aortenaneurysma und Miliartuberkulose., Ztschr. f. Tuberk., 1914, **23**, No. 3.

[6] Weinberger: Mitt. d. Ges. f. inn. Med. u. Kinderh., 1916.

In 1890 the patient had had a venereal ulcer for which he had taken medicine for six weeks. No symptoms or signs of syphilis had ever followed. He had been married ten years; his wife, a Filipino, had never been pregnant. He had malaria in 1898 in Cuba and tonsillitis in 1909. He was in the United States Army from 1892 to 1900, and then in the quartermaster's department for four years. He had never used liquors or tobacco.

He was again seen, Aug. 3, 1911, when he came to have an application for a pension signed. He permitted examination of his neck, which showed but a very slight increase in size, and stated that he was still taking the XXX and felt fine. He was warned as to the danger he was incurring by engaging in active exercise, but he evidently paid little heed to the advice. He was again seen, October 2, having been several days in bed.

Examination.—The tumor had increased considerably in size; it bulged and pulsated to such an extent that, with the thinning of the overlying tissues, it seemed almost ready to break through the skin. The apex beat of the heart was not heaving, in the fifth space, in midclavicular line. A soft systolic murmur replaced the first sound. A somewhat rough systolic murmur was audible over the aortic area as well as over the tumor mass. The pupils were equal and small, and reacted to light and accommodation. The lids were tremulous. The skin, sclera and mucous membranes were negative. There was no jaundice. The tongue, throat and gums were negative. The thyroid was negative. The posterior cervical glands on the left side were palpable; also small left epitrochlear. The lungs were negative. The abdomen was level, symmetrical, soft and tympanitic throughout. There was liver dullness, fifth rib to costal margin in midclavicular line; it was not palpable. The spleen and kidneys were not palpable. The penis, testes, back and extremities were negative. The reflexes were normal.

The patient was induced to enter the University Hospital, October 19, where he remained for six days. Figures 1 and 2 are from pictures taken during this period. Blood examination revealed the Wassermann reaction weakly positive; hemoglobin, from 88 to 60 per cent.; red blood cells, 4,800,000; white blood cells, from 9,000 to 7,000; polymorphonuclears, 72; large mononuclears, 8; small mononuclears, 18; eosinophils, 2. The systolic blood pressure while the patient was in the hospital was: October 19, left, 140 mm. Hg; October 24, right, 94; 1.104; October 26, right, 102; 1.114. Urine examination was negative. The fundi showed no abnormalities. The lids were tremulous.

Diagnosis.—It was believed that the subclavian was the vessel most involved, and this opinion was shared by all who saw the patient. The roentgenogram, however, showing apparent involvement of the innominate and even possibly of the aorta, frightened off even the most daring of my surgical friends, one of whom was at first aching to attempt a surgical cure. Attempts to induce clotting, by introducing silver wire, did not appeal to the patient, who wanted me to stick in some sort of needle and let out blood, his idea of an aneurysm being that it was a walled off pocket of blood, easily drained.

After going home, October 27, the patient was pretty comfortable for a while, having a dragging pain only when recumbent on either side. This became more severe, seemingly aggravated by a gradual softening of the entire mass, but relieved by lying flat on his back. November 10, on arising in the morning the patient removed the cotton gauze dressing with which he kept the mass covered, and found that perforation of the skin had occurred; then there escaped at least a quart of thin yellowish fluid, this being attended by a sense of relief and with no shock. There was no blood in the discharge. The patient was seen on the following day, and on November 15 was again taken to the hospital where the following notes were made:

General condition about the same as on leaving hospital in October. Shoulder feels stiff and sore; patient has little use of right arm. Practically no pain. Weight 138 pounds. Hemoglobin 84 per cent.; red blood cells, 4,000,000; white blood cells, 9,200; polymorphonuclears, 68; large mononuclears, 10; small lymphocytes, 22. Urine negative.

November 20: Since the patient entered the hospital the wound on the neck has been carefully cleansed daily with hydrogen peroxid and packed with small gauze strips with a small amount of camphor-phenol. The purulent discharge seems to be decreasing and granulation occurring rapidly. Smears were taken today; also a small section of wall of ulcer. The tissue is not sensitive and not highly vascular.

November 22: Yesterday morning at 5 a. m. the intern on service summoned to see the patient, who was reported as pulseless after a large hemorrhage, found that the patient had been to the water closet a short time previously, and had just fallen asleep when he was awakened by a gush of blood from his neck. He was lying in a great pool of blood, on his right side. The pulse was weak, but clearly made out. Morphin sulphate, 0.015 gm., was given hypodermically. The hemorrhage was pretty well stopped of itself at that time, and after preparations had been made for a possible secondary hemorrhage, the dressing was removed and the sinus closely packed with iodoform strips. The patient was dizzy, and complained of great thirst. He was given plenty of fluids, but no stimulation.

November 23: It had been intended to leave in the packing for sixty hours, if possible, but this afternoon at 4 o'clock the patient's temperature rose to 39 C. (102.2 F.). The packing was removed, the sinus cleaned, and more tissue from the granulating surface removed for injection into guinea-pigs and for staining for tubercle bacilli. (See pathologic report below.) The artery could be seen pulsating in the floor of the sinus. It was covered by a large slough which it seemed best not to disturb. The patient suggested that be could at times feel the escape of air in the sinus when he took a full breath. The process was undoubtedly in close apposition to the right apex. The pulsation seen was probably from the right subclavian artery.

Of the tuberculin reactions, the von Pirquet was positive, the Calmette questionable, or very weakly positive if at all, and the Moro negative.

November 24: This morning the sinus was unpacked, filled with collargol solution, 5 per cent., sterilized by boiling, and roentgenograms taken. The mediastinum was taken obliquely to miss the heart shadow if possible, and an anteroposterior view was taken. The patient's condition was good. The blood picture showed little effect from hemorrhage. Late this afternoon the patient's temperature rose to 39 C. (102.2 F.). (This seemed to be a part of the febrile course that had been present since the patient entered.) He had been constipated to a marked extent, but no more distress was noted in his neck.

November 30: The patient's sinus was granulating very rapidly and had decreased to one third its former size. It was dressed three times a day. The patient complained of increasing tenderness in the right shoulder, extending down inside of the arm to the elbow. He believed there was slight swelling of the forearm, though I could not make it out. The glands of the axilla were much enlarged and very painful. Tincture of iodin and an ice bag were applied locally.

Previous to this time the patient had received three injections of a mercury preparation intravenously (November 16, 18 and 20). Inunctions of mercury and potassium iodid were given November 25 to 30, inclusive.

December 1, 1911: At 3:55 a. m. the patient had a large hemorrhage, further severe ones occurring at 4.30, 6 and 7 a. m., at which time 700 c.c. of salt solution with 10 minims of epinephrin were administered intravenously.

The patient died at 7:30 a. m.

Pathologic Report.—Necropsy was performed December 1. Rigor mortis was complete. Despite the natural pigmentation of the skin, it showed a marked pallor. The pupils were regular in contour, moderately and equally dilated. Palpable lymph glands were slightly enlarged. There were no visible skeletal deformities. An irregular sinus opened above the inner end of the right clavicle and led downward and medially; its external orifice measured about 4 by 3 cm., the long diameter being approximately parallel with the upper border of the clavicle. In the neighborhood of the sinus, the tissues showed a considerable degree of tumefaction.

When the thorax was opened and the lungs retracted, a large fusiform aneurysm of the innominate artery was visible. It was firmly adherent to the tissues surrounding the sinus. The heart and large vessels were removed *en masse*. In the aneurysmal sac at its upper and anterior aspect there was a rent which was continuous with the sinus opening above the clavicle. Through this rent an underlying thrombus appeared. The aneurysm measured 7 by 5 cm., and involved the innominate artery throughout its entire extent, but did not include the subclavian or common carotid arteries. The thrombus was of such size as almost to completely fill the cavity of the aneurysm, was easily removed, being attached to the wall of the vessels by very thin adhesions, and on gross section was found to consist of fibrin arranged in a distinctly lamellated manner. The shape and loose attachment of the thrombus was of such a nature that it must have acted during life very much in the fashion of a ball-valve. The chambers of the heart were practically free from blood save for a few small clots entangled in the meshes of the trabeculae corneae. Both the thoracic and abdominal divisions of the aorta evidenced a mild degree of patchy atheroma. The cardiac valves were free of microscopic pathologic changes, which was also true of the circumvalvular and remaining mural endocardium. The foramen ovale was not patent. The coronary arteries were in good condition. The left ventricle was somewhat hypertrophied.

The parenchyma of the apex of the right lung was contracted by several fairly large cicatricial processes, and the visceral pleura of that region as well as the adjacent parietal pleura were studded with miliary tubercles. The tuberculous involvement of the parietal pleura on the right side extended as far down in the midaxillary line as the upper margin of the fourth rib, and above it invaded the perisinusoidal areas quite out to the cutaneous limitation of the opening. The left lung was clear of tuberculous lesions as well as the left pleura in its entirety.

Aside from varying moderations of exsanguination, the abdominal organs and the external genitals showed nothing of any special pathologic importance. The brain and cord were not removed.

Additional Notes.—Ten days before the patient's death a piece of the wall of the sinus at its external opening was removed for the purpose of microscopic examination and inoculation experiments. The sections revealed typical miliary tuberculous lesions. A portion of the biopsy was triturated in sterile normal salt solution, and of the resulting fluid, 1 cm. was injected subcutaneously into each of two guinea-pigs, right thigh, ventral aspect, below the inguinal glands. Twenty-one days later the animals were etherized to the point of death and smears made from the enlarged and broken down glands of the inguinal regions above the points of inoculation. Stained by the acid-fast method, these showed numerous tubercle bacilli.

Dried Agricultural Products.—An industry that is sure to be developed to a greater extent than at present, in the opinion of the *Scientific American* (June 24, 1916), is the drying of agricultural products, such as potatoes, and aqueous industrial residues, such as the products of the sugar factories and the breweries. In France, it is said, fresh beets are dried, and three beet sugar works dry the exhausted beet pulp. Another industry in France is the making of "sugar flour" from fresh beet pulp by a process using increasing temperatures up to 120 C. A flour is produced which has the sweetening property of sugar to a certain extent, which can be used in all instances when the sugar it not required to be pure, as in breweries, for special breads, for feeding stock, etc. It is said a ton of beets produces 500 pounds of flour which sells for $2 a hundred. The drying of potatoes will be of especial practical value on account of the difficulty of keeping and handling them in their raw state. Damp grain may also be dried.

BERIBERI

REPORT OF CASES *

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CASE 1.—*History.*—K. Saito, a Japanese man, aged 44, had been in the United States for twelve years engaged in domestic work. He had not returned to Japan in that time. His family history had no medical significance. His complaints on admission to the medical clinic were headache, palpitation, digestive disturbances and insomnia. He had no history of previous acute disease, and had always been in good health until five months previously, when he took cold and the present symptoms developed. Three years before he had been operated on for a fistula in ano which was cured and had not recurred. He had had no digestive disorder before the condition for which he now sought relief. His weight had not varied from 155 to 160 pounds for five years past.

Physical examination showed a middle-aged Japanese, fairly well developed and nourished. His pupils were equal, medium, regular, and reacted to light and accommodation. His teeth were in poor condition with much caries and pyorrhea. The gums were spongy. The pharynx and tonsils were negative. No abnormality was detected in the lungs. The heart showed some increase of transverse cardiac dulness, from a half inch to the right of the right sternal border to a half inch outside the nipple line in the fifth left interspace. The impulse could be felt over the entire precordium, but there was no murmur or thrill. The area of the great vessels was not perceptibly widened to percussion. The radial pulse was equal, regular, 86, and the arteries thickened. The systolic pressure was 165 mm. (Faught).

The abdomen was symmetrical, protuberant and very tympanitic. Hepatic and splenic dulness were not increased, nor were these organs palpable. The extremities showed a deep tense pretibial edema. The knee jerks were absent and the Achilles jerk decreased. There was a sensation of numbness in the legs, but no anesthesia or muscular weakness could be detected. Some soreness was complained of over the nerve trunks of both upper and lower extremities. The patient said he had considerable numbness and tingling of the legs and a cap-sensation of numbness over the cranium. There was no motor or static ataxia. Some hyperesthetic areas were found on the sides of the chest and on the thighs. There was no disturbance of temperature sense. The nervous system findings were confirmed in the neurologic clinic.

Special examination of the eyes showed no refractive error or lesion of the fundi. There was moderate puffiness under the eyes. The patient stated that his diet consisted largely of milled or polished white rice; in fact, that it constituted the major portion of his food and had for many years. He had no venereal history and no evidence of having had venereal infection. A second examination of the eyes showed fundi and visual fields normal. Ears, throat and nose presented no abnormality. The clinical course was one of steady improvement both subjectively and objectively under a treatment of rest in hospital, where he was referred to the clinic ward for observation, mixed diet and mild tonics. He had several crops of boils which healed with no ill effects. Temperature, pulse and respiration were always within normal limits.

Laboratory Findings.—Blood: Average blood count gave 80 per cent. hemoglobin (Dare); white cells, 5,600; polymorphonuclears, 64 per cent.; lymphocytes, 26 per cent.; mononuclears, 3 per cent.; eosinophils, 5 per cent.; and transitional cells, 2 per cent. Stool: No occult blood. Practically normal digestion. Numerous clonorchis ova. Urine: Neutral, specific gravity 1.020, very slight trace of albumin, no sugar, a few hyaline and finely granular casts, epithelial cells and mucus. Wassermann reaction on blood serum was negative. Ten days after a provocative intravenous injection of 0.5 gm. arsenobenzol, the Wassermann reaction was still negative. Roentgenogram of the bony spine showed no abnormality.

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* Presented before the Cooper Clinical Society, San Francisco, May 8, 1916.

Spinal fluid: At the first examination, the Wassermann reaction was suggestive of positive (1, + + +; 0.5, + + +; 0.1, + + — —; 0.025, — —) 1 polymorphonuclear cell per cubic millimeter. Nonne-Appelt phase 1, very slightest trace. Noguchi butyric acid reaction, negative. In view of these findings the patient was given 0.5 gm. arsenobenzol intravenously, and ten days later the spinal puncture was repeated. On second examination the Wassermann reaction was negative in all dilutions. One polymorphonuclear leukocyte was found per cubic millimeter. Nonne-Appelt phase 1 and the Noguchi reaction were negative. The colloidal gold reaction was 0, 0, 00000000. Gastric contents: Ewald test meal, removed by tube in one hour, was well digested; no blood; a little mucus; occult blood, + +. Total acid, 30. Free hydrochloric acid, 12. Phenolsulphonephthalein excretion: (1) First hour, 45 per cent; second hour, 40 per cent; total, 85 per cent. (2) First hour, 40 per cent.; second hour, 20 per cent.; total, 60 per cent.

This case on summary presents an interesting combination of findings. The diagnosis of beriberi is supported by the cardiac palpitation and enlargement, with pretibial edema, exposure to beriberic conditions, an afebrile course, and a peripheral neuritis. There was undoubtedly present a low grade chronic nephritis which, however, did not seem severe enough to account for the edema. The high phenolsulphonephthalein excretion, moderate blood pressure, and absence of other evidence of marked renal insufficiency point rather to beriberi as the principal pathologic condition. The diagnosis must include alveolar pyorrhea, cardiac hypertrophy, and arteriosclerosis of a moderate degree.

The clonorchis infection would help account for the pretibial edema, as it was evidently of long enough duration and intensity to produce an eosinophilia. Presumably the patient contracted the clonorchis at least twelve years before in Japan. The fluke would account, too, for the digestive disturbances.

As for the seriousness of the clonorchis infestation, opinion differs. In sections of China in which from 12 to 20 per cent. of the population are infected, the disease is rather disregarded. While the fluke cannot be eradicated, it is not considered a particularly dangerous parasite. Clonorchis ova have been found in the abdominal lymphatics, and the fluke inhabits the bile duct system as well as the duodenum. It does without question produce various gastro-intestinal disturbances, and the question of a toxin must be considered, especially if, as in this case, the eosinophilia and in any part the edema, are to be ascribed to the parasite. The further possibility of egg embolism is to be kept in mind. Dr. Herbert Gunn states that he has found about 14 per cent. clonorchis infection in the routine examination of a large series of orientals in San Francisco. Cases are not infrequent in the Stanford medical clinic.

Case 2.—L. F. S., a Chinese man, aged 42, came to the medical clinic complaining of tiredness and numbness of the legs, with frequent urination and some irregularity of the bowels. The conditon was of gradual onset, was progressive and was first noticed five or six months previously. The family history was of no medical significance except that the father had died from pulmonary tuberculosis at the age of 73. There was no history of previous illness beyond frequent colds and much headache. There were no symptoms referable to the respiratory, circulatory or gastro-intestinal tracts. There was no history or evidence of venereal disease.

Up to the time of admission to the clinic, the patient had frequent nocturia and six or more urinations in the daytime. His habits were abstemious. He had been in the United States for thirteen years except for a period of sixteen months ending six months previous to admission, during which time he was visiting at his home near Canton, China.

The immediate illness consisted solely of numbness and weariness of the lower extremities, with headache, frequent urination, cold hands and feet, and at times constipation.

Examination revealed the patient rather pallid, moderately developed, and somewhat below the average stature. The teeth showed marked pyorrhea and caries. The pupillary reflexes were normal. The chest showed sunken supraclavicular fossae with corresponding dulness. There were no râles and no change in fremitus, voice or breath sounds. The cardiac dulness was not increased, and the sounds were of good quality and free from murmurs. After vigorous exercise, a slight irregularity was noted. The radial pulse was equal, regular and of moderate tension. The abdomen showed no abnormality. There were marked cyanosis and some clubbing of the fingers. A general adenopathy was present. The patellar reflexes were greatly exaggerated. At first a tentative diagnosis was made of underlying pulmonary tuberculosis with a secondary anemia. The laboratory examinations showed a moderate anemia with an eosinophilia of 5 per cent. Occult ova and trichocephalus ova were found in the stool. The sputum had no tubercle bacilli. It was thought that there might be a further helminth infection which would more adequately account for the symptoms than trichocephalus alone. With this in view, thymol was administered in the fashion recommended by Stiles, and the stools were examined, but no further ova or parasites appeared, although the occult blood disappeared.

At the time the thymol was administered, it was observed that there was definite but not very noticeable edema of the ankles, and especially of the pretibial regions of both legs. Also there was numbness of both legs from the midthigh down. Tactile sensation was unimpaired. Ankle clonus, the Babinski and Kernig reactions were negative. The knee jerks were constantly exaggerated. No paresthesia was observed. The diagnosis of beriberi was now considered. The patient was referred to the neurologic clinic with a tentative diagnosis of peripheral neuritis, which was confirmed. The tendon reflexes were all lively except the Achilles, which could barely be elicited. The Oppenheim reflex was negative. The abdominal and cremasteric reflexes were normal. Sensibility to heat and cold was normal, but with some diminution of acuity from the midthigh down. No definite area of anesthesia could be mapped out, and there was no disturbance of the deep reflexes. Except that a watch could not be heard on contact, there was no disturbance of the cranial nerves. The neuritis, while not prominent, was none the less definite.

In the complete absence of albuminuria and fever, and the absence of any other intestinal parasite except the trichocephalus in small numbers, it was felt that the positive features of exposure to beriberic conditions, a peripheral neuritis, a slight disturbance of the cardiac rhythm and a pretibial edema justified the diagnosis of larval beriberi. It is to be noted that no other cause for the neuritis could be found, alcohol and arsenic being ruled out among the first. A latent pulmonary tuberculosis could not be excluded, but if present, was certainly not active and not sufficient to account for the symptoms. Neuritis in tuberculosis is usually a late symptom, and such a cause can easily be excluded here. It is usually stated that eosinophilia does not occur in trichocephalus infection, but it is none the less not infrequently seen. If eosinophilia in any sense represents an anaphylactic reaction to helminth infection or helminth proteins, it is hard to see why this worm out of many should be exempt.

It is authoritatively stated that in beriberi the characteristic neuritic symptoms are especially displayed by the vagus and vasomotor nerves, the former being associated with the very characteristic cardiac lesions and the latter with the edema. Cardiac failure is the usual termination if recovery does not take place, and it is no unusual thing to see sudden and quite unforseen acute dilatation of the heart in patients who even a few minutes before were apparently comfortable. It is hard to relate the entire cardiac pathology to the vagus, and it seems more reasonable that there is some local toxic influence on the heart. Before the cardiac irregularity was discovered in the case here presented, it was felt that the apparently normal heart was distinctly against the diagnosis of beriberi.

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FILARIASIS

REPORT OF TWO CASES IN THE DISTRICT OF COLUMBIA, AND ANALYSIS OF THE CASES REPORTED FOR EASTERN NORTH AMERICA *

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The term "filariasis" as here used is restricted to infections with *Filaria bancrofti* or at least with worms having embryos apparently of that type. Most of these infections in the northern states have occurred in persons who have acquired the parasite in the tropics and are consequently lacking in the interest which indigenous diseases possess. As an examination of the published cases, however, shows that, excepting two large series reported from Charleston, S. C., less than fifty have been recorded for eastern North America, one may perhaps be pardoned for reporting two other imported cases, especially as the disease may become endemic in this latitude, if it not already is.

Following a consideration of these two cases is a summary of what, it is hoped, are all of the cases previously reported, with a discussion of each case or group of cases. As compilers are only human, probably recorded cases in eastern North America have been inadvertently overlooked. Only cases in which adult or embryo worms were actually found have been considered.

It is not to be supposed that the 142 cases reported for eastern North America represent anything like the incidence of filariasis in this country. They are more apt to represent careful diagnosis and interest on the part of observers to report them. Judging by the large number of indigenous cases found in Charleston, S. C., one would expect them to be equally numerous in other southern cities; yet but few have been reported in them. In going through the *Index Medicus*, the indexes of The Journal, the International Catalogue of Scientific Literature and the cards of the Zurich *Concilium Bibliographicum* in looking for published records, I made no special effort to search for reports of filariasis on the Pacific coast. Two published records, however, show it to be present there. Wellman, von Adelung and Eastman[1] report filariasis as constantly present about San Francisco Bay, and describe some experiments with feeding mosquitoes on an infected Japanese; von Adelung[2] reports a case of chyluria in a Japanese, with embryos present.

As previous writers and the standard textbooks deal with the morphology, the life history, etc., of *Filaria*, and as these facts are generally well known at the present time, no reference to that aspect of filariasis will be made here. Only an analysis of the cases previously described in eastern North America and the two here recorded will be attempted.

REPORT OF CASES

Case 1.—Colored medical student at Howard University, in 1902, between 20 and 25 years of age, native of Trinidad, West Indies.

This case was accidentally discovered by Dr. Paul Bartsch in teaching histology. At that time the medical course at Howard University was given at night, and in the routine study of students' fresh blood the moving embryos were found. This student was well developed, as shown by anthropometric measurements taken by Dr. Bartsch, and had no chyluria or enlarged glands. He appeared mentally listless and was unable to complete his medical course on that account. When first coming under observation he had been away from Trinidad for three years, and was under Dr. Bartsch's observation for one and a half years when he left the medical school and was lost sight of. Embryos were present in his blood when last seen, that is, four and a half years since leaving the tropics. The largest number of embryos found in a single drop of blood was seven, or about 150 per cubic centimeter, in blood obtained after 10 p. m. At 8 p. m. an occasional embryo was found in a drop, sometimes none, never more than one. During the day embryos were never found in drops examined, although many attempts were made to find them. At that time Rivas and Smith's method of drawing a few cubic centimeters from a vein and placing it in dilute acetic acid solution was unknown. In petrolatum ringed preparation of drops of blood, Dr. Bartsch has observed the embryos moving after a lapse of twenty-two days. The listless condition of this patient may have been due to a simultaneous infestation with hookworms, but his feces were not examined for them. I doubt if filariasis was the cause of it.

Case 2.—Patient of Dr. George N. Overton, who suspected filariasis, and in conjunction with Dr. Walter Van Swearingen made a positive diagnosis by a night examination of the blood. Dr. Overton has kindly furnished blood from this patient for the past three years for use in my classes in clinical microscopy. Living embryos from this case were exhibited[3] at the Biological Society of Washington, March 25, 1916.

The patient is a bright, intelligent colored girl, aged 19 years, born in British Guiana. She has lived in Panama, whence she came to Washington in 1911, five years ago, in order to attend the Armstrong High School, where she was graduated this year. Her family history is negative except for a sister who has filariasis (diagnosed by symptoms), now living in British Guiana. Eight years ago while in British Guiana, she first noticed swelling of the right leg, later attended with intense pain and a "drawing" sensation of the limb, with headache, fever and chills; often she would retire feeling well only to be awakened with these symptoms; walking or any vigorous exercise would precipitate an attack. During these attacks there appeared a large lump in the right inguinal region which would slowly travel down the thigh, then to the leg and finally disappear in the region of the ankle. These attacks would number about three a month, lasting about one week. She received medical treatment at Demarara and Panama with negative results. In 1911 she came to the United States, and was soon after attacked in usual way. Three years ago she came under Dr. Overton's care, and the positive diagnosis of filariasis was made. This patient's blood has been examined only at night, from 9 to 10 p. m., and shows from one to three or four embryos in each drop; this is about 20 to 100 embryos per cubic centimeter. Aside from the embryos and an eosinophilia of from 10 to 15 per cent., her blood picture is normal. The treatment given by Dr. Overton has been local applications of ichthyol and iodin to the inguinal region, thigh, and leg, and a course of Fowler's solution and later of Donovan's solution. Under this treatment the local and systemic symptoms cleared up, but the embryos still persist in the blood. Continued residence in the temperate zone and the tonic effect of the treatment tried are probably responsible for her improved condition. I do not believe the treatment has had direct effect on the adult worms. I found as many embryos in the blood this year as I did three years ago. The contrast in mental picture between this case and the preceding listless patient of Dr. Bartsch is marked.

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* Because of lack of space, this article is abbreviated in The Journal. A synopsis of all the cases heretofore reported in eastern North America will appear in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

[1] Wellman, Creighton; von Adelung, Edward, and Eastman, Finley M.: The Relation of Mosquitoes to Filariasis in the Region of San Francisco Bay, The Journal A. M. A., July 16, 1910, p. 217.

[2] Von Adelung, Edward: California State Jour. Med., 1911, **9**, 27.

[3] Lyon, M. W., Jr.: Science, May 26, 1916, p. 762.

COMMENT

The source of infection in both cases was undoubtedly the tropics. The possibility of filariasis being spread from cases imported into this latitude must not be lost sight of. Mr. Frederick Knab of the Bureau of Entomology informs me that what is probably the important intermediate host in the spread of *Filaria bancrofti,* the mosquito known as *Culex quinquefasciatus* Say (formerly *Culex fatigans* of authors, also called *Culex pipiens* by Cuban authors and *Culex ciliaris* by Manson) is abundantly found in Washington during the late summer. It seems not unlikely that the summer temperature conditions in this latitude are suited to the development of the embryos into infective forms. That this actually has happened is perhaps shown by Barnes'[4] Washington case, by Slaughter's[5] Alexandria, Va., cases and by Dunn's[6] Philadelphia case. According to Mr. Knab the known range of *Culex quinquefasciatus* is as far north as Washington, D. C., St. Louis, and San Francisco. It has not been recorded in either Baltimore or Philadelphia, but Mr. Knab thinks there are no climatic reasons why it might not be found in those cities.

The possibility of infected mosquitoes being imported with bunches of bananas or other tropical fruits, as suggested by Johnstone[7] in reporting a possible Chicago case, and thus spreading filariasis beyond its endemic zone, should be considered. Mr. Knab, however, thinks this is a rather unlikely manner of carrying *Culex quinquefasciatus.* On the other hand, he believes there is considerable likelihood of infected female mosquitoes traveling from the tropics in the cabins or elsewhere on ships, and thus infecting individuals outside of the endemic zone. *Culex quinquefasciatus* is a house-inhabiting mosquito, and might readily be found in the rooms of vessels. There seems to be no reason why they might not also travel in the coaches of passenger trains from an endemic center like Charleston to more northern cities.

SUMMARY

Two imported cases of infection with *Filaria bancrofti* are reported for the District of Columbia.

Including these, 142 cases have been reported in eastern North America, 7 of which are doubtful records. One hundred and four acquired their infection in the United States; 28, in the West Indies or in South America; 1, in Egypt; 2, unknown but probably in the United States.

Distributed by sex and race, the 135 positive cases show: white males, 25; colored males, 38; males, race not stated or inferable, 12; total males, 75; white females, 21; colored females, 37; females, race not stated or inferable, 2; total females, 60; total white, 46; total colored, 75; race not stated or inferable, 14. The somewhat greater frequency of infection in males is probably associated with their seeking medical advice for involvement of the scrotum. The rather marked frequency of infection in the colored over the white is probably associated with the fact that in the large Charleston series the colored patients come from a class more apt to be bitten by mosquitoes. Excluding the Charleston cases the figures are: white males, 11; colored males, 4; males, race unknown, 12; white females, 5; colored females, 2; females, race unknown, 2; total males, 27; total females, 9; total white, 16; colored, 6; race not stated, 14. The ages of the patients varied from 6 years to old age.

Pathologically the cases show: no or almost no symptoms directly referable to the parasite or suffering from other affections, 72 cases, that is, about 50 per cent.; chyluria or hematochyluria, 36 cases; elephantiasis of the legs, 3; scrotal enlargement of various kinds, 13; inguinal enlargements, 11. Of the cases with chyluria, two showed that the chylous urine was passed by a single ureter, in one the right, the other, the left. This may have been the case with many of the others, as probably only a few were cystoscopically examined. In one case with inguinal enlargement, the mistaken diagnosis of hernia was made, and in one with scrotal involvement a supposed tuberculous testicle was removed. A moderate eosinophilia (from 10 to 15 per cent.) was present in most of the cases, but was entirely absent in some.

In those patients who became pregnant and had children, the embryos were not found in the child's blood, or in the mother's milk (Henry's[22] Philadelphia case; Saussure's,[44] and Johnson's[45] Charleston cases. Compare, however, Barnes'[4] Washington case).

Geographically the eastern North America cases are distributed from Canada to New Orleans and Key West, and from Boston to St. Louis. There is a large endemic center in Charleston, and probably elsewhere in the South. Indigenous cases are found along the Atlantic seaboard as far north as Philadelphia, but most cases north of Charleston are imported ones.

Culex quinquefasciatus, the mosquito which serves as the intermediate host for *Filaria bancrofti,* ranges as far north as Washington and St. Louis and perhaps farther. It is a house and city mosquito.

Adult worms remain living in their human host and give forth embryos for at least five years (Brooklyn and Washington cases), and probably thirteen years (Rosenberger's Philadelphia case).

The diagnosis is easily made by examining for living embryos in drops of fresh blood obtained at night, or by the Rivas-Smith method of placing a cubic centimeter of blood, day or night, in dilute acetic acid solution and examining the centrifuged sediment. The number of embryos found varies from one to over 2,000 per cubic centimeter, depending on the time of day or night examined and probably the number of parent worms.

Surgical interference, where the parent worms are accessible, has usually been successful when employed.

Medicinal treatment is unsatisfactory. In some of the foregoing cases salvarsan has apparently given good results. Branch[48] speaks highly of it in the West Indies; Cottle,[49] in the Pacific, thinks it ineffective.

George Washington University.

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4. Barnes, N. P.: Month. Cycl. Med. Bull., 1913, **6,** 1; Tr. Am. Therap. Soc. for 1912, 1913, p. 156.

5. Slaughter, R. M.: Med. News, 1891, **59,** 649; Practice (Richmond, Va.), 1891, **5,** 329.

6. Dunn, Thomas D.: Tr. Coll. Phys., Philadelphia, 1898, Series 3, **20,** 80.

7. Johnstone, Mary M. S.: Chicago Med. Recorder, 1903, **25,** 34, 62; Woman's Med. Jour., 1904, **14,** 1, 25.

22. Henry, Frederick P.: Med. News, 1896, **68,** 477; Med. Surg. Reporter, 1896, **74,** 775.

44. De Saussure, P. G.: Med. News, 1890, **56,** 704.

45. Johnson, F. B.: South. Med. Jour., July, 1915, **8,** 630.

48. Branch, Edmund R.: Jour. Med. and Hyg., 1913, **16,** 364.

49. Cottle, George F.: U. S. Naval Bull., 1912, **6,** 84.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 35)

ALBUMINURIA IN INSURANCE

A broader point of view and better knowledge of functional or accidental albuminuria have made its discovery in applicants for insurance a cause for reexamination of the urine, and not a cause per se for rejection. That albuminuria is not normal is acknowledged, and when it is found more than once in an applicant he is either rejected or his acceptance postponed. The age of the person in whom it is found is of importance, as after 40 even traces of albumin are suspicious. For the same reason an occasional hyaline cast may not be alarming in persons under 30; in those over 40 it is ominous. An applicant in whom albumin is found should be reexamined unless the amount is considerable. After four negative specimens and an absence of casts, with a blood pressure below 140 mm. systolic, or with a diastolic below 100 mm. if the systolic is 150, with cardiac sufficiency, and with no history of syphilis, tuberculosis or any renal disease, the applicant should be accepted. Any signs of cardiac hypertrophy or symptoms of hypertension should cause the applicant to be rejected.

A specific gravity of anything less than the whole twenty-four hours' urine is unimportant. A single specimen may vary from 1.005 (nervous urine, or urine passed soon after a long summer drink, or in severe cold weather) to 1.025, and still not indicate the average specific gravity. A high specific gravity, namely, more than 1.025, without sugar and without normal sediment, is rarely found in applicants for insurance. An abnormally low specific gravity of the urine is frequent, and in such cases most insurance companies require another examination; such an examination, however, is not justified on these data alone.

As the action of tobacco on the heart, blood vessels and kidneys is positive, a question of great importance, which the applicant should answer, is, "How many cigars, cigarets, and pipes do you smoke a day?" This is not yet often asked on insurance examinations, but is just as important today (there being fewer men who drink to excess) as is the question, "How many glasses of beer or whisky do you drink a day?" It is not sufficient to determine that the blood pressure is not too high in those who smoke to excess, as the high blood pressure may have become normal as a result of the weakening of the heart muscle by tobacco.

Occasionally a peculiar nervous albuminuria occurs in certain persons while under some nervous tension. However, although this condition often accompanies such nervous tension, these people never give evidence of orthostatic albuminuria. It is, of course, possible that at times some associated but undiscovered cause is present.

There are also instances of albuminuria in active persons with casts in the urine for years without any apparent progression, whose death will not be due to cardiovascular-renal disease. In such cases data of kidney function tests and of the nonprotein nitrogen of the blood should be obtained. We can no longer assume that hyaline or a few granular casts demonstrate nephritis. They do demonstrate some abnormal congestion or disturbance in some part of the kidney, but such a disturbance may completely disappear, as can a mild disturbance in any other part or organ of the body. On the other hand, coarse granular, fatty and waxy casts show kidney inflammation.

Traces of albumin may result from inflammation of the prostate and of the seminal vessels, and, of course, from pus anywhere in the urinary tract. In albuminuria from vesiculitis, Belfield[58] finds that if the urine is passed into three glases, a little into the first, the bulk into the second, and a little into the third, a good reaction is found for albumin in the first and last glasses, but less in the second glass; while in renal albuminuria all of the urine tests the same. In prostatitis, massage of the prostate will increase the albumin in the urine passed immediately afterward. This is especially significant if the bladder has been previously washed. Of course urine drawn by ureteral catheters will positively prove the source of the albumin.

(To be continued)

THE MODERN TREATMENT OF MERCURIAL POISONING

Cases of mercurial poisoning, particularly with mercuric chlorid, are so common nowadays that we should be ready to treat these patients promptly. It is equally essential that every hospital should be prepared to treat patients with mercuric chlorid poisoning properly as soon as they are received. Until quite recently the prognosis was far from favorable; but the considerable degree of success attained of late in the management of mercury intoxication has given new hope and encouragement for vigorous attention in every case.

The excellent suggestions of Lieb and Goodwin[1] and of Lambert and Patterson[2] on which the prevalent mode of treatment is based have lately been supplemented by the further studies of Lewis and Rivers[3] at the Johns Hopkins Hospital. The keynote in the procedure is elimination, which must be encouraged energetically by every available method. The Baltimore investigators point out that many apparently moribund persons have been saved by properly directed and vigorously pushed therapeutic measures. Death should be the only indication, they remark, for a discontinuance of treatment prior to the complete recovery of the patient.

Inasmuch as the excretion of mercury into the stomach and intestine as well as its appearance in the sweat has been definitely demonstrated by chemical investigations, the instructions to wash out the stomach frequently, to irrigate the colon liberally and to induce perspiration by means of a hot pack are placed on a rational basis. The administration of alkalies is based on the work of Macnider, who, in an article in the *Journal of Experimental Medicine* (1916, 23, 171), shows that they are capable of protecting the kidney from the full renal effect of salts of heavy metals like uranium which lead to pronounced nephritic disease as mercury does. Sodium bicarbonate exerts a diuretic action in addition, and there are indications of a decided benefit when it has been employed in mercury poisoning.

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[58] Belfield, W. T.: Vesicular Albuminuria, The Journal A. M. A., June 19, 1915, p. 2040.

[1] Lieb, C. C., and Goodwin, G. M.: The Excretion of Mercury by the Gastric Mucous Membrane, The Journal A. M. A., June 19, 1915, p. 2041.

[2] Lambert, S. W., and Patterson, H. S.: Poisoning by Mercuric Chlorid and Its Treatment, Arch. Int. Med., November, 1915, p. 865.

[3] Lewis, D. S., and Rivers, T. M.: Chemical Studies on a Case of Bichloride Poisoning, Bull. Johns Hopkins Hosp., 1916, **27**, 193.

The high figures reported for nonprotein nitrogen of the blood indicate the retention of nitrogenous waste, which is undoubtedly a factor in the early fatal issue of some cases. Lewis and Rivers,[3] therefore, urge the administration of carbohydrate in the form of glucose, either by mouth or intravenously, in a 10 to 50 per cent. solution. In addition to serving as a mild diuretic, it is believed to exert a protein-sparing action and thereby delay the appearance of extreme grades of nitrogen retention which usually precede death.

As an index to the changes in the renal function, the specific gravity curve of the urine should be studied in addition to the familiar functional tests for kidney performance. Mosenthal[4] has shown how much information may be gained regarding the condition of kidney function from a study of this factor. In nephritis, marked fixation of the specific gravity at a low level occurs in only the severest types. This is characteristic of a kidney which has no reserve power whatever and is therefore compelled to function constantly at its maximum capacity in order to eliminate the end-products of metabolism which ordinarily find an exit from the body in the urine. The variations in the concentration of the urine, as expressed by its specific gravity, become more and more conspicuous as renal function approaches normal.

The accumulation of reliable guides based on careful studies of mercury poisoning are a fortunate accession to modern therapy. Any treatment which has a rational background of scientific indications to support it is always undertaken with greater zest, confidence and persistence than are the haphazard makeshifts of empiric rules. The indifference bred of failure is no longer justified. Quoting Janeway[5] in respect to the management of cases of mercuric chlorid poisoning, every practitioner either should know how to treat these patients, or should get them promptly to the nearest hospital that does.

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

UREASE

Urease is a urealytic enzyme found in certain beans, fungi and micro-organisms.

Actions and Uses.—In the presence of water, urease converts urea into ammonium carbonate, thus: $(NH_2)_2CO + 2H_2O = (NH_4)_2CO_3$. It is employed in the determination of the amount of urea in the urine, blood and other body fluids.

Dosage.—For the estimation of urea in the urine, two methods are used, with various modifications: 1. A measured amount of urine is treated with urease, and after a specified time the ammonia produced is drawn into volumetric acid by means of an air current, and the residual acid determined by titration ("Absolute Method," D. D. Van Slyke, *Jour. Biol. Chem.*, 1913-1914, **16,** 125). 2. The alkalinity of a portion of urine, treated with urease, is determined with volumetric hydrochloric acid (methyl orange being used as an indicator). This figure is corrected for the acidity or alkalinity of an equal volume of the same urine, determined with the same reagents. The corrected figure represents the ammonium carbonate formed by the conversion of the urea present (Marshall, *Jour. Biol. Chem.*, 1913, **14,** 283).

The amount of urea in blood is determined by treating as in Method 1, the blood having been mixed with potassium citrate, to prevent clotting, as soon as drawn.

UREASE-SQUIBB.—Jack bean urease.—A standardized preparation of the urealytic enzyme obtained from the jack bean, *Canavalia ensiformis.*

Actions, Uses and Dosage.—See general article on urease above. Urease-Squibb is supplied in the form of powder and tablets.

Manufactured by E. R. Squibb and Sons, New York. No U. S. patent or trademark.

Urease-Squibb Tablets, 0.1 Gm.—Each tablet contains 0.1 Gm. urease-Squibb.

An aqueous extract of the jack bean is filtered, the clear filtrate reduced to dryness, the dry powder extracted with absolute alcohol, acetone and ether, dried, and the dry powder mixed with monopotassium phosphate and dipotassium phosphate in proportion to produce the maximum hydrolytic action and stability of the enzyme.

It is a fine, white, practically odorless and tasteless powder, which dissolves readily in cold water, forming an almost clear solution.

If 0.1 Gm. of Urease-Squibb in 1 Cc. of water be added to 5 Cc. of phosphate-urea mixture (according to the "absolute method") and digested at 20 C. for fifteen minutes, it will decompose sufficient urea to liberate from 100 to 150 Cc. of fiftieth-normal ammonia by aeration.

NEUTRAL SOLUTION OF CHLORINATED SODA.—Solution Chlorinated Soda, Dakin.—Solution Chlorinated Soda, Carrel-Dakin.—A chlorinated soda solution, containing 0.43 to 0.48 per cent. of available chlorine, free from caustic alkali. It must be protected from light.

Actions and Uses.—Neutral chlorinated soda solution has the germicidal and other properties of solution of chlorinated soda, U. S. P., but because of its freedom from alkali is not irritating to the tissues. It does not coagulate or precipitate the proteins of the lymph exudate in wounds, nor does it inhibit leukocytosis or phagocytosis or the digestive action of tryptic enzymes. It has been used after the first cleansing and in the subsequent more or less continuous irrigation of wounds, especially of infected war wounds. Whether its action in this case is to be attributed to the real antiseptic or germicidal effect is still doubtful.

Dosage.—For external use, full strength.

Place 154 Gm. chlorinated lime, assaying 30 per cent. available chlorine (by the method of the U. S. P.) and 5 liters of water in a jar, stir thoroughly and let stand for 6 to 12 hours. Add to this with constant stirring a solution of 91 Gm. monohydrated sodium carbonate and 64 Gm. sodium bicarbonate in 5 liters of cold water. After one-half hour siphon off the clear liquid and filter it through double filter paper to obtain a clear solution. Transfer the liquid to glass containers and keep dark. (If the chlorinated lime contains a larger or smaller amount of available chlorine than 30 per cent. each of the ingredients to be used in making ten liters should be proportionately decreased or increased.)

If to 20 Cc. neutral solution chlorinated soda about 0.020 Gm. phenolphthalein in powder is added, no red color develops on agitation.

If the available chlorine of neutral solution of chlorinated soda is determined by the U. S. P. assay method for *liquor sodae chlorinatae* it should contain not less than 0.43 per cent., nor more than 0.48 per cent. available chlorine, equivalent to not less than 0.45 per cent., nor more than 0.50 per cent. sodium hypochlorite (NaOCl).

THEOBROMINE (See New and Nonofficial Remedies, 1916, p. 376).

Theobromine-Merck.—A nonproprietary brand complying with the standards for theobromine.

Manufactured by E. Merck, Darmstadt, Germany (Merck and Company, New York).

BARIUM SULPHATE FOR ROENTGEN-RAY WORK (See The Journal, Oct. 7, 1916, p. 1091).

Barium Sulphate, P. W. R. for X-Ray Diagnosis.—A nonproprietary brand complying with the standards for barium sulphate for Roentgen-ray work.

Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

Barium Sulphate, Merck for X-Ray Diagnosis.—A nonproprietary brand complying with the standards for barium sulphate for Roentgen-ray work.

Manufactured by E. Merck, Darmstadt, Germany (Merck and Company, New York).

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[4] Mosenthal, H. O.: Renal Function as Measured by the Elimination of Fluids, Salt and Nitrogen, and the Specific Gravity of the Urine, Arch. Int. Med., 16: 733, Nov., 1915.

[5] Janeway: Discussion of the Paper of Lewis and Rivers (Footnote 3), Bull. Johns Hopkins Hosp., 27: 201, July, 1916.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 13, 1917

PHYSIOLOGIC ASPECTS OF THE WORKING DAY PROBLEM

The length of the working day has a preeminently physiologic bearing, and recently has assumed increased political prominence. Lee[1] has presented the crux of the matter as follows: The eight-hour problem is primarily a problem of physiology; if the physiologic effects of any kind of labor are injurious, the conditions of such labor should be changed. This is fundamental, and should precede any consideration of the economic and social effects resulting from a change of conditions, a basic fact which is continually overlooked.

The most serious physiologic interference accompanying prolonged uninterrupted work is the familiar phenomenon of fatigue. Its existence is generally recognized, yet few except those who have attempted a more intimate analysis of work in relation to weariness realize the subtle ways in which fatigue not only damages the working human mechanism but also tends to lower the efficiency of its performance. Nowadays every student of medicine has opportunity to learn from his experimental study of physiology that the introduction of periods of rest during a laboratory experiment with a muscle diminishes the fatigue of the moment, aids recuperation, and delays the oncoming of exhaustion. This fact is demonstrated in each of us several times in a minute, since each beat of the heart is followed by a period of rest to enable the cardiac muscle to recuperate from the effects of the previous contraction. The beneficial effects of similar periods of rest in industrial labor, as Lee reminds us, are evidenced by the custom — not uncommon since the striking demonstration of the late Mr. Frederick Taylor in the lifting of heavy iron pigs — of giving workers occasional brief intervals of freedom from their tasks.

Any working day which, through conditions of intensity and rate of labor and environmental features, tends to cause the detrimental effects of fatigue should be modified. Here is a large field for the careful study of conditions relating to the hygiene of work. Formerly economic arguments were commonly employed to combat all attempts to reduce working hours for those performing heavy labor. Recently there has been a growing conviction that in many industries a shorter working period under more favorable physiologic conditions will frequently result in an output as large as that achieved on a longer working day basis, if not even larger. The question, however, is one not only of a shorter day, but also of more frequent periods of rest which may tend to eliminate the incipient fatigue which curtails efficiency.

Whether or not the reduction of the working period to the eight hour day is a physiologic necessity cannot be decided on any *a priori* grounds. Lee points out that two factors are to be considered: the characteristics of the labor, and the capacity of the laborer. Different occupations vary greatly in their fatiguing power. Especially productive of fatigue are those characterized by great muscular effort; unusual quickness or complexity of muscular action; single acts, however simple, which are monotonously repeated over long intervals of time; constant strain through concentration of attention or through a bodily posture long maintained, and those occupations in which the work is carried on in crowded places, in extreme heat and humidity, in the midst of excessive noise, or under other unfavorable environmental conditions. Perhaps the ideal will hinge on the establishment of a system of labor in which the length of the working day shall vary for each person according to his personal capacity.

It would be folly to say that other aspects of the problem deserve no consideration in the discussion of the working day. Labor leaders insist on the propriety of certain demands from the standpoint of social justice: an opportunity for something more than machine efficiency, and more time for personal enjoyment and social betterment. If the ideal conditions of work demanded are afforded, a serious obligation to do his best will rest on the laborer as well as on each one of us.

THE SANITARY ASPECTS OF THE PUBLIC FOOD MARKET

The widespread agitation regarding the high cost of food has focused attention on various possible palliative factors, among them the public or municipal markets. From the standpoint of the food economist these are assumed to contribute to better living conditions by lowering the cost of distribution, as well as by effecting other economies. The food market, whether under public or private control, introduces many problems of sanitary and hygienic importance, such as the care of easily deteriorated foods publicly offered for sale, which have already been brought within the jurisdiction of municipal boards of health or other forms of inspection service.

Other features are either too utopian or too difficult of enforcement to receive authoritative consideration at the present time. Among these belong such matters as the personal cleanliness of food handlers and the perhaps still visionary schemes for indicating food values in some intellectually tangible manner. Now that the establishment of public markets is everywhere under discussion more widely than it has been before, it may not be amiss to inquire wherein sanitary science and hygiene might play some part in the plans for the future.

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[1] Lee, F. S.: Is the Eight Hour Working Day Rational? Science, Nov. 24, 1916, p. 727.

There are, first of all, possibilities of danger to health in the foods offered for sale. They may deteriorate from natural decay; they may be adulterated by harmful additions or equally unjustified subtractions; they may become sources of infection through personal contamination or careless handling, and be responsible for the transmission of disease. Such eventualities are recognized. Chemical and bacteriologic laboratories should cooperate with official inspectors, as they already do in many places, to enforce rational sanitary codes. Armstrong[1] believes that even greater safeguarding in the direction of standard analysis of food is likely to come in the future. This has long been urged by Lusk.[2] Thus he says:

> The poor, 50 to 60 per cent. of whose income is spent for food, waste their money in the purchase of beautiful labels or relatively expensive and unnutritious foods. A publisher employing several thousand individuals says that his employees buy from choice the products advertised in his magazines. Children of the poor are sent to buy food for the family and the whole expenditure of half the family's income is effected in an atmosphere of unfathomable ignorance. Yet if one seeks to help, one is informed that one must not meddle with the appetites, and the funny man of the newspaper makes a witticism on the subject of "highbrow" information.

In somewhat the same spirit Armstrong contends that eventually governmental authority will have to take the responsibility for food standardization, and, if this standardization is to be on a rational basis, calorific values will have to be employed. Further, if the purchaser is ever to be educated to the point at which she can buy her food supply on an intelligent food value basis, there will have to be a mechanism for routine calorific food analyses. In the present state of development, an equipment of this kind cannot, of course, be considered a prerequisite to the market establishment. At the same time, its need should be emphasized, so that in the future it may become an essential part of the municipal market control. Again, it must be made clear that this is, of course, of hygienic rather than of sanitary importance. Incidentally it may be pointed out that in "standardizing" foods for human consumption we should merely be imitating what has long been an enforced and now highly appreciated regulation in respect to cattle feeds.

The ideal food market needs healthy employees. Good food deserves to be handled by persons free from communicable disease; otherwise wherein are the advantages of the legal protection of food, offered for sale, from dust, dirt, flies and other contaminations? Much of such regulation now becoming more popular in large municipalities is confessedly in the interest of decency rather than strict hygiene. With all these safeguards, however, the sanest sanitary regulations will not accomplish their best possibilities until the purchasing public is educated up to the significance of the modern, perhaps sometimes overdone, hygienic propaganda. Perhaps the highest standard has rarely been presented with broader vision than by Armstrong when he said:

> If eventually municipalities would meet the responsibility of having this program of personal food hygiene include, not only the infection-preventive and disease-suppressive factors of food protection, but also the positive, health-creative, educational factors of dietary food selection, the markets would then be utilized to something like their full potentiality as creative, social forces.

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[1] Armstrong, D. B.: The Sanitation of Food Stores and Markets, Jour. Home Economics, 1916, **8**, 577; The Sanitation of Public Markets, The Journal A. M. A., this issue, p. 103.

[2] Gephart, F. C., and Lusk, Graham: Analysis and Cost of Ready-to-Serve Foods, Chicago, American Medical Association, 1915, p. 15.

THE RESPONSE OF THE PYLORIC MECHANISM

The conditions which determine the gastric discharge through the pylorus into the duodenum, and the relations of gastric acidity to motility, discharge and duodenal regurgitation have a direct bearing on the diagnosis and treatment of disorders of the stomach. Recently the application of the Roentgen ray to the examination of movements of the alimentary tract in its various sections has led to definite conclusions as to the normal performance of the pyloric mechanism. Thus it is reported, as the result of observations on experimental animals, that if the secretion of gastric juice is deficient, the opening of the pylorus is not easily accomplished. The opening of the pylorus, however, seems to depend not only on intragastric events but also on the condition of the duodenum. So long as the contents of the latter are acid, the pylorus remains firmly closed. For example, it has been reported that if alkaline fluid is introduced into the stomach, it is passed rapidly into the duodenum; but if acid is introduced simultaneously by experimental devices within the duodenal canal, the pylorus remains shut and no fluid passes beyond its portals until the acid which bathes the duodenum is neutralized by alkaline juices secreted into the gastro-intestinal lumen.

Starling[1] summarized the subject by saying that we probably have in the walls of the alimentary canal a local nervous mechanism for the movements of the pyloric sphincter. This may be played on by impulses starting either in the stomach or in the duodenum, probably by the contact of acid with the mucous membrane. Increasing acidity on the side of the stomach causes relaxation of the orifice, whereas acidity on the duodenal side causes contraction of the pyloric orifice. The exact parts, however, played in the mechanism by the local system and by the central nervous system, respectively, have not yet been thoroughly made out, though there is no doubt that these movements may proceed independently of any connection with the central nervous system.

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[1] Starling, E. H.: Human Physiology, 1915, p. 700.

It has lately been pointed out that these deductions, drawn largely from observations on laboratory animals, are not entirely in accord with clinical observations. It is asserted that in cases of so-called hyperacidity, a retarded emptying of the stomach with resulting atony and dilatation is often found, and also, that in cases of achylia gastrica, in which there is practically no free acid found in the stomach, the normal rate of discharge is often unimpaired. It seems probable, therefore, that the presence of an acid reaction is not the only essential factor in the control of gastric discharge.[2] It would be futile to recite the details of the conflicting reports. Further carefully planned investigations in this field are clearly needed to unravel the tangle of discrepancies. In recent studies by Morse,[2] of the laboratory of physiology of the Northwestern University Medical School, the abolition of sympathetic reflexes which might inhibit the effects sought to be determined was accomplished by making observations on animals in which the spinal cord was in part destroyed. Quite unexpectedly throughout these experiments the presence of acid in the stomach in general has been observed to retard rather than hasten gastric discharge. It is reported that water is discharged from the fasting stomach of anesthetized pithed dogs more rapidly than any percentage of acid. The rate of discharge is decreased with increase of acidity. Duodenal regurgitation, as evidenced by increase in the contents of the stomach, often occurred at 0.2 per cent acidity, and in nearly all trials occurred at or before 0.3 per cent. acidity was reached. Increase in acidity increased the frequency and amount of regurgitation from the duodenum.

If any more universal application may be ascribed to the experiments of Morse, it appears that the acidity of fluid gastric contents has no supreme function in producing or hastening gastric discharge, but the discharge seems to be controlled by the irritability or nonirritability of gastric contents to the duodenal mucosa. This suggestion of a progressive diminution in the rapidity of discharge through the pylorus with increase in the acidity of the gastric contents is so contrary to the accepted version of what occurs[3] that at best we may speak of an old problem presented anew for solution. For the moment the center of interest in the control of the pyloric sphincter has been shifted more prominently to the region of the duodenum.

HEMATOPORPHYRIN

Hematoporphyrin is the term applied to one or more iron-free pigments obtained by the decomposition of color-bearing components of the blood pigment hemoglobin. Its significance in medicine has been derived from the fact that hematoporphyrin is at times found as a noteworthy constituent of the urine, having a diagnostic import as a symptom of poisoning with sulphonal, trional, tetronal, quinin and other drugs. It has also been found in the urine in a variety of diseases which have no obvious common relationship in respect to the origin of the excreted pigment. It is even stated that traces of hematoporphyrin regularly occur in the urine of healthy persons.

To account for the elimination of hematoporphyrin in the urine, it is necessary to consider its antecedent possible origin from blood pigment in the body. Nothing definite relating to the mode of formation or the seat of production is known at present. The chemical relationships of hematoporphyrin offer a starting point for hypotheses respecting its introduction and physiologic significance. It is closely related to the bile pigment bilirubin and to the urinary pigment urobilin.

It is readily conceivable, therefore, that hematoporphyrin represents a stage in the destructive metabolism of hematin, the chromogenic part of the hemoglobin molecule, and that ordinarily the conversion proceeds to the stage of the bile pigment without betraying the intermediate product here under discussion. If this were true, urinary hematoporphyrin as well as hematin might represent degradation products which for some reason have escaped further change and consequently are excreted in the transitory stage.

Hoagland,[1] of the biochemical division of the Bureau of Animal Industry, has suggested a possible source of hematoporphyrin within the body not realized till now. In a series of experiments on the aseptic autolysis of ox muscle, he observed the appearance of pigment spectroscopically identical with hematoporphyrin. This result was obtained only when the air was excluded, and led the observer to conclude that the striated muscular tissue contains enzymes which, under anaerobic conditions, readily reduce oxyhemoglobin to hematoporphyrin. These findings appear to Hoagland to offer a satisfactory explanation as to the method and source of production of hematoporphyrin in the body.

In view of the fact that hematoporphyrinuria often is an accompaniment of cases of poisoning or disease in which the liver cells are believed to be destroyed or inactivated, Hoagland ventures a step further in postulating, on the basis of the foregoing, that probably hematoporphyrin may be a regular intermediate product in the transformation of hemoglobin into bile pigments. The generally accepted view, he says, concerning the disposal of the free hemoglobin in the blood stream under normal conditions, is that the hemoglobin is converted directly into bile pigments by the liver. Such being the case, it would seem that when an abnormal quantity of hemoglobin is liberated into the blood stream, or when the activity of the liver is greatly decreased by disease or other causes, hemoglobin rather than hematoporphyrin would be excreted in the urine. Yet hemoglobin is not so commonly found under such conditions.

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[2] Morse, W. E.: The Relation of Acid to Gastric Discharge and Duodenal Regurgitation in the Dog, Am. Jour. Physiol., 1916, **41**, 439.

[3] Cannon, W. R.: The Mechanical Factors of Digestion, New York, 1911.

[1] Hoagland, R.: Formation of Hematoporphyrin in Ox Muscle During Autolysis, Jour. Agricultural Research, 1916, **7**, 41.

There is, however, still another circumstance which deserves mention. If hematoporphyrin is formed as readily in muscular tissue as Hoagland would lead us to believe, may we not take into consideration the further possibility that hematoporphyrin is ingested in meat products more frequently than is suspected, and that an exogenous source of urinary hematoporphyrin is thus furnished? Until more is known of the fate of this interesting blood pigment derivative in the alimentary tract, in the blood stream and in the liver, only the vaguest hypotheses can prevail as to its true significance.

In any event, hematoporphyrin is only one of a series of closely related compounds, the porphyrins, which promise to have a greater significance in physiology and pathology than has generally been accorded to them.[2] Both the porphyrins of animal origin and the chlorophyl derivative, phylloporphyrin, seem to act as photosensitizing agents, rendering the body peculiarly susceptible to noxious effects from light. Animals injected with various porphyrins promptly exhibit untoward symptoms when exposed to light, but not when kept in the dark. There are affections of the skin, as hydroa aestivale, associated with exposure to bright sunlight, in which cutaneous symptoms manifest themselves simultaneously with the appearance of hematoporphyrin in the urine.[3] In other instances, likewise attended with hematoporphyrinuria, necroses have been observed in parts of the body exposed to light.[4] Such experiences seem to be more than chance analogies.

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[2] The Porphyrins in Pathology, The Journal A. M. A., March 29, 1913, p. 998.

[3] Ehrmann, S.: Arch. f. Dermat. u. Syph., 1909, **97**, 83.

[4] Perutz, A.: Wien. klin. Wchnschr., 1910, **23**, 122.

Reflex Epilepsy from Contusion of the Kidney

O. Uffreduzzi has recently reported a case of epileptic seizures which came on for the first time after contusion of one kidney. The patient apparently had been healthy before, with nothing to indicate a predisposition to nervous trouble. The convulsions were at first localized, but gradually became general, with loss of consciousness. The removal of the peripheral focus, the displaced and cystic kidney, was followed by a complete cure of the reflex epilepsy. Even if this had failed to cure, the assumption of reflex epilepsy was unmistakably correct; various other factors might have cooperated in the irritation entailing the seizures. Cicatricial changes or other central or peripheral cause might keep up a tendency to epileptic seizures even after removal of the primary cause. The foregoing is from an abstract in *Pathologica*, 1916, **7**, 265.

Current Comment

METAL MINE ACCIDENTS DURING 1915

While the number of men killed in the metal mines of the United States in 1915 was less than in 1914, the fatality rate was slightly higher. In 1915, there were among 152,118 men employed, 553 men killed, a rate of 3.64 a thousand; while in 1914, out of 158,115 men employed, there were 559 fatal accidents, a rate of 3.54 a thousand. Among the 202,000 men employed in metal mines and in metallurgical plants, there were in 1915, 35,295 nonfatal injuries, 35 of which resulted in permanent total disability, 574 in permanent partial disability, 7,242 involved a loss of more than fourteen days' time and 27,144 were responsible for a loss of from one to fourteen days. The rate of nonfatal injuries was 232 a thousand, as compared with 191 for 1914. This increase in the injury rate is attributed by the Bureau of Mines, not to an actual increase in the number of accidents, but rather to the fact that better and more complete reports are secured each year. The occurrence of over 35,000 disabling injuries in one year among 200,000 employees, nearly 8,000 of which resulted in a loss of more than two weeks' time, is significant and interesting, in view of the present widespread discussion of social insurance. Eight thousand accidents with a minimum of two weeks' incapacity would amount to 16,000 weeks or 96,000 working days lost. When to this is added the loss from 27,144 minor injuries with an average loss of seven days each, amounting to 190,000 days, we have a total loss from nonfatal injuries of 286,000 working days a year in this industry alone.

NEW FACTS ABOUT PHOSPHATIDS

The phosphatids or phospholipins are the fatty substances which yield, on decomposition, phosphoric acid and fatty acids along with certain nitrogenous bases. Lecithin is the most familiar substance of this group of lipoids; another member, kephalin, has lately come into greater prominence than it has heretofore held as the result of its probable relation to the coagulation of the blood. Ever since Hoppe-Seyler pointed out that lecithin-like substances are probably present in all living cells, more or less attention has been focused on this group of compounds. It is fifty years since Diaconow[1] suggested the probable chemical structure of the lecithin of egg yolk; yet the exact structural make-up of this compound is not completely solved today. Despite this, the phosphatids have played a prominent part in a variety of physiologic speculations in respect to vital phenomena. Their physical texture and tendency to form emulsion-like solutions have given them significance in the physical phenomena of protoplasm. They are doubtless concerned in some of the reactions of immunity, such as the Wassermann test for syphilis and other changes involving the process of hemolysis. They may unite with toxins and enzymes so as to facilitate or retard biochemical reactions. Thus the phosphatids have attained a sort of scientific "popularity" far beyond the apparent deserts of their as yet ill defined chemical structure, so that new information regarding them is much to be desired. Not long ago we called attention to the final demonstration that at least two phosphatids are present in milk,[2] thus answering a long debated question as to whether or not these lipoids are actually represented in this important food. Osborne and Wakeman,[3] to whom this information is due, have now furnished proof that all of the phosphatids present in cow's milk are associated in some way with protein. It is not unlikely that such combinations, which have long been known in the so-called "lecithalbumin" of the egg yolk, represent the form in which the phosphatids primarily exist in the living protoplasm. Indeed, there is reason to believe that the proteins of the blood are engaged in similar combinations.

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[1] Diaconow, C.: Ueber das Lecithin, Hoppe-Seyler's Medizinisch-chemische Untersuchungen, 1868, **3**, 405.

SECRECY, THE FUNDAMENTAL

The Proprietary Association is the "patent medicine" organization of the United States, and its devious methods have been referred to many times. Samuel Hopkins Adams in the "Great American Fraud" series turned the light on the activities of the concern in a general way, while Mark Sullivan in "The Patent Medicine Conspiracy Against the Freedom of the Press" gave specific instances of its tricky methods. The Proprietary Association used to publish annual reports giving a list of its members and representatives, as well as of its associate members and the names of the concerns these members represented. Apparently, it no longer does so and the membership of the Proprietary Association seems to be a close secret. After each annual meeting the drug journals usually publish the list of newly elected officers, and that is about the extent to which the public is given any hint as to who comprise this "patent medicine" organization. The Proprietary Association has claimed to be doing some house-cleaning — Heaven knows it is needed! — within its own ranks. As there is no possible way of checking up on the question, it is a safe claim to make. If a "patent medicine" faker is "caught with the goods" the Proprietary Association can conveniently disown any connection with the guilty party. It is a fitting commentary on much of the "patent medicine" business that the organization which represents it should be so ashamed of its own membership that it is unwilling to make it public. Secrecy in composition! This is the watchword of the "patent medicine" industry, not only as it applies to its products, but also as it applies to its official organization!

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[2] The Lecithins of Milk, editorial, The Journal A. M. A., Nov. 13, 1915, p. 1734.

[3] Osborne, T. B., and Wakeman, A. J.: Some New Constituents of Milk, Second Paper, The Distribution of Phosphatides in Milk, Jour. Biol. Chem., 1916, **28**, 1.

A Sad Commentary.—It is a strange commentary on man that his greatest gifts for good are so grossly neglected. The church's flagging interests must be kept alive by quasi-secular amusements, angel cake and church suppers—while the tuberculosis campaign subsists on the Red Cross stamp and the small change which seductive, begging letters may withdraw from a reinforced pocket.—*Bull.*, Newark (N. J.) Dept. of Health.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Personal.—Dr. Francis E. Harrington, U. S. P. H. S., has been granted a leave of absence by Surgeon General Blue to take charge of the health work of Jefferson County. Dr. Harrington was elected full time health officer of Jefferson County.

Health System Needed in Birmingham.—The Jefferson County Medical Society adopted resolutions at its December meeting, calling on the various woman's clubs, commercial organizations and citizens to appear before the board of revenue to urge a large appropriation for the installation of a unified health system, recommended by Surg. Carroll Fox, U. S. P. H. S.

New Officers for Mobile Society.—At the annual meeting of the Mobile County Medical Society, December 2, the following officers were elected: president, Dr. James J. Peterson; vice president, Dr. Lee W. Roe; secretary, Dr. Willis W. Scales (reelected), and treasurer, Dr. Eugene Thames. The society also recommended Dr. Paul J. M. Acker as county health officer, Dr. Eugene Thames as physician to the County Jail and Poor Asylum, Dr. Edward C. Terrill as physician to the Pine Grove Hospital, and reelected Dr. M. Toulmin Gaines as a member of the Committee on Public Health and Board of Censors.

ARKANSAS

License Revoked.—Official notice from the State Medical Board of Arkansas says that at its meeting, held Dec. 28, 1916, the license of Dr. W. C. Baldwin, Helena, was revoked for claiming through public advertising a special ability to treat and cure chronic and incurable diseases.

Hospital Notes.—The superintendent of the Sebastian County Hospital announces that accommodations for twenty-five additional patients are now ready. The third floor of the building has been remodeled, so that it has five five-room wards, an operating room and sterilizing room.

State Health Board Appointments.—December 30, Governor Hayes reappointed Drs. Burrell A. Fletcher, Augusta, and Henry L. Montgomery, Gravelly, as members of the state board of health, and also named Dr. Fergus O. Mahony, Eldorado, to succeed Dr. Andrew L. Buckner, Dermott, on the board.

COLORADO

Barker in Denver.—Dr. Lewellys F. Barker of Johns Hopkins University delivered an address on "Internal Secretions" before the Medical Society of the City and County of Denver, December 26.

Personal.—Dr. George B. Packard, Jr., who for the last six months has been a surgeon in the allied service on the western war front, sailed for home, December 16.——Dr. Charles A. Powers, Denver, after a short vacation has returned to his work in an American hospital in Paris.

Public Health Administration.—In *Public Health Reports*, Dec. 29, 1916, appear the results of a study by Surg. Carroll Fox, U. S. P. H. S., of public health organization and administration in Colorado, similar to the studies made under the direction of the Public Health Service in other states. Among the recommendations made for the improvement of the health service in the state are the creation of full time instead of part time positions of secretary, medical inspector, sanitary engineer, bacteriologist and some others, the increasing of their salaries, the establishment of a well equipped laboratory, energetic efforts to secure notification of reportable diseases, and complete birth and death registration. Laws requiring this are now on the statute books. A reorganization of the board on a different plan is recommended, as well as increased appropriations.

DISTRICT OF COLUMBIA

Medical Examination of Schoolteachers Made Compulsory.—The board of education has promulgated rules requiring teachers in the public schools to undergo medical examinations to determine their physical fitness whenever the supervising officer immediately responsible for their work so directs. The rules are intended primarily to provide against the continuance in school of teachers suspected of suffering from communicable diseases or of harboring infection endangering the health of their pupils.

ILLINOIS

Chicago

Clemenson's Sentence Commuted.—The sentence of imprisonment for life imposed on Dr. Haldane Clemenson eight years ago for the murder of his wife was commuted, December 26, to twenty-five years by order of Governor Dunne. With the good conduct allowance, this will allow Dr. Clemenson to be released in 1923.

Polish Physicians Elect Officers.—At the annual meeting of the Chicago Polish Medical Society, the following officers were elected: president, Dr. Wladyslaw A. Kuflewski; vice president, Dr. Anthony Balcerzak; secretary, Dr. A. Pietrzykowski (reelected), and treasurer and editor in chief of the *Polish Medical Bulletin*, Dr. Nicholas Kalinowski (reelected).

To Combat Paralysis.—The health commissioner of Chicago has sent to the finance committee of the council a request for $500,000 to combat infantile paralysis during the coming year, in addition to the regular budget of the health department. The commissioner urges that no decrease be made in the working force or the appropriations for the health department, notwithstanding the financial condition of the city.

Contagious Disease Hospital Opened.—The new Municipal Contagious Disease Hospital was opened, January 7, when fourteen scarlet fever patients were admitted. The building is five stories in height. Four floors will be devoted, at present, to scarlet fever patients. At a meeting of the Chicago Medical Society, January 3, a resolution was adopted endorsing the recommendation that the hospital be called the Alfred C. Cotton Hospital.

The Health Record of Chicago.—In the annual report of the commissioner of health it is stated that only two cities had a lower death rate last year than Chicago. Los Angeles led with a death rate of 12.35 per thousand; New York came next with 13.88 per thousand, and Chicago followed with 14.58 per thousand. There were fewer deaths from typhoid and tuberculosis in 1916 that in any year since statistics have been kept by the health department.

Personal.—Dr. Edward K. Armstrong was selected as superintendent of the new Contagious Disease Hospital by a committee consisting of Drs. A. J. Ochsner, D. A. K. Steele, A. Augustus O'Neil and J. V. Fowler. He accepted the position and took charge of the institution, January 4.——Dr. William Healy, director of the Juvenile Psychopathic Institute, has resigned to take charge of the Judge Harvey Baker Foundation, a similar institution in Boston.——Dr. John Webster Melody resumed his series of lectures on "Moral Law in the Medical Profession," January 7, at St. Jarlath's Hall, Hermitage Avenue and Jackson Boulevard.——Dr. Charles F. Swan, for many years a practitioner of South Chicago, and who has been visiting in Vancouver, Wash., since last September, was stricken with cerebral hemorrhage, December 24.——Dr. Abraham L. Desser was seriously injured in a collision between his automobile and a street car, December 31.

INDIANA

State Health Officer Gives Luncheon.—Dr. John N. Hurty, secretary of the state board of health, gave his annual Christmas luncheon to the employees of the board, December 22.

Leprosy in Indianapolis.—A case of leprosy was reported, December 11, from the Robert W. Long Hospital, Indianapolis, the patient being a man 69 years old from Fort Branch, Ind. He is now said to be quarantined at his home in Fort Branch.

Shipwrecked.—Dr. Perry C. Traver, South Bend, has returned after three months' service in the Panama Canal Zone. Dr. Traver was a passenger on the United States Army Transport *Sumner*, which went aground off Barnegat, N. J., December 11.

KENTUCKY

Vaccination Decision.—In 1916 suit was brought by citizens of Henry County to enjoin the county board of health from enforcing an order of the county board of health requiring all teachers and pupils in the public schools to be vaccinated. In a decision by the Court of Appeals of Kentucky, printed in full in *Public Health Reports*, Dec. 29, 1916, the court held that the evidence showed that the board was justified in its order, that a matter of such vital importance to the community should not be left to the whim of individuals, and that the action of the local board of health should be sustained.

LOUISIANA

Dr. Dowling Reappointed.—Governor Pleasant has reappointed Dr. Oscar Dowling, Shreveport, president of the Louisiana State Board of Health for a term of four years.

MARYLAND

Organization of Bureau of Communicable Diseases.—The organization of a bureau of communicable diseases has been announced by Health Commissioner Blake, Baltimore. It will be in charge of Dr. John F. Hogan, and will include the health wardens, the nursing division, the tuberculosis dispensaries, school physicians, the clerk of vital statistics, the fumigation division, the complaint clerk, the tenement house division and Sydenham Hospital.

Personal.—Dr. Harry H. Johnson has been appointed superintendent of the Sydenham Hospital by Health Commissioner Blake, to succeed Dr. John F. Hogan, recently appointed second assistant commissioner of health.——Dr. Ernest Zueblin, professor of medicine at the University of Maryland, has accepted the directorship of the tuberculosis department of the medical faculty of the University of Ohio. Dr. Zueblin is a graduate of the University of Lausanne, Switzerland, having entered the institution after five years' study at Heidelberg and Zurich.——Dr. Richard E. Yellott, Fallston, is in a serious condition at the Hebrew Hospital. He is said to have taken several bichlorid tablets while despondent over continued ill health.——Dr. Simon Flexner of the Rockefeller Institute, New York, will deliver a public health lecture on "Infantile Paralysis and Its Relation to the Public Health," at a meeting arranged by the Johns Hopkins University and the Women's Civic League, December 13, in Baltimore.——Dr. John C. Grieve, chief of staff of the Battle Harbor Hospital, Labrador, delivered an illustrated address recently in Baltimore on the work of the Grenfell Mission in Labrador.——Dr. Harry L. Kolseth has been appointed health warden of the Thirteenth Ward of Baltimore, to succeed Dr. John H. von Dreele, resigned.

MISSISSIPPI

Sanitary Survey of Jones County.—The board of supervisors of Jones County will appropriate $1,600 for a sanitary survey of the county to be made in cooperation with the state board of health and the Rockefeller Foundation. The latter organization is said to be prepared to spend, if necessary, $50,000 on this work in the county.

New Secretary for State Board.—At the meeting of the Mississippi State Board of Health, January 2, Dr. Waller S. Leathers, university director of public health under the state board and connected with the board for nearly seven years, was elected secretary and executive officer, to succeed Dr. Jacob D. Gilleylen, Jackson, deceased.

New Officers.—At the quarterly meeting of the Neshoba-Winston-Newton Tri-County Medical Association, held in Newton, December 18, the following officers were elected: president, Dr. Z. Carl Hagan, Union; vice presidents, Drs. William H. Mars, Philadelphia, and Frank L. Brantley, Dixon, and secretary-treasurer, Dr. Sidney A. Majure, Union (reelected).

NEW YORK

Personal.—Dr. Marcus B. Heyman, Central Islip, Long Island, has been appointed superintendent of the State Hospital for Nervous Diseases, Little Rock, Ark., to succeed Dr. Edwin P. Bledsoe.——Dr. William J. Gabel, Syracuse, has been appointed physician to the Onondaga Reservation.

Mortality and Morbidity in Syracuse.—During 1916 there were in Syracuse 2,360 deaths, 63 of which were due to infantile paralysis. There were 229 cases of this disease. The births numbered 3,875, as compared with 3,577 for 1915, and 3,417 for 1914. The deaths for 1915 were 2,013, and for 1914 they were 2,205. The death rates for the three years were, respectively, 15.3, 13.2 and 14.3 per thousand.

Communicable Diseases.—At Cohoes during the year ending December 1, there were in the city 490 cases of communicable diseases, as follows: chickenpox, 10; diphtheria, 42; measles, 291; mumps, 1; miscellaneous, 3; scarlet fever, 57; tuberculosis, 70; typhoid fever, 11, and whooping cough, 5. The record of typhoid fever in the city during the previous six years was as follows: 1911, 140 cases; 1912, 104; 1913, 20; 1914, 13; 1915, 16, and 1916, 11 cases. There was no poliomyelitis in the city during the year.

County Tuberculosis Hospitals.—Nassau County has contracted to purchase a 100-acre tract of land near Farmingdale, L. I., and has issued bonds to meet the cost of site and buildings for a county tuberculosis hospital.——In Broome and Chautauqua counties sites have been selected for hospitals and in Chenango County construction of a new hospital has been begun.——Plans for the new Niagara County Hospital have been filed with the state commissioner of health for his approval.——In Rensselaer, Warren and Livingston counties appropriations of $150,000, $50,000 and $35,000, respectively, were carried at the polls last November and the boards of supervisors are now considering sites. In Rensselaer County the Albany Railroad has offered to give $150,000 toward the purchase of a site.——Rocky Crest, the tuberculosis sanatorium for Cattaraugus County, recently opened, is in the town of Olean, between Olean and Rock City. The institution has accommodation for twenty-two patients, and Dr. Edward Torrey, Olean, is the superintendent.

New York City

Deaths from Influenza.—Influenza was prevalent during December, and for the week ending December 16 there were 254 deaths from this and other respiratory diseases.

Institutions Must Report Puerperal Septicemia and Suppurative Conjunctivitis.—The health department will hereafter prosecute all violators of the Sanitary Code, which requires reports from institutions of all cases of puerperal septicemia and suppurative conjunctivitis under their care.

Sweeping of Sidewalks Regulated.—The board of health has added a section to the Sanitary Code under which householders are held responsible for the cleanliness of their sidewalks. All dirt must be swept up and removed. Sweeping into the gutters is prohibited except between 6 and 8 in the morning.

Free Dental Clinic for Children.—The New York College of Dentistry announces that it will hold a free dental clinic at 205 East Twenty-Third Street, on Saturday afternoons, for children between the ages of 7 and 14. There will be ninety chairs available. This is the only free dental clinic now maintained by a dental college in this city.

Personal.—Dr. William C. Woolsey, Brooklyn, who has recently returned from service on the western war front in France, delivered an address before the Flatbush Medical Society, recently, on "Surgical Treatment of Infection in the French Army."——Dr. E. P. Roberts, New York, has been appointed a member of the New York Board of Education.

Alumnae to Meet.—The Alumnae of the Woman's Medical College of the New York Infirmary for Women and Children will have a reunion dinner at the McAlpin Hotel, Monday evening, June 4, during the week of the meeting of the American Medical Association. Further information may be obtained by communicating with the secretary of the Reunion Committee, Dr. Ethel D. Brown, 26 Gramercy Park.

Fund for After-Care.—Health Commissioner Emerson has turned over to the New York Committee on After-Care of Infantile Paralysis $39,287.60 to be added to the fund of $250,000 which the committee started out to raise. This sum is the unspent balance of contributions made in August, 1916, on an appeal by the health department for funds to purchase braces and other appliances for children crippled by infantile paralysis.

Bronx Doctors Raise Fees.—The Bronx County Medical Society announces that physicians of the Bronx have adopted a new schedule of fees, under which night calls or emergency calls during the day will be $4. Calls during office hours requiring a doctor to leave his office before his accustomed time will be $3. Day calls will be $2, and office calls not less than $1. A like charge will be made for information given over the telephone.

Institute Votes Special Compensation.—The trustees of the Rockefeller Institute for Medical Research, in consideration of the decrease in the purchasing power of fixed salaries caused by the increased cost of living, voted additional and special compensation equal to 15 per cent. of the current annual salary to be paid to each regular officer and employee of the institute, it being understood that this is not an increase in salary and does not create a precedent for the future. Employees who have served less than one year are to be paid 15 per cent. of the amount actually received up to the last day of December, 1916.

City's Death Rate for 1916.—Notwithstanding the epidemic of influenza and infectious colds, and the epidemic of poliomyelitis, during 1916, the death rate for the year is the lowest on record, 13.89 per thousand. In 1900 the death rate was 20.57, and in 1910, 16.00. This lowering of the death rate has been accomplished through the reduction in infant mortality. In 1910 the death rate per thousand infants born was 125.6; during 1916 it was 93.1. The death rate from typhoid in 1910 was 0.12, and in 1916, 0.04. In 1912 there were seventy deaths from poliomyelitis; in 1913, fifty-four; in 1914, thirty-four; in 1915, thirteen and in 1916, 2,248. The death rate from pneumonia in all forms was, in 1913, 0.13, and in 1916, 0.14. In 1900, the death rate from tuberculosis was 2.37; in 1910, 1.81 and in 1916, 1.50. The common infectious diseases of childhood have all shown a remarkable decrease, while the diseases of adult life, organic heart disease, nephritis and cancer, show proportionately more deaths than they did ten years ago. The marriage rate for the year was 9.78, as against 9.68 for 1910 and 9.33 for 1915. A study of the marriage, death and birth rates of the past ten years has convinced the recorder that the estimated population of the city, 5,602,841, is approximately correct.

NORTH CAROLINA

District Society Meeting.—At the annual meeting of the Fourth District Medical Society, held in Wilson, the following officers were elected: president, Dr. Kinchin C. Moore, Wilson; vice presidents, Drs. James C. Grady, Kenly, and Edmund S. Boice, Rocky Mount; secretary, Dr. Charles L. Swindell, Wilson, and treasurer, Dr. Henry B. Best, Wilson.

Secret Medicine and Liquor Business.—The January issue of the *Bulletin of the State Board of Health* is devoted entirely to the secret medicine business. It is hoped that the next legislature, encouraged by the prohibition forces of the state, may enact legislation relative to the sale of secret remedies which have become so frequently cloaks for the sale of diluted alcohol in the prohibition states of the South.

OKLAHOMA

Endorse University Hospital.—At the meeting of the Tulsa County Medical Society at the Oklahoma Hospital, December 18, a resolution was adopted to endorse the efforts of the administration to build and equip a hospital at Oklahoma City, to cost $200,000 and to be conducted under the supervision of the medical department of the state university.

Personal.—Dr. Pleasant M. Haraway, Marlow, was recently injured by a fall downstairs.——Dr. Horace Reed, Oklahoma City, has recovered after an operation for appendicitis.——Dr. John H. Harms and wife were recently injured when their automobile was driven into an open bridge.——Dr. Albert C. Hirschfield, Oklahoma City, who is stationed on the border with the Oklahoma militia, recently fractured his thigh.——Dr. Welcome B. Tilton, Clinton, has been appointed physician to the Uintah and Ouray Indian reservation, at Fort Duchesne, Utah.——Dr. James G. Rafter, Muskogee, city physician, was severely injured when his automobile was struck by a street car.

OREGON

New Hospital Assured.—The department of medicine of the University of Oregon has succeeded in raising, by subscription, the $25,000 necessary to secure the $50,000 appropriated by the Oregon legislature a year ago. This sum is to be expended in building a hospital on the medical school's new campus on Marquam Hill, overlooking Portland.

New Health Board Officers.—At the annual meeting of the state board of health, held in Salem, December 21, Dr. Alvane C. Seely, Roseburg, was elected chairman, and Dr. David N. Roberg, Portland, was reelected secretary and state officer. One of the most important features of the session was the subdivision of the board of health registration districts of the state under the acts of 1915. Two hundred and forty-eight subdivisions were made under this act.

New Officers.—The Portland City and County Medical Society at its annual meeting, December 20, elected the following officers: president, Dr. Joseph M. Short; vice president, Dr. Clarence J. McCusker; secretary, Dr. J. Guy Strohm (reelected), and treasurer, Dr. Katherine C. Manion (reelected).——At the annual meeting of the Central Willamette Medical Association, held in Albany, December 7, Dr. James H. Robnett, Albany, was elected president; Dr. Edward Bennett, Monroe, vice president, and Dr. Gerald E. Riggs, Albany, secretary-treasurer.

PENNSYLVANIA

Health Commissioner's Secretary Resigns.—Mr. H. Lindley Hosford, secretary to Dr. Samuel G. Dixon, state commissioner of health, has resigned to take charge of an educational campaign to be conducted in New York state.

Smallpox Epidemic.—Sporadic cases of smallpox have been reported from Allegheny County for several weeks, and in the last two days three or four cases have been reported. Assistant Chief Medical Inspector Hull of the state health department has been sent to Pittsburgh. Two thousand five hundred notices were sent to physicians, school boards, health boards and large employers of labor, and vaccination under the direction of the department of health has been started on a large scale.

Personal.—Dr. William H. Robinson, Roaring Springs, fell on a pavement, December 13, sustaining a concussion of the brain. He is under treatment in the Mason Hospital.——Dr. Walter Lathrop was reelected surgeon and superintendent of the Hazleton State Hospital for the twentieth time, December 8. Dr. Robert A. Gaughan has been reelected assistant superintendent.——Dr. William S. O. Sherman, Pittsburgh, delivered an illustrated address before the Mahoning County Medical Society, Youngstown, Ohio, on "The Methods of Wound Treatment and Sterilization as Practiced in the French Army."

Philadelphia

Inspection Force Reduced.—Because their services were no longer required, twenty-seven medical inspectors and thirty-two nurses, engaged by the bureau of health last summer during the prevalence of anterior poliomyelitis, have been discharged.

Professorship Endowed.—Miss Anna J. Magee has presented to Jefferson Medical College $150,000 to endow the Magee professorship of the practice of medicine and clinical medicine. Dr. Thomas McCrae has been appointed to the newly endowed chair.

After-Care of Paralysis Victims.—The Emergency Aid organization has asked for $20,000 to carry out the after-treatment of 492 children crippled by poliomyelitis during 1916. Many of the victims need expensive braces and appliances. Three hundred are receiving dispensary treatment, while the other 192 are being treated at hospitals.

Personal.—Dr. Richard M. Pearce, Jr., of the University of Pennsylvania will sail from New York, January 15, to make a medical survey of the Argentine Republic and Uruguay.——A fire in the home of Dr. William W. Keen, January 2, caused much excitement, but little damage.——Director Wilmer Krusen of the Department of Public Health and Charities was presented with a large grandfather's clock by the chiefs of bureaus and the employees of the department.

Teaching Force Depleted by Pneumonia.—Pneumonia and grip have so depleted the teaching force of the Philadelphia public school that the entire substitute list has been exhausted and thirty-eight classes are without teachers. Reports of deaths from pneumonia during the last two weeks show the epidemic thus far has proved more fatal to adults than to children under 16. There were 167 deaths from lobar pneumonia, as compared with sixty deaths from bronchial pneumonia.

Medical Institutions.—An addition to Bryn Mawr Hospital is to be two and one-half stories in height, and will be of stone.——A union between the Child Federation and the Public Education and Child Labor associations was formed, January 1, to be known as the Child Federation. The offices will be in the Witherspoon Building. Albert Cross, executive secretary of the Child Federation will be managing director and secretary of the combined organization. It is hoped to reduce administration expenses so that more money will actually go into the work among children.

Officers Elected.—At the meeting of the Section on Otology and Laryngology, College of Physicians, Dr. George C. Stout was reelected chairman, and Dr. George M. Coates, clerk, for the ensuing year.——The West Philadelphia Medical Association has elected the following officers for 1917: president, Dr. William S. Newcomet; vice president, Dr. Charles E. Price; secretary, Dr. Henry G. Munson; treasurer, Dr. Edmund L. Graf, and additional members of the board of directors to serve three years, Drs. Aaron L. Bishop, Seth A. Brumm, George F. Levan and Justus Sinexon.——At the meeting, held January 3, the following officers and elective committees were chosen by the College of Physicians of Philadelphia for 1917: president, Dr. Richard H. Harte; vice president, Dr. William J. Taylor; censors, Drs. James Tyson, William W. Keen, George E. de Schweinitz and Thomas R. Neilson; secretary, Dr. Francis R. Packard, and treasurer, Dr. John B. Roberts.

VIRGINIA

Marine Hospital for Norfolk.—Hon. E. E. Holland, M. C., introduced a bill in the House of Representatives, December 21, appropriating $500,000 for a marine hospital at Norfolk.

Memorial to Dr. Johnston.—The Richmond Academy of Medicine and Surgery, December 23, adopted memorial resolutions regarding the death of Dr. George Ben Johnston.

Personal.—Dr. Hampden A. Burke, Petersburg, has been appointed a member of the State Board of Medical Examiners for the Fourth District, succeeding the late Dr. Otho C. Wright, Jarratt.

Medical Society Organized.—The Bath County Medical Society having been granted a charter by the Medical Society of Virginia, a meeting for permanent organization was called at Hot Springs, December 27, at which, Dr. Lanier D. Pole, Hot Springs, presided as temporary chairman and Dr. Guy Hinsdale, Hot Springs, was temporary secretary.

Contract for Hospital Awarded.—The contract for the erection of the new negro pavillion of the Memorial Hospital, Richmond, has been awarded. The building will cost, when completed and equipped, about $175,000. It is expected that it will be finished by November 1. It is to be seven stories and a basement in height, and will contain accommodation for 146 patients, forty in private rooms and 106 in wards.

New Officers.—At the annual meeting of the Richmond Academy of Medicine and Surgery, December 12, the following officers were elected: president, Dr. Greer Baughman; vice presidents, Drs. Claude C. Coleman, William R. Weisiger and Marvin E. Nuckols; secretary, Dr. Mark W. Peyser (reelected for the twenty-fourth consecutive term); assistant secretary, Dr. Emmett H. Terrell, and treasurer, Dr. James H. Smith, all of Richmond.——At the fifty-fifth annual session of the South Side Virginia Medical Association, held in Petersburg, December 12, the following officers were elected: president, Dr. Joel Crawford, Yale; vice presidents, Drs. Fletcher J. Wright, Petersburg; James H. Hargrave, Hopewell, and Edgar W. Young, McKenney, and secretary-treasurer, Dr. Emmett F. Reese, Courtland. Hopewell was selected as the next place of meeting.

GENERAL

Physical Directors Elect Officers.—At the meeting of the Society of Directors of Physical Education and Colleges, held in New York, December 29, Dr. Joseph E. Raycroft, Princeton, N. J., was elected president; Dr. Edwin Fauver, Rochester University, vice president, and Dr. Paul C. Phillips, Amherst, Mass., secretary-treasurer (reelected).

Big Four Surgeons Hold Meeting.—At the annual meeting of the Big Four Railway Surgeons' Association, held in Cincinnati, December 14, the following officers were elected: president, Dr. Granville Reynard, Union City, Ind.; vice presidents, Drs. Edward R. Henning, Bellefontaine, Ind.; James T. Musselman, Paris, Ill., and Adoniram J. Banker, Columbus, Ind., and secretary-treasurer, Dr. William A. Ewing, Dayton, Ohio.

Tri-State Physicians Meet.—At the thirteenth annual session of the Tri-State Medical Society of Arkansas, Louisiana and Texas, at Texarkana, Ark., December 19, Shreveport, La., was selected as the next place of meeting, and the following officers were elected: president, Dr. Jacob M. Bodenheimer, Shreveport; vice presidents, for Arkansas, Dr. Thomas F. Kittrell, Texarkana; for Louisiana, Dr. Thomas E. Wright, Monroe, and for Texas, Dr. Charles M. Rosser, Dallas, and secretary-treasurer, Dr. Edwin L. Beck, Texarkana.

Large Amounts Needed for Charities.—A campaign is in progress to raise $150,000 to enlarge the Norwegian Lutheran Deaconess Home and Hospital, Chicago.——Nearly $2,500,000 for the relief of Jewish war sufferers in Europe was pledged at a mass meeting in Carnegie Hall, New York, December 21.——Jewish women of the United States, under the leadership of Hadassah, have inaugurated a campaign to raise $100,000 for a medical unit to be dispatched to Palestine to combat infectious disease and to improve sanitary conditions.

Elections in Surgical Societies.—At the annual meeting of the Southern Surgical and Gynecological Society, held in White Sulphur Springs, W. Va., December 13, Dr. William

D. Haggard, Nashville, was elected president. The society will meet next year at St. Augustine, Fla.——At the twenty-sixth annual meeting of the Western Surgical Association, held in Minneapolis, December 16, the following officers were elected: president, Dr. Leonard Freeman, Denver; vice presidents, Drs. Joseph Ransohoff, Cincinnati, and Roland Hill, St. Louis, and secretary-treasurer, Dr. Arthur T. Mann, Minneapolis. Omaha was selected as the next place of meeting.

Civil Service Examination.—The United States Civil Service Commission announces an open competitive examination for assistant epidemiologist (male), to be held January 30. From the eligible list certification will be made to fill the vacancy in the Public Health Service, with a salary ranging from $2,000 to $2,500 per year. Applicants must be citizens of the United States, between 23 and 40 years of age, graduates of medical schools of recognized standing and must have had at least three years' experience in epidemiologic work under federal, state or local authorities, and experience in laboratory technic with special reference to malaria and typhoid fever.

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Luke's Hospital, New York, $5,000 by the will of Mary C. Elmendorf.

Flagler Hospital, St. Augustine, Fla., Germantown (Pa.) Dispensary and Hospital, Morristown (N. J.) Hospital; Babies Hospital, New York, and St. Mary's Hospital for Children, New York, each $100,000 and St. John's Guild, New York, $50,000 by the will of Mrs. Charles W. Harkness.

Hahnemann College and Hospital, Philadelphia, a bequest of $40,000 by the will of Marcus N. Darr, Buffalo, N. Y.

Exeter (N. H.) Cottage Hospital, a bequest of $10,000 by the will of Abner L. Merrill, Exeter.

Children's Hospital, Milwaukee, a donation of $150,000 from Ferdinand Schlesinger, contingent on the raising of a like sum by the hospital association, and $5,000, the receipts of a Horse Show, held in Milwaukee, December 20.

New Journal Issued.—The Rhode Island *Medical Journal*, owned and published by the Rhode Island State Medical Society, has issued its first number under date of January, 1917. This new state journal succeeds the *Providence Medical Journal* published by the Providence Medical Association. It will be issued monthly instead of bimonthly. On an editorial page of this first issue it declares that "it is a source of satisfaction in which every reader can share that the advertising pages of this journal are as clean as those of any medical publication in the country." The *Providence Medical Journal* first appeared in January, 1900. It has been edited during the sixteen years of existence by Drs. George S. Hershey, F. T. Rogers and J. W. Leech. The editor of the new journal is Dr. Roland Hammond. On the editorial staff are Drs. F. T. Rogers, J. W. Leech, Alexander M. Burgess and John E. Donley. Dr. J. F. Hawkins is the business manager.

Wellcome Prizes.—The Association of Military Surgeons of the United States announced, January 5, the results of the Henry S. Wellcome prize competition. A gold medal and $300 were awarded to Capt. Mahlon Ashford, M. C., U. S. Army, for his essay entitled "The Most Practicable Plan for the Organization, Training and Utilization of the Medical Officers of the Medical Reserve Corps, of the U. S. Army, and of the Medical Officers of the Officers' Reserve Corps of the U. S. Army, in Peace and War." Asst. Surg. Gen. William Colby Rucker, U. S. P. H. S., was awarded a silver medal and $200 for his essay, "The Influence of the European War on the Transmission of Infectious Diseases, with Special Reference to Its Effect on Disease Conditions in the United States." Lieut. Henry C. Coe, M. R. C., U. S. Army, New York, and P. A. Surg. James R. Hurley, U. S. P. H. S., each received honorable mention and a life membership in the association.

Fraudulent Drug Traffic Checked.—Fraudulent traffic in imitations of certain synthetic drugs used extensively by physicians has been checked through the joint action of federal, state and municipal officials, according to the annual report of the Chief of the Bureau of Chemistry, United States Department of Agriculture. Because of the high prices demanded for such drugs, cheap imitations, with little or none of the therapeutic properties of the genuine, have been put on the market under the names and labels of the real drugs. Shipments were seized, and a number of individuals were prosecuted successfully, under the Federal Food and Drugs Act, and indictments were procured under the postal laws, but the traffic could not be wholly suppressed under the federal laws, nor could all offenders be reached. The department of agriculture thereupon laid the matter before the state and municipal officials, with the result that many prosecutions were instituted and seizures made by them. Ultimately, through joint action, the traffic was suppressed.

Conference on Medical Preparedness.—At the request of the Council of National Defense and the secretary of war, deans and representatives from more than eighty medical schools of the country convened in Washington, January 6. The preliminary meeting was called to order by Dr. Franklin H. Martin, Chicago, who stated that the object of the meeting was to agree on some basis of cooperation between the medical schools of the country and the army and navy, whereby the depleted medical branches of the service might be recruited to full strength from the eligible graduates of the medical schools this summer. Dr. Edward Martin of the University of Pennsylvania was called to the chair and introduced Surgeons-General Gorgas and Braisted, who set forth the needs of the army and navy medical departments. Plans for courses on military and naval surgery were presented by Col. William H. Arthur, director of the Army Medical School, and Surg. Edward R. Stitt of the Navy Medical School. The curriculum provides for two lectures a week, the course to begin on February 1. Dr. Victor C. Vaughan of the University of Michigan presented a resolution favoring universal military training and petitioning the secretaries of war and of the navy to supply the medical schools with instructors on medical surgery and sanitation. Dr. Arthur A. Law of the University of Minnesota presented a resolution petitioning Congress to modify the army act of June 3, 1916, so as to make express provision for the detailing of medical officers of the army as instructors in military surgery and hygiene in medical colleges. Both of these resolutions were adopted. Major Robert E. Noble of the army presented the needs of the Medical Corps and stated that by July, 1920, the army would need 1.110 medical officers to complete its full quota. In the afternoon, the members of the conference were received by the president and secretaries of war and of the navy. Secretary Baker welcomed the officers and thanked them for their interest in medical preparedness.

FOREIGN

No Importation of "Patent Medicines" Into Germany.—The *Münchener medizinische Wochenschrift* cites a recent official order to the effect that the decree of Feb. 25, 1916, prohibiting importation of unnecessary articles (*entbehrliche Gegenstände*), applies until further notice to proprietaries (*Geheimmitteln*).

Journal Founded as Official Organ of Welfare Work for Disabled Soldiers.—The affiliated agencies throughout the German empire working to improve the condition of those maimed and crippled by the war have combined and the central board is issuing a monthly to serve as the forum for all matters of the kind and possibly to serve later as a general forum for welfare work of all kinds. The editorial staff consists of A. Liebreich, Magistratsrat in Berlin, and W. Gerth, Amtsrichter. L. Voss of Berlin is the publisher; the yearly subscription is about $4.

Public Education on Disease.—The *Deutsche medizinische Wochenschrift* states that even during the war the demands continue for loans of the collections at the central headquarters at Berlin of the medical postgraduate instruction system. Many requests come from the countries now occupied by troops. The collections are loaned free of charge for popular lectures given by nurses, hygienists and others, as well as by physicians. Lantern slides and wall pictures are most in demand, especially sets of slides on venereal diseases, bacteriology, care of the sick, anatomy, prophylaxis and care of the health in general, tuberculosis, epidemics, etc. A special catalog is sent on demand. The headquarters of the postgraduate work are at the Kaiserin Friedrich-Haus, Luisenplatz 2, Berlin.

Alvarenga and Jubilee Prizes Awarded in Sweden.—The Alvarenga prize is awarded annually by the Swedish Medical Association. The 1916 prize was given to Dr. E. Nilsson for his comprehensive study of the physical development and fitness for military service of the young men of Sweden between 1861 to 1913. The association distributed eleven other prizes. The jubilee prize was given to H. B. Lundborg for his medical-biologic study of generations of certain families in Sweden totaling 2,232 members. He traced the working of the mendelian laws of heredity through nearly 200 years. A work by Lundborg on this topic of race hygiene and its importance in modern culture was published in the *Journal of Nervous and Mental Disease*, 1912, No. 11, p. 39. The Journal, June 15, 1912, p. 1890, also summarized some of his research on deafmutism in 414 families.

CANADA

Infantile Paralysis Disappearing in Ontario.—Only five cases of infantile paralysis with one death were reported in December in the Province of Ontario, as compared with seventy-six cases and seven deaths in September, thirty-one cases and seven deaths in October, and ten cases and two deaths in November.

Medical Inspection of Schools in Toronto.—The vote on the amalgamation of the medical inspection department of the Board of Education, Toronto, with the Department of Public Health, January 1, resulted in a majority of nearly 14,000 for the amalgamation. It will be necessary for the Toronto City Council to secure the sanction of the Ontario legislature to the vote of the people before amalgamation is finally effected. Last year the city council unanimously approved of the amalgamation. The vote for amalgamation stood as 3½ : 1.

Personal.—Col. James A. Roberts, Toronto, in command of the University of Toronto Base Hospital, Saloniki, and Col. Herbert S. Birkett, Montreal, have been made Companions of the Bath.——Capt. J. Harris McPhedran, Toronto, on leave of absence, has sailed for England.——Capt. D. Edwin Robertson, Toronto, who has been on active service for over two years, has arrived home and will reenter professional life. He will be first assistant to Dr. W. Edward Gallie, who has been chief surgeon at the Hospital for Sick Children, Toronto, since the departure of Dr. Clarence L. Starr for special operative work in London.——Dr. Walter W. Wright, Toronto, has enlisted for overseas service.

University News.—The Senate of Queen's University, Kingston, Ont., has issued a memorandum covering its objections to the action of the University of Toronto in deciding to establish in 1918 a six-year academic course in medicine. A conference had been held between representatives of the two universities but no other universities interested in Canada had been asked to participate in that conference. Queen's University says that the proposals come at a time when there is an unusual demand for the services of medical men from the British and Canadian governments, and that the great need for medical men will not immediately cease when war is over.

Colonel Bruce Not Upheld.—The official report of the Board of Inquiry into the report and charges of Col. Herbert A. Bruce, Toronto, who went overseas last July, deputed by the Canadian government, or the Minister of Militia of that day, as Inspector-General, to make an exhaustive inquiry into the condition of the army medical services of Canada and the Canadian hospitals abroad, has just been made public by the Canadian High Commissioner. It upholds Surg.-Gen. G. Carleton Jones, and states that the charges made by Colonel Bruce have not been substantiated; nor does the Board of Inquiry consider that the changes recommended in Dr. Bruce's report are necessary or advisable. The announcement is made in the public press that Colonel Bruce is returning to Toronto, and that Surgeon-General Jones will at once reassume his command.

Workmen's Compensation and the Doctors' and Hospital Fees.—Representatives of the Ontario Medical Council, the Ontario Medical Association and the Academy of Medicine, Toronto, joined with representatives of the labor interests on January 5 to discuss the payment of doctors' and hospital fees by the Workmen's Compensation Board, before the Private Bills Committee of the Ontario legislature. The manufacturing interests were also represented. Dr. Edmund E. King, president of the Ontario Medical Council, presented the case for the physicians and stated that the profession was far worse off under the commission than previously, when practically all employers paid the professional bills of employees injured in their work. The labor interests unanimously supported the physicians in asking that these bills be paid by the commission. The manufacturers, of course, opposed the proposition, as it would mean a greater assessment on the industries. The government made no announcement as to its intention to amend the bill in the direction sought, but the prime minister of the province appeared sympathetic. The total number of accidents in the province during the past year was 26,092.

LONDON LETTER

London, Dec. 18, 1916.

The War

FOOD CONTROL

The continuance of the war has created some difficulty with regard to the supply of food, but this is much less acute and has developed much later than in Germany. A food controller has been appointed, and the following legislation is expected soon: 1. Meat. Institution of a compulsory meatless day; Thursday will probably be the day selected. On that day it will be unlawful for any person to sell or consume, either in places of public eating or in private houses, meat, game and poultry. It is understood that fish will not be included in the order. 2. Sugar. "Rationing" by the state, probably by a system of tickets. There is enough sugar to go round at present; it is the old system of distribution that is at fault. 3. Bread. Maize, barley and oats to be included among the ingredients for baking. Maize blends most easily, barley is the most palatable, and oats the most nutritious of the three. There may not be much maize to spare, as it can be put to other and even better uses in our present situation. 4. Potatoes. A big program of saving to be undertaken to insure next season's supplies. 5. Pigs. As urgent a matter as potatoes, both provide a great part of the staple food of the working classes. Special steps are to be taken to increase largely the number of pigs in this country. The space to be allotted to the transport of tea will in future be much curtailed.

VITAL STATISTICS

Vital statistics during the disturbing influence of the greatest of all wars are of special interest. The quarterly return of the registrar general for the three months ending with September have just been issued. The birth rate has shown a slight rise. It is now 21.7 per thousand of the population, as compared with 19.5, the rate in the fourth quarter of 1915, which was described as the lowest birth rate recorded in any quarter since the establishment of civil registration. The deaths registered amounted to 102,457 civilian and noncivilian. This is a rate per thousand of 11.2. Infant mortality, measured by the proportion of deaths under 1 year to registered births, was equal to 79 per thousand, being 41 per thousand below the average in the ten preceding third quarters, and equal to the lowest recorded quarterly rate, namely, that for the September quarter, 1912.

Abolition of Compulsory Latin for Medical Students

The preliminary examination which every youth must pass before being registered as a medical student included Latin as a compulsory subject. The modern tendency to exalt science at the expense of the classics has brought about a position which has compelled the General Medical Council no longer to require a knowledge of Latin—which was usually very elementary—by medical students. For fourteen years the University of London has not required Latin for its matriculation examination, and within the last two years the Universities of Liverpool, Leeds, Sheffield and Birmingham have followed. The medical council was therefore in the anomalous position of requiring knowledge of a subject which these universities do not require of students undertaking medical or other courses. After an animated debate in which several speakers insisted on the great advantage of a knowledge of Latin to the student in his medical studies, the council decided by a majority of 21 to 12 to accept the examinations of these universities. This conclusion was something of a compromise, for Latin still remains compulsory for what are called "junior grade" candidates for admission to the medical curriculum. These are boys who usually leave school at an earlier age than the "senior grade" candidates mentioned above and do not produce, as evidence of general knowledge, certificates of examination by a university. Latin is retained as a compulsory subject for them on the ground that there is at present no satisfactory substitute for that language in the educational scheme suitable to a boy of 15. The contribution to the discussion at the medical council of a brilliant scholar in the wide sense, Sir Clifford Allbutt, is worthy of attention. He said that for years he had been against any particular subject being made compulsory for entrance. It was perfectly amazing how boys wriggle through an examination in Latin and Greek with so little knowledge of either, and the time devoted to them was not worth it. If the average man was asked to translate or go behind the Latin words he had used, it would be found they had been used in a parrot like way and learned by heart as ladies learn the names of plants. What was desired was to raise the literary quality of teaching, which could be attained by substituting two modern languages—French and Italian or French and Spanish—for Latin, so that the students would come up with a fair amount of literary cultivation.

A Leper in a Lodging House

In the court of appeal, a point of interest to the profession has been decided. An action was brought by a lodging house keeper against a physician and a woman for fraudulent representation and conspiracy. The latter engaged rooms for her father, who was a leper and died from the disease after a year. The plaintiff alleged that she had suffered damage in consequence. In answer to her question, the leper's physician said that he was not suffering from an infectious disease but that great care should be taken. He believed that leprosy was not infectious. In answer to questions put by the judge, the jury decided that leprosy was infectious and that the defendants had by fraudulent misrepresentation induced the plaintiff to admit the leper. They assessed damages at $1,250. After argument, however, the judge held that the defendants were entitled to judgment because there was no implied term or warranty in the compact of tenancy that the leper was a fit and proper person to occupy the rooms, and that the physician was not bound in law to make any disclosure as to the condition of the patient. This judgment has been upheld by the judges of the court of appeal.

Anthrax in Shaving Brushes

An account was recently given (The Journal, Sept. 30, 1916, p. 1030) of cases of anthrax due to contaminated shaving brushes. The subject has again arisen in Liverpool, where two specimen shaving brushes infected with anthrax have been discovered. At a meeting of the Liverpool health committee, Dr. Hope, health officer, said that the hairs of which brushes were made had probably been taken from infected skins. All brushes of the kind which could be found in the city had been taken and destroyed. One of the brushes had been discovered in a curious way. A man bought it in Liverpool and used it on the way to Halifax, N. S. When he arrived there he was found to be suffering from anthrax, and the fact was reported to Liverpool. A number of the brushes had then been bought. Their origin had been traced to foreign firms on the continent.

PARIS LETTER

Paris, Dec. 14, 1916.

The War

TREATMENT OF WOUNDS OF THE KNEE

Professor Depage of Brussels has just reported to the Société de chirurgie de Paris statistics of 124 wounds of the knee treated at the ambulance hospital "Océan," at La Panne, since Dec. 20, 1914. Eighty-three were serious cases, which he classifies in two categories: (1) wounds without large separation of the joints and without very serious lesions of the bone extremities, and (2) wounds of the joints with serious and wide lesions of the bone extremities.

These wounds have been treated in various ways. Until Sept. 10, 1915, Depage drained the joints during a longer or shorter period, after the cleansing and excision of torn tissues, making one or several dressings every day. In each instance the wound was irrigated with antiseptic solutions (oxygenated water, formaldehyd or phenol [carbolic acid]). The wounded limb was kept rigid either by a bridged apparatus or by a drain. During a second period, until July 1, 1916, Depage applied the method of Carrel after ample loosening of the joints. During a third period he practiced systematically the immediate closing of the joints of the knee despite extensive lesions of the bone. Until that time he had sutured the synovial membrane immediately only in articular wounds of the knee without lesions of the bone. After a careful dressing of the region, the wounded and bruised tissues were excised, the bullet or foreign matter removed, the joints freely washed with Dakin's solution or with ether, and the bones curetted or scraped with a gouge, a small rubber drain being left in the joints for twenty-four hours in contact with the lesions of the bone. By some means immobility was secured. When this method is employed, the temperature is generally about 37.5 C. (99.5 F.) on the evening of the operation; in two or three days it returns to normal; in eight days massage is begun with passive movements, and in fifteen days the patient is given a mechanotherapeutic course of treatment. In certain cases, however, the temperature climbs to 38 C. (100.4 F.) and even 38.5 C. (101.3 F). The local condition then dictates the course to be followed. If the joints do not show any reaction, further treatment is deferred, and order is generally restored within five or six days. If infection appears certain, arthrotomy is resorted to, and the Carrel treatment is given when the lesions of the bone are not too extensive. If, on the other hand, these lesions are serious, resection is made without delay.

The value of the three methods successively employed by Depage in the treatment of articular wounds of the knee is clearly shown in the following table:

		First Period 29 Wounds Per cent.	Second Period 32 Wounds (Carrel Method) Per cent.	Third Period 22 Wounds (Closing of Wound) Per cent.
1	Cures with restitution of movements	24.10	46.87	86.36
2	Suppurations of the knee	68.80	28.12	4.54
3	Ankylosis with or without resection	37.93	18.75	13.63
4	Amputations of the thigh	34.40	15.62	0
5	Deaths	13.88	3.06	0

TREATMENT OF WOUNDS OF THE BREAST

In accordance with an opinion still too much in vogue, it is believed that most penetrating wounds of the thorax heal without the employment of operative treatment. Drs. Combier and Murard have voiced their disapproval to the Société de chirurgie de Paris. They have shown that the death rate among the wounded so treated is considerable, at least among those with large wounds in which hemorrhage shows no tendency whatever to cease, as these patients lose too much blood. Combier and Murard have also tried to intervene in these cases by suture of the bleeding lung and suppression of the pneumothorax. In three particularly threatening cases they have employed successfully the following mode of treatment: resection, under local anesthesia, or a simple injection of morphin, of the fractured ribs on an area just wide enough to furnish ready access to the lung; exteriorization and exploration of the affected pulmonary lobe, which usually is easily performed; suture of the pulmonary wound with the aid of long U-shaped points, anchoring of the sutured wound to the interior surface of the thorax, if possible, so as to permit the lung to recuperate its play; drainage by means of a tampon, of the membrane lining the interior of the ribs. The thoracic lining could also be entirely sutured without tamponing by making an incision for breathing in case of pleural effusion. There are, however, more favorable methods, which are successful in less serious cases, such as simple occlusion of the wound with a suture, employed by old school surgeons. In wounds in which the air comes in contact with the membrane lining the interior of the ribs, it is sufficient simply to close the wound to prevent infection, treating it as a simple pneumothorax requiring rapid resorption. This procedure has often given Combier and Murard good results.

Relative to this report, Drs. Rochard, Delorme and Baudet remind us that they had ceased, long before the war, to oppose operative treatment in serious cases of wounds of the breast.

THE TREATMENT OF SHOCK IN WAR SURGERY

Professor Depage of Brussels has made a report on this subject to the Société de chirurgie de Paris. He points out that vasoparalysis constitutes one of the most important phenomena of shock. The circulatory field becomes too large for the quantity of blood in the veins, the function of the heart becomes impaired, blood accumulates in the arteries, and the blood pressure becomes lower as the extremities become cold and cyanotic. The treatment of shock calls for: (1) a special position of the patient in which the abdominal vessels are at a higher level than the heart and the brain (this necessitates merely adjustment of his bed; (2) heat; (3) restoration of blood pressure to a sufficiently high degree either by increasing the quantity of the blood fluid (injection of Locke's serum), or by determining the vascular constriction (digitalis, strychnin, camphorated oil).

VESICAL CALCULI IN WOUNDS OF THE BLADDER

Dr. Legueu, clinical professor of diseases of the urinary tract of the Faculté de médicine de Paris, has pointed out to the Académie de médecine that about one third of the wounds of the bladder develop one or more calculi within a few months. Legueu estimates that these calculi have less to do with infection than with a concomitant fracture of the pelvis, such as is found in all wounds developing calculi. While serious disorders are given attention, fragments and splinters of bone frequently fall into the bladder, so that after the healing of all exterior wounds, one finds an internal osteopathic abscess visible only with a cystoscope. For some time the cavity of the bladder continues to receive from the focus of the fracture minute particles of bone which enter the bladder, causing calculi. Hence the osteovesicular abscess is the primary lesion from which complications result. Legueu has attempted operative treatment for these abscesses, but the disorders necessarily caused in healing them are very complicated and postpone the patient's recovery several months. He has relieved a patient of his calculus in a few days by lithotrity, and he advises that the abscess be permitted to close itself spontaneously.

NEEDLE WOUND OF THE HEART

Dr. Marais reported to the Société de chirurgie de Paris the case of a soldier who thrust a needle into his heart with the intention of killing himself, and who died suddenly twenty-four hours later without having shown any sign of internal hemorrhage in the meantime. At the necropsy there were found an abundant hemorrhagic infiltration in the anterior mediastinum and an infusion of 120 gm. of blood in the pericardium. In the middle of the latter infusion was found the needle which had caused death. No trace of its passage was visible on the skin. On the anterior surface of the right ventricle was a wound 4 cm. long, and 2.5 cm. in average width. It was a superficial wound above, but deep and penetrating in the lower part. This leads one to suppose that the needle after having perforated successively the thoracic wall and the pericardium (the victim was very thin), was maintained in place by one extremity in the thoracic wall, while the other extremity worked its way through the myocardium, causing a slow, insignificant hemorrhage with no clinical signs, which later suddenly became abundant and fatal. Marais was of the opinion that if the diagnosis had been made earlier, surgical intervention would probably have been successful.

Reorganization of Physical Education in Public Instruction

A commission has just been instituted at the ministry of the interior for the purpose of studying the reorganization of physical education in public instruction. Among the members of this commission are Drs. Gilbert and Weiss, professors of the Faculté de médicine de Paris, and Henri Méry, Albert Mathieu and Mosny, physicians at the hospitals of Paris.

The Decimal Classification in the Numbering of Surgical Matter

The military health service has just systematized part of its surgical matter by introducing the decimal classification at the suggestion of Mr. Paul Woog. Until recently, when a very fine catgut ligature was desired, specifications were given for "triple zero," "double zero" or "single zero," depending on whether the diameter of the catgut was 0.2, 0.3 or 0.4 mm. A silk ligature of 0.3 mm. was designated as No. 2 in the health service, and was called "zero" in the civil service. An "O" drain measured 4 mm. in exterior diameter, and a No. 6 drain, 20 mm. This illogical and complicated classification has recently been replaced by a simple and rational one: The figures adopted for catgut silk ligatures, drains and rubber tubes will designate in tenths of a millimeter the outside diameter of these objects. Thus a No. 6 ligature is six tenths, or 0 6 mm. in diameter; a No. 10, ten tenths, or 1 mm. in diameter; a No. 130 drain will be 130 tenths, or 13 mm. in diameter, etc.

Marriages

Manley Hunter Eames, M.D., Oak, Va., to Miss Mary Virgiiia Warburton of Williamsburg, Va., at Richmond, Va., December 18.

Robert Parke Bay, M.D., Baltimore, to Miss Nancy M. McNabb of Harford County, Md., at Baltimore, December 23.

Grover Cleveland Goudy, M.D., Canton, Ohio, to Miss Edna Amanda Hilger of Pittsburgh, December 30.

Clyde James Bibb, M.D., to Miss May Hollern, both of Portage, Pa., at Hollidaysburg, Pa., November 5.

Irving William Fraim, M.D., Waltham, Mass., to Miss Leola Basley of Worcester, Mass., December 19.

Gustav Kolischer, M.D., Chicago, to Miss Juliette Lippe of New York, December 26.

Frederick G. Fox, M.D., to Miss Anna Kuehn, both of Chicago, December 31.

Deaths

Arthur Curtis Rogers, M.D., Faribault, Minn.; a pioneer and leader in the work for defectives; died in the University Hospital, Minneapolis, January 2, from pernicious anemia. Dr. Rogers was born near Decorah, Iowa, July 17, 1856. After graduation from Earlham College, Richmond, Ind., he taught school and then became steward of the State School for Feebleminded, Glenwood, Iowa. His interest in the work caused him to take up the study of medicine in the State University of Iowa, Iowa City, from which he was graduated in 1883. He went to Oregon as head physician and principal of the State School for Indians, Forest Grove, and two years later was called to Minnesota to become superintendent of the Minnesota School for Feebleminded and Colony for Epileptics at Faribault, a position which he held until the time of his death. The institution which then had about fifty inmates now employs about 300 teachers and attendants, cares for more than 1,600 inmates, and has been regarded for many years as one of the model institutions of the country. Dr. Rogers was a Fellow of the American Medical Association, president of the Minnesota Conference of Charities and Correction in 1898, and of the Minnesota Academy of Social Science in 1911. He was secretary and treasurer of the American Association for the Study of the Feebleminded and a member of the commission to revise Minnesota laws relating to children.

Hon. Sir Frederick William Borden, K. C. M. G., minister of militia and defense of Canada from 1898 to 1911; died at his home in Canning, N. S., January 6. He was born May 14, 1847, the son of Dr. J. and Maria F. Borden. His preliminary education was received at the University of Kings' College, Windsor, N. S., and his medical course was taken at Harvard Medical School, from which he was graduated in 1868. He was appointed assistant surgeon of the Sixty-Eighth Battalion "Kings' County" Militia in 1869, and served continuously thereafter in the militia and Canadian Army Medical Corps, of which he was, at the time of his death, surgeon colonel. In 1874, he was elected to the House of Commons from Kings' County, N. S., and has served continuously, excepting during the years from 1883 to 1886. To Sir Frederick Borden's efforts were due in a large measure, the efficient organization of the Canadian troops which was of so great assistance to Great Britain during the Boer War, in which his son, Lieut. Harold L. Borden, was killed in action.

James Henry, M.D., Orangeville, Ont.; University of Toronto, Ont., 1863; aged 73; a member and for several years vice president of the Ontario Medical Council; for more than half a century a practitioner of Dufferin County; surgeon in the Canadian militia and lieutenant colonel on the retired list of the thirty-sixth infantry; coroner for the counties of Peel, Grey, Dufferin and Wellington, and division surgeon for the Canadian Pacific Railroad; died at his home, October 29, from cerebral hemorrhage.

Carl Johann Luyties, M.D., St. Louis; Missouri Medical College, St. Louis, 1884; Hahnemann Medical College, Philadelphia, 1885; aged 56; a Fellow of the American Medical Association; a member of the visiting staff of the St. Louis Children's Hospital and St. Louis City Hospital; a specialist on diseases of children; professor of chemistry and later professor of diseases of children in the Homeopathic Medical College of Missouri, St. Louis; died at his home, December 23, from cerebral hemorrhage.

Edward Marshall Buckingham, M.D., Boston; Harvard Medical School, 1874; aged 68; a Fellow of the American Medical Association and New England Pediatric Society; instructor in diseases of children in his alma mater and for more than twenty years treasurer of the Massachusetts Medical Society; for many years secretary of the staff of the Boston City Hospital and visiting physician to the Children's Hospital; died at his home, December 23, from angina pectoris.

James Wendell Reber, M.D., Philadelphia; Beaumont Hospital Medical College, St. Louis, 1889; aged 50; a Fellow of the American Medical Association; formerly assistant physician at the State Hospital for the Insane, Norristown, Pa.; professor of ophthalmology in Temple University and the Philadelphia Policlinic; once president of the American Academy of Ophthalmology and Oto-Laryngology; died at his home in Germantown, December 30, from pneumonia.

Matthew Watson O'Brien, M.D., Alexandria, Va.; Medical College of Ohio, Cincinnati, 1876; aged 61; a Fellow of the

American Medical Association; formerly vice president of the Medical Society of Northern Virginia, and president of the Southern Railway Surgeons' Association; local surgeon for the Southern, Chesapeake and Ohio, Washington and Old Dominion and Washington Southern railroads; died at his home, December 28.

Frederick David Bentley, M.D., Portage, Wis.; Rush Medical College, 1886; aged 52; a Fellow of the American Medical Association; assistant superintendent of the Cook County Insane Hospital, Dunning, from 1889 to 1890; for several terms health officer of Portage; local surgeon to the Chicago, Milwaukee and St. Paul System; who built and maintained the first hospital in Portage; died at his home, December 23.

William H. White, M.D., Bloomfield.; University of Pennsylvania, Philadelphia, 1860; aged 79; a Fellow of the American Medical Association; president of the Bloomfield Press Company and a member of the Bloomfield Board of Education; a veteran of the Civil War, in which he served as surgeon of the Seventy-Ninth Pennsylvania Volunteer Infantry; died at his home, December 28, from pneumonia.

Miah B. Sullivan, M.D., Dover, N. H.; New York University, New York, 1880; aged 59; a member of the New Hampshire Medical Society; and formerly president of the Strafford District and Dover medical societies; for many years a member of the surgical staff of the Wentworth Hospital; once state senator; founder of the Dover *Evening Star;* died at his home, December 26.

Alexander H. Saxton, M.D., Baltimore; University of Maryland, Baltimore, 1863; aged 75; attending physician to the Baltimore General Dispensary and physician to St. Mary's Industrial House of the Good Shepherd; for ten years vaccine physician and for eight years pension surgeon; state medical examiner for the Royal Arcanum; died at his home, December 24, from heart disease.

William S. McCormick, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1903; aged 40; formerly a Fellow of the American Medical Association; for five years a medical inspector for the board of health of Philadelphia; formerly assistant demonstrator of anatomy in his alma mater; died in the Methodist Hospital, Philadelphia, December 30, from diabetes.

Peter Sebastian Ganz, M.D., Louisville, Ky.; University of Louisville, Ky., 1894; aged 55; a member of the Kentucky State Medical Association; and a director of the St. Lawrence Home for Boys; for several years a member of the faculty of his alma mater and a member of the staff of Sts. Mary and Elizabeth's Hospital; formerly a druggist; died at his home, December 23.

James A. Clyne, M.D., Joliet, Ill.; Albany (N. Y.) Medical College, 1886; aged 56; a Fellow of the American Medical Association; formerly president of the Will County Medical Society; local surgeon of the Chicago and Alton Railroad for twenty years, and in 1893 and 1894 health officer of Joliet; died at his home, November 8, from carcinoma of the throat.

Julius Alexander Becker, M.D., New York; New York University, New York, 1898; aged 41; a member of the Medical Society of the State of New York; professor of practical anatomy in the New York University and Bellevue Medical College; assistant surgeon to Bellevue Hospital and police surgeon; died at his home, December 25, from pneumonia.

James Graham Wittenmyer, M.D., Peebles, Ohio; Starling-Ohio Medical College, Columbus, Ohio, 1913; aged 29; a member of the Ohio State Medical Association; lieutenant in the Medical Corps of the Ohio National Guard and assigned to duty with Field Hospital No. 2, Columbus; died in the Base Hospital at Fort Bliss, Texas, December 9.

Charles N. Wyatt, M.D., Easley, S. C.; Southern Medical College, Atlanta, Ga., 1887; aged 53; a Fellow of the American Medical Association; twice president of the Pickens County Medical Society; a trustee of the Medical College of South Carolina; local surgeon of the Southern Railroad; died at his home, December 27, from chronic nephritis.

John R. Borland, M.D., Franklin, Pa.; Philadelphia University of Medicine and Surgery, 1865; aged 88; a member of the Medical Society of the State of Pennsylvania; formerly professor of theory and practice of medicine and dean of the faculty of the Georgia Eclectic Medical College, Atlanta; died at his home, December 26.

Ethelbert Fremont Geer, M.D., St. Paul; University of Vermont, Burlington, 1884; aged 58; a Fellow of the American Medical Association; formerly secretary of the Ramsey County Medical Society; for three years a member of the St. Paul workhouse board; died at his home, December 24, from cerebral hemorrhage.

Edmund Doe Spear, M.D., Boston; Harvard Medical School, 1874; aged 64; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society and American Otological Society; a specialist on diseases of the nose and throat; died at his home, December 25, from pneumonia.

George T. Thomas, M.D., Rogers, Texas; Missouri Medical College, St. Louis, 1885; aged 61; a member of the State Medical Association of Texas, and once president of the Bell County Medical Society; died suddenly at Jonesboro, Texas, December 21, from cerebral hemorrhage.

John Snyder, M.D., Mecosta, Mich.; Detroit College of Medicine and Surgery, 1886; aged 54; a Fellow of the American Medical Association; who was obliged to give up practice five years ago on account of disease of the spine; died at his home, December 11, from angina pectoris.

Kenneth Charles Richman, M.D., Philadelphia; Jefferson Medical College, 1911; aged 30; a specialist in laryngology and rhinology; a member of the staff of the Philadelphia General Hospital and Rush Hospital; died at his home, December 8, from heart disease.

Joseph Huston McKee, M.D., Carnegie, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; aged 54; a Fellow of the American Medical Association, and president of the Carnegie Medical Association; died at his home, December 25, from pneumonia.

E. Lloyd Irvine, M.D., San Francisco; University of Oregon, Portland, 1905; aged 33; formerly a practitioner of Portland, and a Fellow the American Medical Association; died in St. Luke's Hospital, San Francisco, December 4, from lobar pneumonia.

Benton F. Tatum, M.D., Stuart, Va.; University of the South, Sewanee, Tenn., 1900; aged 45; a member of the Medical Society of Virginia; who underwent surgical operation, recently, in Richmond; died at his home, December 29.

Cummins Butterfield Jones, M.D., Los Angeles; Miami Medical College, Cincinnati, 1873; aged 67; formerly superintendent of the Ohio Soldiers' and Sailors' Orphans' Home, Xenia; died at his home, December 23, from heart disease.

Charles C. Dellenbaugh, M.D., Portland, Mich.; University of Buffalo, N. Y., 1859; aged 82; formerly a Fellow of the American Medical Association; for more than half a century a practitioner of Portland; died at his home, December 25.

Frank Gamon, M.D., Erie, Pa.; Medico-Chirurgical College of Philadelphia, 1903; aged 36; a member of the Medical Society of the State of Pennsylvania; a specialist in anesthesia; died in Hamot Hospital, Erie, December 23.

Joseph Dobson, M.D., Fairfield, Conn.; United States Medical College, New York, 1880; aged 79; surgeon in the British army during the Boer War; died in Bridgeport Hospital, November 25, from chronic interstitial nephritis.

Norman J. Cranmer, M.D., River Falls, Wis.; Detroit Medical College, 1870; aged 80; for forty years a practitioner of Van Buren, Allegan and Missaukee counties, Mich.; died at the Hotel Gladstone, River Falls, December 7.

William J. Dillenback, M.D., Brentwood, Md.; George Washington University, Washington, D. C., 1888; aged 51; a member of the Medical Society of the District of Columbia; died at his home, December 27, from diabetes.

James W. Fitzmaurice, M.D., Chicago; Rush Medical College, 1889; aged 56; formerly a member of the Illinois State Medical Society; died at his home, December 29, from uremia.

Effa A. Osborn Norton, M.D., Chicago; Curtis Physio-Medical Institute, Indianapolis, 1896; died at her home, December 22, from diabetes.

Lothar M. Schwarz, M.D., Chicago; Jenner Medical College, 1897; aged 54; died at his home, December 21, from cirrhosis of the liver.

John Capell, M.D., Watson, Ark.; Chattanooga (Tenn.) Medical College, 1907; died in St. Joseph's Hospital, Memphis, Tenn., November 21.

Warner Lewis, M.D., Wayland, Va.; University of Maryland, Baltimore, 1867; a Confederate veteran; died at his home, December 10.

Reuben Eiseman, M.D., Latrobe, Pa.; Jefferson Medical College, 1887; aged 55; died at his home, December 13.

Eben Vernon, M.D., Los Angeles; Atlanta (Ga.) Medical College, 1859; aged 78; died at his home, December 16.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

IRON CITRATE GREEN

Report of the Council on Pharmacy and Chemistry

H. K. Mulford Company and E. R. Squibb and Sons submitted to the Council ampules containing solutions of iron citrate green. It thus became necessary to consider the eligibility of iron citrate green itself for admission to New and Nonofficial Remedies. As the rules of the Council provide that nonessential modifications of official or nonproprietary preparations will not be recognized, the above named firms were asked to state what advantages, if any, the so-called iron citrate green had over the official iron and ammonium citrate. In reply the H. K. Mulford Company wrote that it had come to the conclusion that iron citrate green and ampules thereof would undoubtedly be considered by the Council as a nonessential modification of an official product, adding:

> "It seems to differ from the official ferric citrate so far as essentials go only in color, but custom, which is exceedingly hard to change in South America, demands that this green variety of ampules be used in place of the official product."

In reply to a similar letter of inquiry E. R. Squibb and Sons wrote:

> "Iron citrate green (iron and ammonium citrate green) differs from the U. S. P. iron and ammonium citrate in that it contains less iron and more citric acid and more ammonium citrate than does the latter. It is of course a modification of the official salt and is supplied to meet a real demand. Its reaction is quite decidedly acid and our present stock contains Fe slightly below the U. S. P. requirements for iron, assaying 15.74 per cent. instead of 16 per cent. Fe. The tests used to control its quality are those for the official product except as before indicated, it is always acid instead of neutral, as the U. S. P. requires for that salt."

The smaller iron content (98 per cent. of the U. S. P. requirement) of the green variety referred to by E. R. Squibb and Sons is so small as to be negligible. Further, the low iron content as well as the acidity of the green salt would appear to be detriments rather than advantages. Inasmuch as no evidence has been presented to show that iron citrate green is superior in any way to the well-known iron and ammonium citrate the Council held that iron citrate green, and with it the dosage forms, was ineligible to N. N. R.

The preceding report was submitted to the Mulford Company and to E. R. Squibb and Sons for comment before publication. The former firm replied that in the present case it felt bound to supply the existing demand, the latter replied that, to give the Council its support in this matter, the sale of iron citrate green and ampules thereof would be discontinued.

MORE MISBRANDED NOSTRUMS

"GOFF'S COUGH SYRUP" AND "GOFF'S HERB BITTERS"

S. B. Goff & Sons Co. of Camden, N. J., were charged with shipping in interstate commerce a quantity of "Goff's Cough Syrup" and of "Goff's Herb Bitters," both of which were declared misbranded. The "Cough Syrup" was sold under the claim (made on the trade package) that it would prevent fatal membranous croup, pneumonia and bronchitis; that it was a powerful restorative for the throat and lungs and was a remedy for pneumonia, bronchitis, "spitting of blood," whooping cough, "weak lungs," pleurisy and grippe. The federal chemists reported that the stuff contained 8 per cent. alcohol, about 55 per cent. sugar, as well as some vegetable extractives and traces of iron, iodids, antimony and alkaloids. The government declared that the claims made for this preparation were false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. The "Herb Bitters" were sold under the claim that "Typhoid Fever, La Grippe, Malaria and Appendicitis cannot possibly exist in the system when Goff's Herb Bitters are taken regularly according to directions." The government chemist reported that the stuff was a water-alcohol solution of aloes, sugar and alkaline carbonate flavored with peppermint. The claims quoted above were declared false and fraudulent and applied knowingly. The company pleaded guilty and was fined $25.—[*Notice of Judgment No. 4332.*]

DANDER-OFF

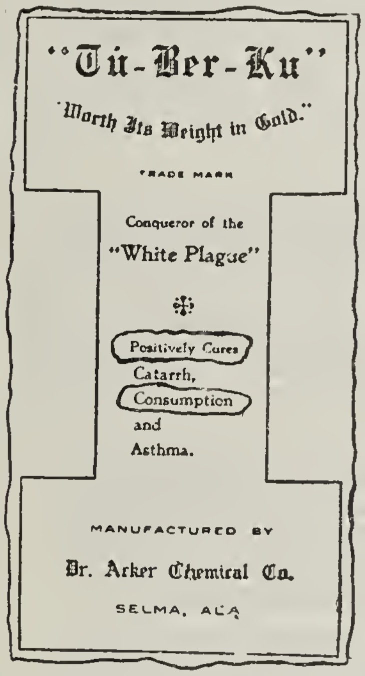
The C. Hughel Co., Indianapolis, Ind., were charged with shipping in interstate commerce a quantity of Dander-Off which was misbranded. The federal chemists reported that the preparation was an alkaline solution of borax and white arsenic colored with coal-tar dye. It was claimed to be superior for all forms of dandruff and for all diseased and eczemic affections of the scalp and to be effective for restoring lifeless hair to good condition and causing the hair to grow more abundantly. These, and similar claims, were declared by the government to be false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. The C. Hughel Co. pleaded guilty and was fined $50 and costs.—[*Notice of Judgment No. 4331.*]

TU-BER-KU

The Dr. A. W. Acker Chemical Co. of Selma, Ala., shipped in interstate commerce 144 bottles of "Tu-Ber-Ku" which the government declared were misbranded in violation of the Food and Drugs Act. The preparation which admittedly contained 20 per cent. alcohol was sold under such claims as:

> "Tuberculosis Can Be Cured. Tu-Ber-Ku Triumphs."
>
> "It is a Blood Cleanser, a Lung Builder, a Flesh Maker, a Health Restorer and an effective agency for fighting and curing Tuberculosis."
>
> "Has cured Consumption, Catarrh, Lagrippe, Asthma and severe colds."

These and similar claims were declared by the government to be false, misleading and fraudulent. The Dr. Acker Chemical Company filed an answer to the libel claiming the product and the case was brought before the court and a jury. After due deliberation the jury returned a verdict sustaining the government's charges. The court ordered the fraudulent nostrum destroyed.—[*Notice of Judgment No. 4367*].



"Tú-Ber-Ku"

"Worth Its Weight in Gold."

TRADE MARK

Conqueror of the

"White Plague"

Positively Cures

Catarrh,

Consumption

and

Asthma.

MANUFACTURED BY

Dr. Acker Chemical Co.

SELMA, ALA

ELECTROZONE

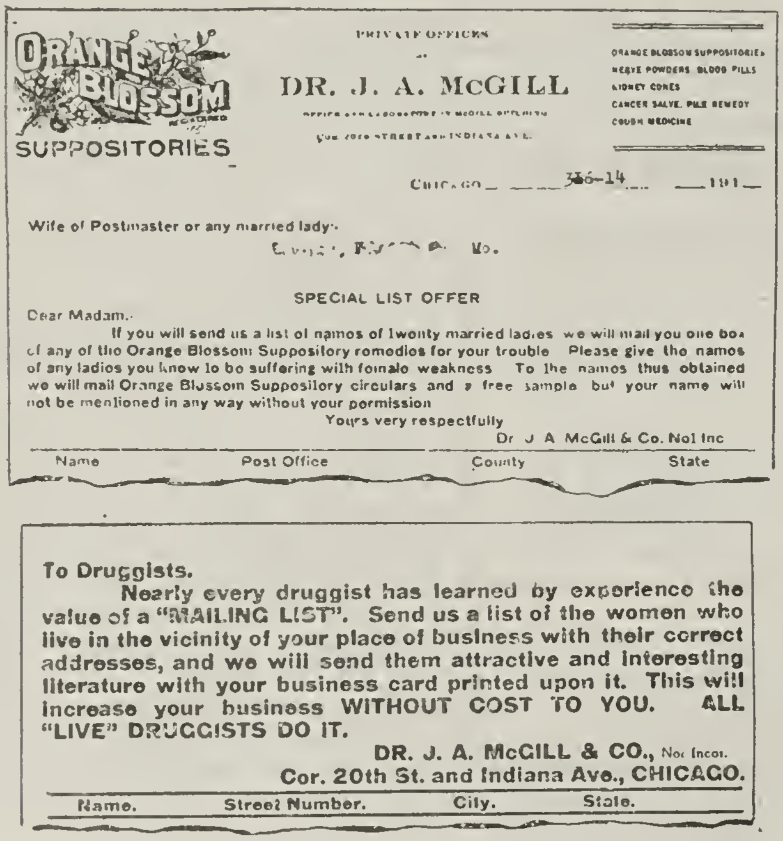
This alleged Antiseptic Germicide, Disinfectant was manufactured and sold by the Chemical and Electrical Co., 45 Broadway, New York. Eighty-four bottles of "Electrozone" were seized by the government under the charge that the stuff was misbranded. This charge was based on the facts, (1) that purchasers were led to believe that the product consisted of or contained ozone associated with electricity, when in fact it did not contain ozone and was not associated with electricity; (2) in that the chemical formula indicated that the product was composed of certain chemicals of which in fact it was not so composed; (3) in that ozone was not formed together with nascent oxygen and peroxid of hydrogen when the hypochlorites were brought in contact with organic matter, as was claimed on the label; (4) in that the stuff liberated no ozone, although the company claimed that when Electrozone was freely sprayed into an atmosphere containing carbonic acid gas, it neutralized this gas and filled the air with a fresh supply of oxygen. Electrozone was recommended by its exploiters for piles, cholera infantum, leukorrhea, rheumatism, eczema, sunburn, diphtheria, "falling hair," ear ache and various other conditions. These claims the government declared false and fradulent and applied "with a knowledge of their falsity" and had been made "for the purpose of defrauding purchasers." The

Chemical and Electrical Company appeared as claimant and having consented to the entry of a decree, with the understanding that it should apply only to certain of the therapeutic claims, the court declared that the stuff was "misbranded in so far as it relates to some of the therapeutic effects" made and declared the product condemned and forfeited and ordered that a judgment be entered against the claimant for the cost of the proceedings. It was provided, however that after payment of the costs, the company might execute a bond of $500 and the Electrozone would be turned over to it on the condition that it should be relabeled under the supervision of the federal official.—[*Notice of Judgment No. 4355*].

ORANGE BLOSSOM FEMALE SUPPOSITORIES

John A. McGill, Chicago, Illinois, has for years been selling a nostrum known as "Dr. Jno. A. McGill Orange Blossom Female Suppositories." Some of the claims that have been made for this nostrum are:

> "A famous remedy for all female diseases."
>
> "The famous Suppository is a Noble Remedy for the following diseases: Inflammation, Congestion and Falling of the Womb, Anteversion, Retroversion and Prolapsus, Dropsy of the Womb, Ulceration, Polypus, Tumors, Leucorrhoea, Profuse and Difficult Menstruation, Ovarian Tumors, Fibroid Tumors, Inflammation and Congestion of the Ovaries, Cancers in their Earlier States. . . ."



ORANGE BLOSSOM SUPPOSITORIES

PRIVATE OFFICES
OF
DR. J. A. McGILL
OFFICE AND LABORATORY IN McGILL BUILDING
COR. 20TH STREET AND INDIANA AVE.

ORANGE BLOSSOM SUPPOSITORIES
NERVE POWDERS BLOOD PILLS
KIDNEY CONES
CANCER SALVE, PILE REMEDY
COUGH MEDICINE

CHICAGO 3-6-14 191

Wife of Postmaster or any married lady:
[illegible] Mo.

SPECIAL LIST OFFER

Dear Madam:

If you will send us a list of names of twenty married ladies we will mail you one box of any of the Orange Blossom Suppository remedies for your trouble. Please give the names of any ladies you know to be suffering with female weakness. To the names thus obtained we will mail Orange Blossom Suppository circulars and a free sample but your name will not be mentioned in any way without your permission.

Yours very respectfully
Dr. J. A. McGill & Co. Not Inc.

Name	Post Office	County	State

To Druggists.

Nearly every druggist has learned by experience the value of a "MAILING LIST". Send us a list of the women who live in the vicinity of your place of business with their correct addresses, and we will send them attractive and interesting literature with your business card printed upon it. This will increase your business WITHOUT COST TO YOU. ALL "LIVE" DRUGGISTS DO IT.

DR. J. A. McGILL & CO., Not Incor.
Cor. 20th St. and Indiana Ave., CHICAGO.

Name.	Street Number.	City.	State.

Two methods used by McGill to obtain a "sucker list": Letters sent to the wives of village postmasters and letters sent to druggists asking for the names of "married ladies" who are suffering from "female weakness."

The government chemists reported that analysis of the "Orange Blossom Female Suppositories" showed that they contained "free boric acid, aluminum salt, sulphate, potassium salt, sodium salt, starch and petrolatum [vaseline]." As such a mixture will not cure "Cancers in their Earlier States," "Falling of the Womb" or the various other conditions claimed by John A. McGill, the government declared these statements to be false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. McGill pleaded guilty and was fined $50 and costs.—[*Notice of Judgment No. 4360*].

DR. SIMPSON'S VEGETABLE COMPOUND

"Dr. Simpson's Vegetable Compound" was put on the market by the "Dr. A. B. Simpson Co." of Richmond, Ind., which was merely a trade name under which Thomas C. Davis and Eva J. Cole did business. In spite of this, the cartons of the nostrum bore the following statement:

> "The undersigned, citizens of Richmond, take pleasure in saying that we are acquainted with Dr. A. B. Simpson, and for the sake of suffering humanity we cheerfully recommend him and his treatment. WM. H. SCHLATER, Clerk Circuit Court. S. S. STRATTAN, Treasurer Wayne Co., T. W. BENNETT, Mayor of Richmond, JOS. P. ILIFF, Chief of Police, THOS. C. DAVIS, Ag't U. S. Express Co. P. C. GRAFF, Ag't Adams Express Co."

The preparation was sold as a specific for erysipelas, all diseases of the skin, inflammatory rheumatism, scald head, salt rheum and tetter. The chemists of the Department of Agriculture reported that the stuff was essentially an alcohol-water solution of potassium iodid, with a small amount of vegetable extractive, in which podophyllum, licorice and gentian were indicated. The therapeutic claims were declared false and fraudulent while, in addition, misbranding was charged because the amount of alcohol present was not truthfully stated and because further a solution of potassium iodid cannot properly be called a "Vegetable Compound." Eva J. Cole pleaded guilty to a part of the indictment and was fined $25 and costs. The indictment was *nolle prossed* as to the defendant Davis.—[*Notice of Judgment No. 4363*].

WELLER'S STONE ROOT AND GIN

This preparation was put on the market by W. L. Weller & Sons, Louisville, Ky. The stuff, which admittedly contained 37½ per cent. of alcohol, was advertised as: "An Excellent Preparation for Kidney, Bladder and All Urinary Troubles, Also an Efficient Relief for Nervous Debility and Dyspepsia. As a Tonic It Has No Equal." These and similar claims were naturally declared by the federal authorities to be false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. W. L. Weller & Sons having admitted the facts and consented to a decree, the court ordered that the stuff should be relabeled under the supervision of the United States food and drug inspectors and restored to the company, after the costs of the proceedings had been paid and a bond in the sum of $100 executed.—[*Notice of Judgment No. 4297.*]

Correspondence

Rural Obstetrics

To the Editor:—In a discussion on this subject abstracted in THE JOURNAL, Dec. 9, 1916, p. 1785, two women physicians took occasion to belittle the ability of the rural practitioner of this branch of the practice of medicine.

This is no new subject. The "country doctor" is looked down on professionally by many of his colleagues who happen to reside in larger communities.

It is hard to see why this should be. In the article referred to, the statement is made that "these men are sent out from our medical colleges and schools with nothing but a smattering of knowledge of the mechanics of childbirth." So far as medical college teaching with its accompanying hospital service is concerned, it is to be remembered that the practitioners in rural communities did not learn their profession there. That time has long passed. We country doctors, as far as my knowledge extends, are originally from the same schools as our city colleagues. If one takes the trouble to look into the matter, he (or she) will find that as large a proportion of these doctors come from first-class schools as the physicians living in larger cities.

With respect to facilities for keeping up to date after graduation, of course the resident of the larger city has much greater opportunities. He can more easily attend the lectures and clinics of specialists, and see large numbers of cases. But it will be noticed by one who visits the postgraduate schools that their attendance is not made up of physicians living in the city in which the school may be located. On the other hand, these valuable institutions are attended principally by those who would be classified as "country doctors," many hundreds of whom have left lucrative and otherwise successful practices and traveled long distances, frequently half way across the continent, to obtain such advantages.

Since we do not have medical libraries located near by, our private ones are well stocked, and the books are not for ornament—they are used. The mail brings us in constant touch with the same information which is accessible to our city brothers (and sisters). Our journals are not thrown unopened in a pile behind the door or on a shelf to be finally discarded without being unwrapped. They are used to keep us in touch with what is going on in the centers of teaching and experimentation.

In the matter of personal experience after his graduation, the country doctor is in a position in which he must keep up with the profession. He has not the specialists in every line, or easily accessible large hospitals to which he may turn over his cases when they are more or less puzzling. Most country practitioners are not so happily located, for instance, that they can call an ambulance and shift the responsibility of a septic obstetric patient to the shoulders of a large hospital, and so have their own mortality rates kept down.

On the contrary, the man practicing in the country must bear his own burdens, and he is in a position to be personally blamed (or sometimes praised) for his results. With this in mind, the practitioner who has the moral and physical backbone to practice away from the larger cities is always doing his best for his patients, even to the end, and is always trying to extend his limitations.

The only country doctors with whose personalities and results I am acquainted are western ones, and I am not ashamed to count myself one of them.

The county in which I reside has an area of over 5,600 square miles, and a population of a little over 7,500. There are usually eight or nine physicians residing in the county. The result is that we often attend obstetric patients at distances of 30 or 40 miles from our residences, thanks to the automobile, though many of our roads are in the mountains.

Of course there are disadvantages for the patients and discomforts for the doctors in this sort of practice, but some one must do it. We realize that under such circumstances the daily visit is impossible. On the other hand, we know that such daily visits do little to prevent or limit infections. If these occur, whether in city or in country, they are almost invariably caused at the time of labor. The consequence is that if proper asepsis is carried out at the time of delivery, there will be little more mortality or morbidity than if the woman lived in a large city.

Since we have been in the registration area, there have been in this county 1,140 full-term births, about 1,100 of them reported by physicians. In this number there have been four deaths directly attributable to labor. One of these deaths was due to puerperal sepsis, one to pulmonary embolism and two to eclampsia. Neither of the eclampsia patients was under the care of a physician until after the onset of serious convulsions. A physician had not been engaged to attend them. One of them was over 30 miles from a physician, and the other about 15 miles away.

Careful examination of death certificates filed during the registration period does not show the deaths of other mothers from "typhoid fever," "acute tuberculosis," "malaria" or any of those conditions which are sometimes made use of, intentionally or otherwise, to cover deaths due to puerperal infection. These mothers were followed up, through the death certificates, for a period of three months after labor, and none of them died during that time from any cause whatever.

Of the physicians attending these 1,100 confinements, five have practiced in this county for varying lengths of time during the registration period, while five have resided here during the whole time, so that to a greater or less extent the 1,100 labors were attended by ten different "country doctors."

Of course I have no means of comparing our local practitioners with those of other rural communities, but I see no reason to believe that they are not representative country doctors, at least as regards this section of the United States.

With such statistics at hand, I certainly think I am justified in making protest against such belittling of the obstetric results of rural practitioners in general. I cannot speak for or against those of the eastern country districts, but only so far as refers to the section in which I happen to reside.

Finally, we do not take kindly to criticism from such sources as those from which the discussion referred to seems to have originated. On looking up the "pedigrees" of the ladies in the fourth edition of the American Medical Directory, copyrighted in 1914, I find that one of the critics was not yet in practice, at least in the United States or Canada—less than three years ago. The other critic seems, according to the same authority, to have graduated from a medical college located in a "city" of about 10,000 population. At the time of publication of the directory of 1914, she was still located in the same center of learning.

Maurice A. Walker, M.D., Dillon, Mont.

"Another 'Contemptuous Verdict'"

To the Editor:—In your issue of December 16 you refer to a certain, or rather, uncertain "dealer in rugs" as having been called a swindler by the *Tribune*. Why this "better part of valor" in discreetly suppressing the details? The *Tribune* evidently had courage enough to expose a fraud and take a chance. Full publicity of such cases is for the good and protection of the community and a further deterrent to evil. In some countries the convicted party must publish the decision of the court in a number of papers. Now, if it was a libel suit The Journal feared, it could have limited itself to a citation of the case from the records, giving the name of plaintiff and defendant, as it does in its medicolegal column. No accusation could possibly lie on the publication of a finding of a court, and your readers would know, as they really have a right to know, who the dealer was and where we were to find his "large and commodious pitfall."

P. H. F.

[Comment.—Our correspondent submitted with this letter what he doubtless considered an appropriate caption: "Editorial Discretion and 'Contemptuous Verdicts.'" The implication that The Journal hesitates to give facts for fear of incurring a libel suit is really humorous. There was just one reason that the name and address of the "dealer in rugs" was not given in the editorial in question: it had nothing to do with the case. The Journal's editorial was simply a comment on the principle involved in "contemptuous verdicts." That was all. It was neither conceived nor written with the idea of protecting The Journal readers from Maine to California and from Oregon to Florida from the alleged "large and commodious pitfall" located in a retail establishment on Fifth Avenue, New York City. As "P. H. F." lives in New York City, an investment of one cent in the New York *Tribune* for Dec. 5, 1916, will give him full information about the case.—Ed.]

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TESTAMENTARY CAPACITY

To the Editor:—Please tell me what is the usual test given by alienists to persons claimed to be mentally unsound, with reference to their capability to transact business and make their wills. There is to come up in the near future the case of a man who made his will over four years ago in favor of his wife, and then afterward of his daughter. The man worked on a farm all his life. He was of more than ordinary intelligence, compared with the older farmers in the locality, and accumulated a small fortune by hard labor and thrift. He helped all the other children to own farms of their own. After an illness lasting five weeks caused by overheating on a horseback ride, he died at the age of 78 years. During this illness he was delirious at times, there was albumin in the urine, etc. All the business men with whom I have talked regarding his soundness of mind state they had never discovered any mental unsoundness, or a condition different from that of any other normal man with whom they had transacted business. I will thank you for any information you may send me bearing on this case, especially what points the contestants are likely to introduce as evidence in their attempt to break the will.

R. S. D.

Answer.—The laws relating to what constitutes capacity to make a valid will vary so much in different states that there can be no uniform rule as to how the mental element of that capacity can be tested by an alienist. It follows, therefore, that it is never the function of an alienist to pronounce on this capacity. This is the duty of the court before which the validity of a will is contested. The alienist will testify only as to the condition of mind of the testator. In some countries proof of the slightest degree of mental alienation at the time of the execution of a testament will suffice to invalidate it. At the other extreme we find the conservative laws on the subject which prevail where the English common law is taken as the basis of legislation. Under the latter systems it is difficult to upset a will on the ground of mental incapacity.

Were an alienist to permit himself to give an opinion as to the testamentary capacity of a testator, he would have either to give a different opinion in different countries, which would be to assume the right of interpreting law, or to give the same opinion in all countries, which would constitute an attempt on the part of the alienist to legislate. In the one case he would be usurping the functions of the court; in the other he would be trespassing on the domain of the legislator. Nevertheless, an expert testifying in such a case will usually be familiar with the local law on testamentary capacity. He will therefore direct his attention more particularly to those elements of the mentality of the testator which, under the local law, are relevant to the latter's testamentary capacity.

What these would be in the particular case you set out we are unable to appreciate. In general, however, the points of importance in a man of the age of 74 and in the condition which you have described, would be: his memory for recent events; his knowledge of the nature and extent of the property of which he was purporting to dispose and of his relations thereto; the extent to which persons who, in the ordinary event, might be expected to benefit by his will, and especially his natural heirs and successors, would be present to his mind in their proper atmosphere at the time he executed the document; and lastly, his knowledge of the nature and consequences of the act which he was performing. An expert may testify in such a case on the results of an examination actually made by himself, or he may, as an opinion witness, enlighten the court by interpreting the effect of the evidence of other persons, or by answers to hypothetic questions. We gather from your letter that the latter procedure is the one likely to be adopted in the case you cite.

There is one point which is not expressly raised by our correspondent, but which should be borne in mind: When there is evidence brought forward tending to show that the testator, though not of unsound mind to such a degree as to incapacitate him from making a will, was nevertheless not of entirely sound mind in the ordinary sense of the expression, this kind of evidence is often relied on and acted on by the court, not to invalidate the will on the ground of unsound mind, but to supplement any other evidence there may be in support of an attempt to upset the will on the ground of undue influence.

MOUTH WASH

To the Editor:—In the *Journal of Infectious Diseases,* 1906, **3**, 793, there was an article by Dr. A. B. Wadsworth, now director of the Division of Laboratories and Research of the New York State Department of Health, giving a detailed description of a mouth wash. Please publish it in Queries and Minor Notes. H. D. T.

Answer:—

	gm. or c.c.		
Sodium chlorid	2		ʒ ss.
Sodium bicarbonate		7	gr. x
Water (dist.)	62		℥ ii
Glycerin	31		℥ i
Alcohol	155		℥ v
Thymol			
Menthol āā		07	gr. i
Oil of wintergreen		18	gtt. iii
Oil of cinnamon		12	gtt. ii
Oil of eucalyptus		32	gtt. v
Tr. cudbear	6		ʒ iss.
Tr. rhatany	2		ʒ ss.

Dissolve salts in water before adding alcohol. For use add an equal part of water.

RUPTURE OF THE ACHILLES TENDON

To the Editor:—Please let me know what the prognosis is in a case of complete rupture of the Achilles tendon at about the junction of the tendon and the muscles. Please do not publish my name. B. A. R.

Answer.—The prognosis in complete rupture of the Achilles tendon is good, provided operation is performed and the tendon properly sutured. If the rupture is a subcutaneous one and there are no contraindications, the operation should be done at once. If the rupture is compound, the question of the time to operate will depend on the condition of the wound as to the presence or absence of infection. If the wound is not infected, immediate operation should be done. In the presence of severe infection, operation should be postponed until the infection has been cleared up.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Illinois: Chicago, Jan. 24-26. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

Iowa: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Kansas: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

New York: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.

Vermont: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

Mississippi October Report

Dr. J. D. Gilleylen, secretary of the Mississippi State Board of Health, reports the written examination, held at Jackson, Oct. 24-25, 1916. The total number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 27, of whom 19 passed and 8 failed. Eight candidates were licensed through reciprocity, including one osteopath. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	84.2
Medical College of Alabama	(1897)	75
Atlanta College of Phys. and Surgs	(1908)	82.7
Atlanta Medical College	(1916)	75
Chicago College of Medicine and Surgery	(1916)	75.2
University of Louisville	(1916)	81
Tulane University of Louisiana	(1908) 81.7; (1916)	82, 82.7
University of Louisiana	(1882)	84.2
University of Pennsylvania	(1913) 83; (1916)	81.6
University of Tennessee	(1916)	75, 75.2, 75.6, 80.5, 82.6, 83.5, 84.7
FAILED		
Coll. of Phys. and Surgs., Little Rock	(1910)	42.2
Loyola University	(1916)	71.1
Louisville Medical College	(1907)	67.5
Mississippi Medical College	(1911)	25.1
Mcharry Medical College	(1913) 55.3; (1916)	60.5, 70
University of Tennessee	(1916)	61.5

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons	(1913)	Georgia
National University of Arts and Sciences	(1916)	Missouri
College of Physicians and Surgeons, Memphis	(1908)	Tennessee
Memphis Hospital Medical College	(1902) (1903)	Texas
	(1913)	Tennessee
University of Tennessee	(1913)	Tennessee

Oklahoma October Report

Dr. Ralph V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, Oct. 10-11, 1916. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 19, of whom 16 passed and 3 failed, including 2 osteopaths. Sixteen candidates were licensed through reciprocity, including 1 osteopath. One candidate was licensed through reregistration. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Birmingham Medical College	(1913)	82
Columbian University	(1900)	80
Atlanta Medical College	(1915)	71
Chicago College of Medicine and Surgery	(1916)	80
College of Physicians and Surgeons, Chicago	(1912)	87
Northwestern University	(1912) 85; (1914)	81
Tulane University of Louisiana	(1914)	80
American Medical College	(1908)	77
University of Oklahoma	(1916)	81
University of Pennsylvania	(1907)	84
University of Pittsburgh	(1915)	83
Vanderbilt University	(1915)	76, 83
Baylor University	(1916)	75
Fort Worth School of Medicine	(1916)	79
FAILED		
College of Physicians and Surgeons, Kansas City, Kan.	(1901)	*

* No grade given.

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas	(1904)	Arkansas
Hering Medical College	(1910)	Georgia
Hospital College of Medicine	(1895) Arkansas; (1907)	Kentucky
University of Louisville	(1889) (1909)	Kentucky
Kansas City Hahnemann Medical College	(1904)	Kansas
St. Louis College of Physicians and Surgeons	(1895)	Arkansas

Washington University	(1913)	Missouri
University of Buffalo	(1901)	Texas
Eclectic Medical Institute	(1904)	Arkansas
University of Pennsylvania	(1908)	W. Virginia
Chattanooga Medical College	(1902)	Tennessee
Meharry Medical College	(1915)	Tennessee
Vanderbilt University	(1910)	Mississippi

Georgia October Report

Dr. C. T. Nolan, secretary of the State Board of Medical Examiners of Georgia, reports the written examination held at Atlanta, Oct. 10, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 12, of whom 7 passed and 5 failed. Eight candidates were licensed through reciprocity. The following colleges were represented.

PASSED

College	Year Grad.	Per Cent.
Atlanta Medical College	(1916)	86.6
University of Maryland	(1916)	94.4
Harvard University	(1915) 95.7; (1916)	89.5
Meharry Medical College	(1916)	83.1, 83.4
Vanderbilt University	(1916)	92.7
FAILED		
Loyola University	(1916)	67.9
Meharry Medical College	(1908) 75.9; (1915) 71; (1916)	76.4, 77.9

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Georgetown University	(1914)	Maine
Tulane University of Louisiana	(1916)	Louisiana
Johns Hopkins University	(1910)	Virginia
University of Maryland	(1911)	Maryland
Leonard Medical School	(1911)	N. Carolina
Jefferson Medical College of Philadelphia	(1916)	N. Carolina
Meharry Medical College	(1916)	Tennessee
Medical College of Virginia	(1909)	N. Carolina

New Jersey October Report

Dr. Alexander MacAlister, secretary of the New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, Oct. 17-18, 1916. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 17, of whom 12 passed and 5 failed. Thirty-four candidates were licensed through indorsement. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1914)	80
Howard University	(1915)	75
Johns Hopkins University	(1915)	79.7
Harvard University	(1916)	83
Albany Medical College	(1914)	75
New York Homeo. Med. Coll. and Flower Hosp.	(1915)	75.1 81
Jefferson Med. College of Philadelphia	(1902) 75; (1916)	84.8
Medico-Chirurgical College of Philadelphia	(1916)	78
University of Vermont	(1915)	82.8
University of Virginia	(1915)	79.4
FAILED		
Howard University	(1914)	71.7
University Medical College of Kansas City	(1892)	60.4
University of the City of New York	(1880)	64.6
University of Palermo	(1905)	53.6
University of St. Joseph, Beirut	(1894)	72.1

LICENSED THROUGH INDORSEMENT FROM JULY 8 TO NOV. 8, 1916

College	Year Grad.	Through Indorsement
University of Louisville	(1912)	Kentucky
Baltimore University	(1901)	Penna.
University of Maryland	(1916)	Maine
Tufts College	(1912)	Mass.
Dartmouth Medical School	(1908)	Maine
Albany Medical College	(1915)	New York
Bellevue Hospital Medical College	(1898)	New York
Columbia University, Coll. of Phys. and Surgs.	(1896) (1906) (1913) (1915)	New York
Cornell University	(1915)	Maine
Eclectic Medical College of City of New York	(1910)	New York
Long Island College Hospital	(1909) (1913) (1915)	New York
New York Homeo. Med. Coll. and Flower Hosp.	(1909) (1913) (1914) (1916)	New York
University and Bellevue Hosp. Med. Coll.	(1913) (1914) (1915, 3)	New York
University of Buffalo	(1914)	New York
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1914)	Delaware
Medico-Chirurgical Coll. of Philadelphia	(1915)	New York
University of Pennsylvania	(1902)	Penna.
University of Vermont	(1902) (1906) (1914)	Vermont
University of Virginia	(1915)	Virginia
University of Naples	(1892)	Alabama

Social Medicine, Medical Economics and Miscellany

SPIROCHAETA PALLIDA OR TREPONEMA PALLIDUM?

In Reply to Dr. Stiles

WILLIAM ALLEN PUSEY, A.M., M.D.
CHICAGO

In reply to Dr. Stiles' argument, I would make two points:

First, the genus *Treponema,* and specifically the organism of syphilis, are not so sharply distinguished from the *Spirochaeta* that the genus *Treponema* can be held to be finally established without any reasonable doubt as to the validity of the genus; and, this being the case, the argument for the name *Treponema pallidum* is based on uncertain ground when it rests on reasons of classification alone.

Second, an overwhelming preponderance of authoritative usage has fixed the name *Spirochaeta pallida* in scientific literature as the name for the organism of syphilis. Dr. Stiles assumes that the distinctions between the *Spirochaetae* and the *Treponemata* are clear and definite, and that the establishment of the genus *Treponema* as distinguished from the *Spirochaeta* is final. The whole classification argument is based on this assumption.

I do not presume to offer my opinion on a question of zoological nomenclature against that of Dr. Stiles, but I may without presumption point out that there is a difference of opinion among microbiologists as to the classification of the organism of syphilis. Its place is not definitely and with unanimity settled outside the genus *Spirochaeta.* Dr. Stiles himself very clearly points out that there are, as regards this point, two groups among zoologists, the "lumpers" and the "splitters." The very fact of the existence of the two groups is the best evidence of the differences of opinion as to this matter of classification.

It is not difficult for me, without being conversant with the literature of protozoology, to find eminent authorities who differ from the International Commission on Zoological Nomenclature about the name of the organism of syphilis. One of these is no less a person than Metchnikoff, Chef de Service de Microbiologie de l'Institut Pasteur, not a physician, who, in his exhaustive article on the microbiology of syphilis in the "British System of Syphilis," says, "I consider that the time is still premature to make any classification of spirillar micro-organisms."

Again, Dr. Novy, professor of bacteriology in the University of Michigan, who has perhaps done more work on the spirochetes and allied forms than any other American expert, indicates in a communication to me, which I quoted in my previous article, that in his opinion the separation of the organism of syphilis from the spirochetes is not established beyond question when he says, "The term *Spirochaeta* has come into such general use that it hardly seems worth while to make a change unless the difference is absolutely conclusive."

Further, Dr. Calkins, professor of protozoology in Columbia University, not a physician, in commenting in his "Protozoology" on the uncertainties of classification and the difficulties in determining the characteristics of these organisms, has this to say:

> *Spirochaeta* thus characterized as an organism with flexible, spirally twisted body with a laterally placed undulating membrane, would seem to be definitely distinguished . . .; but, unfortunately, the problem is not so simple, for we have to do with exquisitely minute things which offer extreme difficulties in technical treatment. . . . Statements as to structure and activities of certain species, even though made by equally eminent authorities, are frequently directly contradictory . . .
>
> Observations are too incomplete and too often contradictory to justify a safe grouping at the present time, and in making groups of spirochetes a given species will be placed in one division or another, according to the discretion of the present author in following one or another authority. With this preliminary caution, the following table of the different kinds of spirochetes, classified according to the presence or absence of so-called flagella and undulating membrane, is based.

He then classifies these organisms as follows:

A. Type genus *Spirocheta.* With undulating membrane; without flagella.

B. Genus *Treponema.* Without undulating membrane; with flagella.

C. Undetermined forms referred to genera *Spirocheta* and *Spirillum.*

A great difference of opinion as to the classification of these organisms is seen when one compares the species in genus *Treponema* as given by Calkins in his "Protozoology" with the species in the same genus as given by Fantham in "The Animal Parasites of Man" by Fantham, Stephens and Theobald. Calkins includes under the genus *Treponema: Tr. pallidum, Tr. pertenue, Tr. anserinum, Tr. gallinarum, Tr. theileri, Tr. muris.* Fantham gives only *Tr. pallidum* and *Tr. pertenue,* but indicates that there are other members of the genus. The interesting fact, comparing the two classifications, is that three species of the six which Calkins classifies as *Treponemata,* Fantham classifies and describes as *Spirochaetae.* The *Treponema gallinarum* of Calkins is the *Spirochaeta gallinarum* of Fantham. The *Treponema anserinum* of Calkins is the *Spirochaeta anserinum* of Fantham. The *Treponema muris* of Calkins is the *Spirochaeta muris* of Fantham.

Bosanquet, in his work "Spirochetes," has the following to say concerning classification:

> It has already been pointed out that the position of the spirochaetes in nature—whether they are to be regarded as protozoa or bacteria—is doubtful. Their relations as a group are almost equally undecided . . .
>
> Certain peculiarities observed in the *Sp. pallida* led . . . Schaudinn . . . to put it in a distinct genus called . . . *Treponema.* The characteristics of this genus were: the round shape of the body in section, as opposed to the flattened shape of the spirochaetes; the fixity of the curls exhibited by the organism; the absence of an undulating membrane, and the presence of terminal filaments . . .
>
> Examination of the qualities on which this distinction is founded does not tend to strengthen a belief in its validity. The round shape of the organism in section may be admitted, but the ribbon-like shape of the other small spirochaetes is not very clearly established. The existence of an undulating membrane is doubtful even in the larger spirochaetes, and still more problematical in the smaller group. Terminal filaments may be found in other species besides *Sp. pallida,* and finally the even curls presented by this spirochaete may at times be absent, as is admitted even by Schaudinn himself. Norris, Pappenheimer and Flournoy point out that the *Sp. obermeieri* exhibits all the characteristics assigned to a treponema.

The uncertainty of the taxonomic place of these organisms is quickly seen whenever a comparison is made of the views of different authors concerning them. Schaudinn, as already shown, made as a distinguishing characteristic, which separated the spirochetes from the treponemes, the presence of an undulating membrane in the spirochete, and the absence of an undulating membrane in the treponeme. Yet Fantham says, in reference to this point; "In some forms there is a membrane or crista present, which in the past was compared with the undulating membrane of a trypanosome, but the membrane of a spirochaete does not undulate." There is even uncertainty about the very type species of the genus *Spirochaeta,* the *Spirochaeta plicatilis* of Ehrenberg, discovered in 1838; for Zuelzer, as quoted by Fantham, says that the *Spirochaeta plicatilis* does not possess a membrane. Again, Blanchard, according to Fantham, finds a slight membrane in the *Treponema pertenue.* Here, then, we have this situation; Schaudinn establishes an undulating membrane as a critical characteristic of the *Spirochaeta.* Fantham says that the membrane does not undulate. According to Zuelzer's observation, the very type species of the *Spirochaeta* does not possess a membrane; and Blanchard finds a membrane in one of the species of the genus *Treponema* which has been separated from the genus *Spirochaeta* partly on the ground that its members do not possess a membrane.

I think these few quotations will indicate the difficulties and the lack of unanimity in the taxonomy of this subject, and the weakness that must attach to any argument which would insist on naming the organism of syphilis on taxonomic grounds alone. But even if there were not this utter uncertainty among authors now as to the classification of these organisms, experience indicates that increase in knowledge might entirely upset the classification in a short time. As knowledge increases, "splitters" are quite as likely to be forced to "lump" as "lumpers" are to "split." There is no inherent scientific virtue pertaining to either attitude. It is not hard to cite experiences to illustrate this fact in the domain of microbiology. Twenty-five years ago so good an authority as Prof. William H. Welch gave us the *Staphyloccus epidermidis-albus* as a species of staphylococcus. It has long since been lumped with the *staphylococcus albus.* A good recent illustration of the uncertainty of distinctions between micro-organisms is the work of E. C. Rosenow, who has shown by his researches that many cocci thought to be distinct and pathogenic varieties are probably one species of streptococcus presenting varying characteristics under different conditions. There is even some uncertainty about the morphology of the organism of syphilis. According to Bosanquet, Bertarelli and Volpino, Schereschewsky, Sobernheim and Tamasoli describe intermediate or irregular forms of *Spirochaeta pallida.* Bosanquet says, "*Spirochaeta* pallida is noted for the regularity of its curls and is indeed identified by this means; yet Schaudinn observed that almost straight forms might occur; . . ." He adds, "These observations are sufficient to indicate that considerable doubt must be felt as to the constancy of form among the small spirochaetes; . . ."

In the face of such differences as shown above, and the confessedly meager and uncertain knowledge of the facts on which the classification of the spirochetes and allied organisms must be made, I believe the outsider may plead, even against the testimony of so authoritative a body as the International Commission on Zoological Nomenclature, that the genus *Treponema* is not so firmly fixed that, on the grounds of classification alone, the name Treponema can be insisted on for any given species in the genus regardless of other considerations.

There are one or two collateral points in Dr. Stiles' article concerning which I should like to say a word. His invoking allegiance to the findings of the Commission on Nomenclature as a matter of ethics seems to me not apposite, and, if I understand the application which he makes of it, it must, I believe, have been due to oversight. Ethics, scientific ethics included, concern matters of right and wrong; and I am sure Dr. Stiles does not believe that any scientific commission, however important, is so august that failure to accept its findings is wrong. That would be medieval worship of authority.

He also refers to the confusion which is liable to occur from the use of *Spirochaeta* without qualification instead of the specific name, *Spirochaeta pallida.* I believe there is little danger of confusion as to the meaning in an article on syphilis if the unqualified word spirochete should be used after *Spirochaeta pallida* had first been used. And I certainly see no reason why there should be more confusion from the use of *Spirochaeta* alone than that of *Treponema* alone. There are already several treponemes, and the unqualified word *Treponema* is certainly not less likely to lead to confusion than the more familiar word *Spirochaeta* without qualification.

A word as to Dr. Stiles' remarks regarding the backwardness of physicians and their failure to appreciate the difficulties of this subject as pure zoologists do: So far as the specific instance which we are now considering is concerned, I do not think that it can be maintained that the pure zoologists stand as a unanimous group, while the physician zoologists are chiefly responsible for the other group. In looking up the position of authorities on this subject I took the first that came to hand. They were Novy, Metchnikoff, Calkins, Fantham, and Bosanquet. Two of these five are not physicians (Calkins and Metchnikoff), and the other three, while physicians, are specialists in this field, who have done original work of the highest class and I have no doubt could claim equal appreciation with the purest systematists of all of the difficulties of classification and nomenclature. The physician zoologists are not responsible for the confusion; pure zoologists are equally uncertain. The confusion lies in the uncertainty of the criteria on which the classifications rest.

But regardless of classification, my argument in favor of *Spirochaeta pallida* is based on the fact that *Spirochaeta pallida* is established by authoratative and greatly preponderating usage. The argument would be just as strong for *Treponema pallidum* if usage were in its favor. Dr. Stiles indicates that there is some doubt as to what is meant by best usage as regards a word or linguistic form, and says, "Best usage from the point of view of the splitters is that usage which comes closest to expressing a natural classification of the organism"—in other words, comes closest to expressing their views. I venture to insist that such is not the meaning of the words "best usage" or "good usage" as they are used in this connection, but, on the contrary, that they refer solely to precedent—the use by recognized authorities of any particular word in question. Good use is a technical phrase which, as such, will be found in books dealing with linguistic forms. It is an accepted principle that the criterion of the standing of words is such usage—not what you, or I, or any present body of men think should be the word to describe a thing, but what the word to describe it is, as shown by good precedent.

As Barrett Wendell says in his work on English composition:

> In English, as in every other language, the final test of what words we may use is inevitably the usage of those who speak and write it; the test of what words we should use is the usage of those who speak and write it best, in other words, good use. . . .
>
> Common consent, general practice, is what makes the . . . alphabet signify anything. In this fact lies the . . . hopelessness of the efforts now and then made by . . . dogmatists, not possessed of despotic authority, to reform spelling. [With equal truth we might substitute nomenclature here for spelling.—W. A. P.] . . . The question in a given instance is not what ought to be the case, but what is. And to the state of things which enables us to decide in spelling, as in other fashions, what the case is at any given moment, we give, for convenience sake, the name "Good Use." . . .
>
> Dictionaries and grammars [or commissions on nomenclature.—W. A. P.] to be sure, may codify what exists at any given moment. Regarded as codes, they are invaluable; but at best they are codes of common law, not legislative enactments. The only sanction behind them is that of practice, of usage.

Thus, usage, in the technical sense of good precedent, establishes proper linguistic forms, and I would point out again that usage, both in quantity and quality, is overwhelmingly in favor of *Spirochaeta pallida*. That point was brought out in my previous article. Let me repeat here a few of the names of individuals to illustrate the quality of usage in favor of *Spirochaeta pallida*.

Metchnikoff, who discovered the inoculability of syphilis in apes, and by this discovery made possible the present revolution in our knowledge of syphilis, used *Spirochaeta pallida*. Hoffmann, who was the codiscoverer of *Spirochaeta pallida* with Schaudinn, and whose name was never separated from Schaudinn's in giving credit for the discovery until after Schaudinn's death, uses *Spirochaeta pallida*. Neisser, who with Wassermann and Bruck developed the serum compliment reaction for syphilis, and until his recent death was our greatest authority on clinical and experimental syphilis, used *Spirochaeta pallida*. Uhlenhuth, whose researches in the chemotherapy of syphilis opened the way for Ehrlich, and whose work, "Atlas der Experimental Kaninchen Syphilis," written in collaboration with Mulzer, is the authoritative book on experimental syphilis, uses *Spirochaeta pallida*. Ehrlich used *Spirochaeta pallida*. Noguchi, the only other man whose work in syphilis entitles him to mention in the class with these men, uses *Spirochaeta pallida* as a rule, but *Treponema pallidum* occasionally.

These men, of course, are not a miscellaneous collection. They, with Schaudinn, who died within a year after the discovery of the *Spirochaeta pallida*, are the men whose discoveries have made modern syphilis; and they and their followers have written *Spirochaeta pallida* into the literature of syphilis in such a way that it cannot be erased. In the attempt to substitute *Treponema pallidum*, the most that can be gained by the advocates of it is the use of both names for the organism. Splitters and purists may use *Treponema pallidum*. It is not beyond the possibilities that in time the taxonomic grounds for its use may be swept from under them, and that they may be forced back to the use of *Spirochaeta pallida*. But whatever they may do, the universal use of *Spirochaeta pallida* in German, its overwhelmingly preponderant use in English, and its preponderant use in French mean that *Spirochaeta pallida* will continue to be the generally used name for the organism of syphilis. For the sake of unanimity and clearness, the use of two names for the organism should be avoided if possible. Certainly this should not be brought about simply in the interest of a system of classification, which, as respects the organism in question here, is based on characteristics whose finality is not certain.

Medicolegal

Liability of Father for Services for Daughter Away from Home

(Wallace vs. Cox et al. (Tenn.), 188 S. W. R. 611)

The Supreme Court of Tennessee affirms a judgment holding that the plaintiff was entitled to recover from defendant Cox as on an implied contract for a surgical operation and attendance on a 17 year old daughter of said defendant. This daughter and an older one were in a nearby city earning their own living, when this one became ill and the plaintiff was called in by the matron of the Y. W. C. A. building where they were boarding. After prescribing for the daughter for a time, the plaintiff decided that an operation was necessary to remove an ovarian tumor. He had stated that the operation would be a slight one, and, when the elder daughter telephoned to their father that an operation was advised, and he inquired whether an incision would have to be made, she said that it would not, that the operation would be a slight one, and he replied: "Well, then, if it must be done, it must be done." The elder daughter testified that the plaintiff did not ask her to telephone to her father, and that she did not inform him that she had done so for several days after the operation. The plaintiff testified that in performing the services, he looked to the father for compensation. The father testified that he failed to hear the name of the surgeon over the telephone; that had he been informed that an incision was required, he would have gone to the city and had the operation performed by another surgeon, with whom he was personally acquainted; and that he was not asked to and did not promise to pay for the operation. The operation was successful. Bills were sent to the father, who paid no attention to them, and suit was brought. The circuit judge, sitting without the intervention of a jury, held that the father was not liable. The court of civil appeals divided on the question, the majority holding that the plaintiff was entitled to recover as on an implied contract, which latter is the judgment here affirmed. The supreme court says that the liability of a father for necessary medical attention given a child who has not remained as a member of his immediate family is a question on which the authorities are at least in apparent conflict. Cases fairly supporting either of the opposing rulings of the lower courts may be found, but a number of those holding with the judgment of the circuit court take color from English cases which proceed on the principle that a father is under only a moral obligation to support his child. The obligation of the parent to support his child at common law was not well defined, but in Tennessee it has been held, more nearly in accord with the natural sense of justice, that the obligation is not merely moral, but legal, and enforceable as a legal common-law duty. It therefore follows that if the parent neglect that duty, any other person who supplies such necessary attention to the child is deemed, ordinarily, to have conferred a benefit on the delinquent parent, for which the law raises an implied promise to pay on the part of the parent. In this case the father did not successfully prove any emancipation of the daughter conferring on her the right to her earnings and terminating his duty to support her. Her effort to earn her own support was praiseworthy and tended to lift a burden that rested on the father, and the courts should be slow to permit the fact to become a shield for his protection, at least where a full emancipation was not shown. The restoration of the daughter in consequence of the surgical operation was itself beneficial to the father, since it gave the daughter ability to relieve him further, unless it be assumed to his and the law's discredit that he no longer owed the duty to receive and provide for her as an invalid in his home. The modern tendency among women and girls to earn a living frequently gives occasion for absence from home, and that fact should not readily be held to deprive them of a claim to support in time of need. Slight circumstances, if necessary, will be allowed to control the decision.

Breach of Contract for Removal of Gallstones

(Schuster vs. Sutherland (Wash.), 158 Pac. R. 730)

The Supreme Court of Washington affirms a judgment in favor of the plaintiff, who sued the defendant for alleged breach of contract for the removal of gallstones, etc. The court says that it was alleged, in substance, in the complaint, that, December 4, the plaintiff and the defendant entered into a verbal contract whereby the defendant, a physician and surgeon, agreed to perform a surgical operation on the plaintiff, and contracted, warranted and promised to remove all gallstones then in the body of the plaintiff, to cure him of the ailments from which he was then suffering, and to remove from his abdomen all causes of disease, of whatsoever kind or nature, possible to be removed by means of such a surgical operation; that the operation was performed the next day; that the defendant failed to remove all or any gallstones from the plaintiff's body by the operation, though a certain gallstone was present; and that the plaintiff was compelled to employ another surgeon, who performed an operation, January 30, and removed a gallstone which had not been found by the defendant. Another statement by the court is that, February 7, the second surgeon found and removed a calculus from the duct known as the ampulla of Vater, and after this operation the plaintiff improved immediately, and progressed to a final recovery without a recurrence of his previous symptoms. Now, as the court reads the record, there was evidence tending to show that the contract was to remove all gallstones in the plaintiff's body in whatsoever place situated, and all causes of disease, be the same what they might, and evidence to the effect that a gallstone of the size of the one removed in the second operation could not have formed in the body within the time elapsing between the two operations. If this were the contract, and the evidence concerning the time required for the formation of the stone be believed, clearly the question was for the jury, conceding that the defendant made an exploration of the gallbladder and the ducts leading therefrom. If, however, the court could say as matter of law that rational beings would not enter into the contract contended for by the plaintiff, and that in law the contract was one to explore the gallducts and the ducts leading therefrom and remove such as would be found, still the court thinks the question whether it was actually performed was for the jury. The court thinks there was much evidence, of a circumstantial nature, to be sure, which tended to show that the defendant did not perform the contract even as he conceded it to be. His own testimony gave rise to a doubt whether he got as far as the ampulla of Vater in his examination of the gallducts, although he did not question that this was within the field of exploration under the contract as stated by himself. The evidence was contradictory, it was true, and its weight did not seem, in every instance, to be with the conclusions of the jury; but, the facts being for them, we must abide their verdict. The defendant did not set forth in his pleadings any different contract from that alleged by the plaintiff in his complaint, but contended himself with a general denial. Under this general denial it was competent for him to show, in order to defeat a recovery, not only that he did not make the contract contended for by the plaintiff, but what the contract entered into between them actually was. But his evidence did not necessary change the issues. It was still incumbent on the plaintiff to recover on the contract alleged, and the court did its full duty when it stated that issue to the jury, and instructed it that there could be no recovery unless the contract was proved as alleged.

Society Proceedings

NEW YORK ACADEMY OF MEDICINE

Meeting held Dec. 7, 1916

The President, Dr. Walter B. James, in the Chair

PNEUMONIA

Nature of the Disease and Serum Treatment

Dr. Rufus Cole: Over 500 cases of pneumonia have been studied for the purpose of determining the relative frequency of the different types of infection. From 60 to 65 per cent. of all cases were due to pneumococci of Types I and II, from 10 to 15 per cent. to pneumococci of Type III, while the remaining 25 per cent. are due to pneumococci of Type IV. Studies have also been made to determine the frequency of the occurrence of the different types in the mouths of normal persons. Five hundred and twenty-seven persons have been examined, and pneumococci were present in the mouths of 254. Where pneumococci were present they were of the atypical group, or Type IV, variety in about 25 per cent. of the cases. In 17 per cent. the pneumococci were of Type III, while in a very small number of cases, all together less than 12 per cent., they were of the so-called fixed types, I and II. Moreover, in practically all the instances in which organisms of these fixed types were found in normal mouths, it was possible to trace a close association between the person harboring them and a case of pneumonia of the same type. These pneumococci of Types I and II tend to disappear from the mouth after a short time, just as they do after a convalescence from pneumonia. The interpretation of these facts seems to be that pneumococci of Types I and II are to be considered as specific infectious diseases, just as typhoid and paratyphoid fever. In pneumonia due to organisms of Type IV, infection is probably autogenous. The interpretation of the conditions as regards pneumococci of Type III is difficult. These are organisms of high virulence, yet are quite widely distributed in healthy mouths and so far as we have been able to learn there have been no differences, immunologic or otherwise, between the organisms of this type found in healthy mouths and those found in disease. It is evident that isolation of cases due to pneumococci of Types I and II should be observed more strictly than has previously been done. In the present stage of our knowledge it is not possible to have an opinion as to whether cases due to pneumonia of Type III would be of any value or not. So far as infection with Type IV is concerned, isolation would probably have no effect.

Specific treatment may be carried out in one of two ways. Use may be made of the so-called immunity reactions, or drugs having specific harmful action on the invading bacteria may be used. The use of the immunity reaction to hasten recovery may be made in one of two ways. First, we can attempt to stimulate the infected organism itself to produce the immunity reaction more rapidly, and to a greater extent than would naturally be the case under the influence of the infection alone. The only method of doing this at present would be by the administration of vaccine; but my studies and experience convince me that little can be hoped from this method in an acute disease like pneumonia. The second method by which immune reactions might be made helpful is by the administration of the serum of animals rendered immune to the disease, and this is the method which we have employed. We now have a method for determining in each case the type of infecting organism before serum treatment is commenced. Moreover, from the standpoint of prognosis alone, such a determination of type is of great importance. Immune horse serums have now been prepared against the three important types, I, II and III. The serum against pneumococci of Type I is of high power; that of Type II is considerably less powerful, while that of Type III has very little effect, either in the test tube or in experimental animals. So far no attempt has been made to treat patients with Type III infection with serum. A limited trial has been made with serum of Type II in corresponding cases, but the results have not been promising. The use of immune serum against infections with Type I organisms has given very gratifying results, and our experience indicates that with proper use this serum has great therapeutic value. In the hospital of the Rockefeller Institute, seventy-eight cases have now been treated, with six deaths, a mortality of 8 per cent. When this is contrasted with the mortality of 25 per cent. which is observed in our cases due to Type I infection, before the use of the serum was begun, and the mortality of 25 and 30 per cent. in other hospitals in which the determination of the type has been made, it is evident, so far as may be judged from this number of cases, that the serum is of considerable value. These results are more striking in view of the fact that, of the six patients who died, only one could have been considered as efficiently treated in accordance with our present knowledge. In order to obtain the best results, certain rules must be observed. The serum must be given in large amounts. It must be given intravenously. Its administration must be commenced as early in the course of the disease as possible, and its use must be continued until the infection has been definitely overcome. It is a mistake to give one dose of the serum, then wait until the disease has gained great headway, and then make another abortive attempt. Before administering the serum, a small dose of normal horse serum should be given subcutaneously in order to desensitize the patient in case he may be sensitive to horse serum. Among the treated patients the incidence of empyema has been greater than among the untreated patients. This probably means that in a certain number of cases, otherwise fatal, the infection, instead of becoming general, is localized. and empyema results. Clinical experience suggests that the serum has some antitoxic action; but methods for demonstrating this are at present unknown. The fact that this serum is effective makes it theoretically possible that refinements in technic and improvements in the method of producing the serum may also make the immune serum effective in infection due to the other fixed types.

Use of Digitalis in Pneumonia

Dr. Alfred E. Cohn: One can tell that digitalis is acting before the onset of symptoms disturbing to the patient. The evidence of this consists primarily in the change of the T wave of the electrocardiogram. When this change take place, the P-R interval begins to lengthen, but usually the T wave change comes first. We have applied these criteria to a study of the action of digitalis in pneumonia. We first endevored to show whether the drug acted and then to show whether it acted beneficially. We found that it required 1 gm. of digitalis at 0.4 gm. a day to accelerate the T wave and also the P-R time. What we had then to show was that in pneumonia with fever, with enough digitalis, changes did occur, and that in pneumonia with fever, with no digitalis, no changes occurred. This we have now been able to show. When digitalis is given, the T wave is lengthened, and the lengthening may go on to the production of heart block. Without digitalis we observed no instance of heart block in about 500 cases. Those cases in which it had been reported that heart block took place bore out this contention, for with a single exception all had a sufficiency of digitalis. Furthermore, the evidence shows that heart block does not occur until a sufficiency of digitalis has been given. When it occurs, it does no ultimate harm. It should usually be possible, however, to avoid it. We found auricular fibrillation in twelve cases out of 123, or about 9.7 per cent. When it occurred, the pulse rate rose immediately, high enough to alter the prospect of recovery. It was also shown that in nonfebrile cases of pneumonia with auricular fibrillation digitalis caused a fall in the V_s rate. This could not be expected in every case, nor could the reason for its failure to act be given easily. When fever was present it did not interfere with the action of the digitalis. Auricular fibrillation might develop spontaneously in pneumonia. Digitalis is not responsible. Auricular fibrillation might disappear even after digitalis has been taken. Auricular fibrillation, if controlled, is not fatal. Even when the disease is fatal, patients recover from the irregularity before death. Digitalis does not do harm and may be life-saving. As a result of these experiences, the hospital has for the time being adopted the following rules in the treatment of pneumonia: 1. Digitalis is given to all patients as a routine. 2. If patients are treated early they are given 1 gm. at the rate of 0.5 gm. daily. 3. If patients are not seen until later, they are given 1 gm. on the first day. 4. If an indication arises later, digitalis is given again at the rate of 0.5 gm. a day until the indication is satisfied, but it is not continued beyond 2 gm. The study shows that digitalis acts, and that, under special circumstances, which are apparently not infrequent, its action is beneficial.

Treatment of Pneumonia by Ethylhydrocuprein

Dr. Alan M. Chesney: These studies are based on twenty-eight cases, and were carried out in collaboration with Dr. Henry E. Moore. The results show that a bactericidal action for pneumococci can be secured in the blood serum of patients if they are given an amount of the drug represented by 0.024 gm. per kilogram of body weight per twenty-four hours. This amount was sufficient in every case to produce the result sought for within twenty-four hours, and to maintain it constantly during treatment. Furthermore, it was demonstrated that the time of appearance of bactericidal action might be shortened, provided the first dose was relatively large and was followed at intervals of not more than three hours by smaller amounts. Thus for a person of average size the amount administered in twenty-four hours must be 1.5 gm., and during the first twenty-four hours the best method of regulation would be to give an initial dose of 0.45 gm. and follow it at intervals of three hours by individual doses of 0.15 gm. During the second period of twenty-four hours the drug could be given in doses of 0.15 gm. The hydrochlorid was much more readily absorbed than the base, and hence is to be preferred. The oral route of administration has been found to be more satisfactory than the intramuscular route, since, for some reason, the bactericidal action appears in the patient's serum much more quickly when the drug is given by mouth than when given intramuscularly. In three cases the pericardial fluid was found to equal the blood in its pneumococcidal action.

DISCUSSION ON PNEUMONIA

Dr. David Bovaird, Jr.: The three main objects to be kept in view in treating this disease are: First, we must make an effort to control the extent of the invasion of the lungs. This has been attempted by the use of external applications of various kinds, by medicines and by antiseptics, the bactericidal action of which it was hoped would limit the action of the bacteria in the lungs and would overcome the invading organisms. Second, we have sought in various ways to control the fever and other constitutional effects of the toxemia by hydrotherapy, by drugs, and by fresh air. Third, efforts are made toward the control of the circulation. Of all our efforts made in this direction, the only thing that has survived is the use of digitalis. In order to establish a foundation for comparison, I have taken the records of over 200 cases of lobar pneumonia treated in the Presbyterian Hospital just previous to the introduction of the serum treatment. One hundred of these cases in adults showed a mortality of 30 per cent. Then we began grouping the cases along the lines which Dr. Cole has described, and we found that the mortality in this series was 8 per cent., practically the same as in the 100 cases immediately preceding. Within the last eighteen months we have treated fifteen cases of Group I pneumococcus pneumonia with the appropriate serum and have had a mortality of two, one patient being a man, aged 77, who had a complicating empyema, and the other, a patient in the surgical side of the hospital. There occurred during the same period twenty-five cases in which the serum treatment was not given, and these showed a mortality of 28 per cent., which would have been higher had it not been for the fact that some of these patients were children. It seems that we may expect a mortality of 30 per cent. in untreated cases; in the cases in which serum was given, the mortality was 14 per cent. We have had three cases during the past three months that impressed us especially with the fact that the serum has some definite specific action. The first patient was a man, aged 28, with a right upper lobe pneumonia, whose temperature rose to 108.4 F. He was given serum on the fifth day, two injections, after which his temperature fell and remained down, and he made an excellent recovery. The second patient was a woman who came in on the second day of her pneumonia and received serum on the third day. Her temperature fell almost immediately and remained down, though undoubtedly she had a frank lobar pneumonia. The third patient was an orderly in the hospital. He received serum within thirty-six hours of the onset of the disease. He received two injections on the second day; his temperature fell almost immediately. In forty-eight hours it reached normal and he made a rapid recovery. Such experiences have been quite ample to convince every one on the staff that in pneumonia due to pneumonocci of Group I we have in the serum a remedy of very decided value.

Dr. L. Emmett Holt: In times past the diarrheal diseases have taken first place in the mortality of young children. In recent times, especially during the last five years in New York, there has been a steady fall in the curve from diarrheal diseases, while the curve of mortality from respiratory diseases, especially pneumonia, has steadily risen. Thus far this year, for the first time the deaths from respiratory diseases greatly exceed those from diarrheal diseases. To November 1 of this year there have occurred 2,246 deaths from diarrhea in infants under 1 year of age, and 2,523 deaths from respiratory diseases. Under 2 years the mortality from diarrheal diseases was 2,642, while from respiratory diseases it was 3,820. In addition we must take into consideration that we still have November and December to account for, months in which deaths from diarrhea are infrequent, while respiratory deaths are constantly on the increase. The indications are that the mortality of infants under 2 years of age from respiratory diseases for the year will be at least 1,300 greater than from diarrheal diseases. The deaths from all contagious diseases to November 1, including those from poliomyelitis, were but 1,012, a little more than one-fourth those from respiratory diseases. Pneumonia has thus clearly become the most important disease of young children. This disease at this age is not often the clear-cut lobar pneumonia, due to one of the four groups of pneumococci, which one meets in the adult; it is usually a mixed infection. There are found other organisms which add much to the severity of the disease and modify its clinical course, making it less amenable to treatment than the same disease in the adult. Observations made at the Babies' Hospital have shown that about 75 per cent. of the pneumococcus infections in children under 3 years of age belong to Group IV. It therefore seems that serum treatment as yet offers little prospect of help in pneumonia in the early years of life, first, because one so frequently has to deal with a mixed infection, and, second, because the pneumococci most often belong to Type IV. Against this, as Dr. Cole has shown, it is obviously impossible to provide a specific serum. Children frequently show pneumococci of Type IV probably because of the wide prevalence of the organism and the extreme susceptibility of the patients. This brings up the question of the prevention of respiratory disease in young children. It is known that many adults harbor pneumococci of Type IV, but do not develop the disease.. Many times a child may at first show only the respiratory symptoms of a common cold, and yet pneumonia will supervene and may prove fatal, not because of the virulence of the infecting organism, but because of the susceptibility of the individual.

Dr. Robert H. Halsey: Cases of pneumonia may be divided into two classes: first, those in which the heart shows no difficulty as the disease progresses, and, second, cases in which changes in the heart occur. In the great majority of the cases of the first class it is unnecessary to use digitalis. I am convinced of this because I have worked with the electrocardiograph and know its value in recording and measuring the changes. There is, however, a time when digitalis is necessary. But if digitalis is used in every case, heart block will develop in some of the cases, as has been demonstrated. One does not seem to be justified in such cases in adding an additional burden, of dissociation of auricle and ventricle, to a heart already under stress. The cases with fibrillating auricle may be divided into those that have the fibrillation before the disease starts and those in which the fibrillation starts after the disease has begun. In the latter class of cases, digitalis controls the condition nicely, and should be used until control is obtained. In the former class, which has the fibrillation before the disease starts and will have it afterward, digitalis is indicated and should be employed, if required, to retain control while in health.

Dr. Arthur F. Chace: A word of warning should be sounded against the use of stock polyvalent vaccines. The polyvalent vaccine offers a great temptation to the general practitioner, and emphasis should be laid on the fact that it is impossible to provide a stock vaccine that is of dependable therapeutic value. It is possible to accomplish much if we avail ourselves of the combined action of serum and ethylhydrocuprein.

Dr. Rufus Cole: I object to the use of the polyvalent serum because it is an additional burden on the patient without the production of any good result.

WESTERN SURGICAL ASSOCIATION

Twenty-Sixth Annual Meeting, held at St. Paul, Dec. 15-16, 1916

The President, Dr. L. W. Littig, Davenport, Iowa,
in the Chair

New Instrument for the Application of the Sewing Machine Stitch in Gastric and Intestinal Surgery

Dr. E. P. Quain, Bismarck, N. D.: The results in forty cases have been very satisfactory. Leakage is effectively prevented by this double, interlocking suture. The time previously consumed for making a gastro-enterostomy has been reduced by nearly one half. To prove the hemostatic efficacy of the method in gastro-enterostomy, a gastric lavage was given to the patients with duodenal ulcer immediately after the operation, and repeated about two hours later. With the exception of a few shreds of clots in two or three instances, such as might easily have escaped during the operation performed without clamps, there was no macroscopic evidence of oozing. Occasional emesis after the operation gave the same negative evidence. Previous observations with other methods of suturing had rarely, if ever, shown such complete absence of bleeding in the postoperative vomitus.

Serous Meningitis Following Traumatism

Dr. Charles H. Lemon, Milwaukee, Wis.: A man fell 40 feet from a coal dock and was picked up unconscious with a compound fracture of the right wrist. He remained unconscious only a few minutes, was removed to a hospital, was operated on for the fracture under an anesthetic, and for five days was apparently normal. On the sixth day he began to have headache, and this was followed by a progressive right hemiplegia, which was complete on the ninth day. Believing that he had probably fractured his skull on the left side and that a hemorrhage was taking place from the posterior branch of the middle meningeal artery, I advised an operation to remove the blood clot. This was declined. The following day the man became totally unconscious, and when he was in a state of coma, permission was given to operate. I trephined the skull over the middle fossa and found no clot. The cortex of the brain, on the opening of the dura, presented an ecchymotic appearance. No cerebrospinal fluid appeared. I passed a grooved director between the dura and brain, and a few drops of cerebrospinal fluid escaped. In a few minutes this increased to a small stream. At the end of fifteen minutes the patient began to show signs of life. The breathing improved. The operation was performed without an anesthetic. A drain was inserted beneath the brain and the wound closed. The man made an uneventful recovery and is still living.

DISCUSSION

Dr. A. E. Halstead, Chicago: My conception of a serous meningitis is entirely different from that of Dr. Lemon's. A serous meningitis, as I understand it, is caused by a toxemia or a mild infection in which there is no pus or no gross manifestations of infection in the meninges. I have operated in several of these cases. I have also seen cases of diffuse meningitis in which the fluid was still serous or retained the characteristics of normal cerebrospinal fluid. These cases occurred in the terminal stage of an infection. I think a weak point in the doctor's paper is the fact that he has no necropsy to sustain his diagnosis of such a traumatic serous meningitis.

Dr. John L. Yates, Milwaukee, Wis.: In these cases of increased intracranial pressure, when there is no foreign body, there is a disproportion in the amount of cerebrospinal fluid secreted and the amount of fluid absorbed. This may be the result of irritation, chemical or bacterial infection, or trauma.

Dr. Frederick A. Dunsmoor, Minneapolis: Dr. Frank Hamilton, in 1873, impressed on me the point that whenever a man who has had a slight injury of his head is bewildered, or even unconscious for a moment, and then gets up and walks off, there is a grave possibility of tragic symptoms developing later.

Dr. M. M. Ghent, St. Paul: Dr. Halstead said that we have no postmortem reports to sustain the diagnosis of traumatic serous meningitis. One drunken miner struck another on the back of the head with a large rock. The man was stunned; I saw him about five minutes afterward. He was able to talk. There was a slight abrasion, not more than half an inch long, just back of the ear. He was put to bed. On the second day he complained of headache; on the third day he had a little fever and began vomiting. He was taken to the hospital, and lived seven days. We opened the skull and found no fracture, no hemorrhage, but the brain on the injured side was just like putty, while the opposite side seemed to be entirely normal.

Cardiolysis

Dr. John E. Summers, Omaha: Cardiolysis, first performed by Peterson at the suggestion of Brauer, in 1902, is done in cases of chronic adhesive mediastinopericarditis. The heart muscle in two cases reported by me was in an advanced, degenerated condition. Nothwithstanding this, one patient, a man, lived four years and ten months after operation, was able during this period to earn his living, and was almost free from heart symptoms until the last several months of his life. The second patient, a young woman, lived nearly a year after operation, had symptomatically made a recovery so far as the function of the heart was concerned, being able to drive a large automobile from Omaha to Denver, 600 miles, cross the Rocky Mountains, and travel to a height of 12,000 feet without discomfort. Overstrain, however, brought on an attack of decompensation which proved fatal.

DISCUSSION

Dr. William R. Cubbins, Chicago: Dr. Summers is to be congratulated on undertaking operative interference in this case. There is no question that the relief will be marked when we have enough courage to remove the chest wall as it should be done.

Dr. R. C. Coffey, Portland, Ore.: Not all of these cases have been reported. Dr. William J. Mayo and I were attending a clinic in New York when we saw this operation performed by a prominent surgeon. The anesthetic was intratracheal, and just about the time the chest wall was completely removed the patient closed his eyes and never breathed again. That case has not been reported.

Dr. George M. Gray, Kansas City, Kan.: In another case I resected, as I remember, the fourth, fifth and sixth ribs. The operation was done about a year ago under local anesthesia. The patient, a man, aged 32, improved markedly.

Factors Which Determine the Extent and Duration of Peritoneal Adhesions

Dr. Arthur E. Hertzler, Kansas City, Mo.: The principles governing the formation of adhesions are the same as those which pertain to wound healing. The exudate forming about wounded surfaces must coagulate to form fibrillar fibrin as the preliminary step. If this is interfered with, primary healing does not take place. Permanent adhesions correspond to healing by first intention, while temporary ones parallel healing by second intention. The purpose of permanent adhesions is to repair solutions of continuity, while temporary adhesions serve the purpose of preventing the spread of infection. When repair is desired, the factors inimical to blood coagulation must be kept from the site of the wound. Temporary adhesions release themselves after their function has been performed, and it is not necessary to break them up when operating in infected tissue in order to prevent subsequent deleterious consequences.

Position in Abdominal Drainage

Dr. Roland Hill, St. Louis: The lateral position, in which the patient is placed on the right side, is very efficient. In this position the head of the bed is slightly elevated, about 30 degrees, and a pillow is placed under the region of the liver, so as to prevent accumulation of fluid in the kidney region. In a series of fifteen cases treated in the lateral position, there was an absence of mortality. In a series of forty-two drainage cases treated in the abdominal position, there were two deaths. In forty-seven cases treated in the Fowler position, there were five deaths.

Radical Cure of Chronic Osteomyelitis

Dr. Emil G. Beck, Chicago: I have adopted the following plan in dealing with these cases: First, I try the most conservative treatment, namely, the injection of bismuth paste, and am able to clean up 60 per cent. of the cases. If this method has been given a fair trial for several months and there is no improvement, the remaining 40 per cent. of cases are treated by a most radical operation. I expose the diseased area by an adequate skin flap incision that I may remove every vestige of the diseased bone, under ocular inspection. I do not permit any dead space in the resected cavity, and I remove enough bone to make a flat surface of bone. Then I implant the skin flap against the bone, packing gauze against it to keep it in contact. I use no suture material, and leave the wound widely gaping and permit granulations to form on the denuded surfaces. The skin on the granulating surfaces is reproduced by means of adhesive plaster dressing, which is changed daily, and is the best form of epidermization of large denuded areas. I use no skin grafts.

Traumatic Surgery of Liver

Dr. Oliver J. Fay, Des Moines, Iowa: Operations on the injured liver should be performed with all the speed compatible with gentleness and a thorough examination of the abdominal viscera. Temporary control of the hemorrhage is usually to be obtained by tamponing. Suture of the wound, ligation of the larger vessels, and tamponing are the most serviceable definitive procedures. Tamponing is the method employed in the largest number of cases; it effects temporary hemostasis until other measures can be employed; it controls hemorrhage from wounds which are inaccessible, or which could be reached only by an unwarranted incision; it is the least time consuming procedure, and is the method of choice when the patient is in a precarious condition, and speed is the first essential. It is a valuable adjuvant to suture of a wound when hemostasis is not assured, or the possible presence of other liver injuries cannot be excluded, and in every case in which the simple ligation of vessels has been employed, it is essential when the presence of infection cannot be excluded.

The Open Hospital

Dr. Lawrence W. Littig, Davenport, Iowa: The most important problem before the medical profession at the present time is the investigation and classification of hospitals. The possibility of such investigation has already produced fruit, and signs of life are already evident in hospital boards and hospital staffs that had long been dead, so far as the spirit of improvement and progress is concerned. The fifth or intern year, as already adopted by an increasing number of medical schools and state boards, will have even a more decided influence for good in the hospitals that desire interns, since both the college and the state board will insist on knowing about the character of the work done in a hospital before it is put on the accredited list. But there are many hospitals that do not care for interns, and these can be reached by the state board, through the training school, since practically all of the hospitals under consideration conduct training schools, the graduates of which present themselves before the state board for examination for credentials as registered nurses. Publicity is the only influence that will reach all of the hospitals under consideration, and stimulate all hospital boards and hospital staffs to action.

Cyst of the Suprarenals

Dr. Herman E. Pearse, Kansas City, Mo.: Hemorrhage is the foundation of the pathogenesis of suprarenal cysts. The fully developed cyst is usually, as in my case, recognized only when the hemorrhage has been repeated from time to time, and operation is at last done for a demonstrable tumor. The condition of suprarenal hemorrhage being concealed, retroperitoneal, and not showing in any excretion of the body, must of necessity be occasionally unrecognized in its early stages, and may often, if suspected and looked for, be recognized as the foundation of phenomena otherwise quite puzzling to the examiner.

Surgical Treatment of Banti's Disease: Report of Three Cases

Dr. Charles D. Lockwood, Pasadena, Calif.: I have collected reports of thirty-eight cases from the literature which, with three cases of my own, make forty-one in all. Six of these patients died as a result of operation, making an operative mortality of 14.5 per cent. Operation done in the first stage of the disease is curative in a large percentage of cases, and the operative mortality is no higher than in other major abdominal operations. In the second and third stages of the disease, there is still a large percentage of recoveries with great improvement of health.

Intracanalicular Papilloma of the Breast

Dr. E. Starr Judd, Rochester, Minn.: In fifty of 100 consecutive cases of discharging nipples, a serohemorrhagic discharge was present, and in the remaining fifty some other form of discharge was described. Carcinoma appeared to be the most common lesion producing a discharge from the nipple; it was almost invariably associated, however, with a tumor in the breast. Usually the tumor was present some time before the discharge began. In 26 per cent. of these cases chronic cystic mastitis was present; twelve of them were in the first group of fifty, and fourteen in the second. In some of our cases of chronic cystic mastitis, however, the discharge may have been from a duct papilloma, for often these tumors are very small and might easily have been overlooked. This series seems to lend evidence to the contention that a hemorrhagic or serohemorrhagic discharge from the nipple in the absence of a palpable tumor is most often produced by benign intracanalicular papilloma. In view of this fact, treatment should be conservative, particularly in young women. In older patients, especially if the condition is associated with chronic cystic mastitis, the mammary gland should be removed. If there are indications of malignant changes, a radical operation is advisable.

The Radical Cautery Operation in Breast Carcinoma

Dr. James F. Percy, Galesburg, Ill.: The most important improvement that can be made in the technic of the modern operation for breast carcinoma is the use of the hot knife in place of the cold steel knife. The wound should be left open in order that small points of recurrence may be watched for which, if they appear, can be cocainized and treated by heat at once. After the wound has been made, no matter how extensive, epithelization can be hastened by covering with strips of adhesive plaster, as recommended by Beck. Carcinoma is most prone to recur wherever blood vessels are left in the wound. Practically every recurrence is about a blood vessel. I would urge that no bleeding vessel be clamped with a hemostat, but it is more important that the bleeding should be arrested by the application of the cautery knife, which not only stops the hemorrhage, but also kills the most common origin for the cancer nidus in its incipiency. I would advise that a roentgenogram be made of the thorax. If metastasis into the lung, pleura or ribs is disclosed, the treatment should consist of massive doses of the Roentgen ray administered by an expert roentgenologist. The four most essential points in the technic are, first, to mark out on the iodin covered skin surface with the handle of the steel knife the limits of the incision to be made; second, do not cut with the cautery knife from above downward into the skin in following this line, but from within outward; third, and very important, in dissecting about the axillary vessels and brachial plexus, hold the parts that are to be removed with the fingers of the free hand, encased in a medium-weight rubber glove, and keep the fingers close to the cautery knife. This is the most practical way of gaging the degree of temperature that the tissues and blood vessels will stand without being injured. Fourth, apply the heat until all the tissues that were fixed by the disease are freely movable. To do otherwise simply means that heat dissemination in the most effective way has not been obtained.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

December, 1916, LXXIV, No. 6

1 *Appendicular Abscess; Hemorrhage; Death. M. Tate, Cincinnati.—p. 933.
2 *Drainage for Pus Conditions in Pelvis During Pregnancy. F. Reder, St. Louis.—p. 935.
3 *Case of Rupture of Uterus; Sepsis; Operation; Recovery. R. B. Hall, Cincinnati.—p. 942.
4 *Rupture of Uterus in Cesareanized Women; Review of Literature. J. N. Bell, Detroit.—p. 950.
5 *Rupture of Cesarean Scar. A. J. Rongy, New York.—p. 954.
6 Postmortem Cesarean Section; Report of Two Cases. O. G. Pfaff, Indianapolis.—p. 967.
7 *Gunshot Wounds of Abdomen in Pregnant Women. L. H. Smead, Toledo.—p. 972.
8 Teaching Obstetrics Under Improved Conditions. H. Schwarz, St. Louis.—p. 981.
9 Lymph Nodes Extract; Its Preparation and Therapeutic Action. D. Hadden, Oakland, Cal.—p. 989.
10 *Blood Pressures During Operations. C. W. Moots, Toledo.—p. 996.
11 Diagnosis of Pelvic Troubles. J. H. Carstens, Detroit.—p. 1002.
12 Care of Patients Before and After Operation. H. W. Yates, Detroit.—p. 1006.
13 Operative Judgment as Factor in Surgical Mortality and Morbidity. R. E. Skeel, Cleveland.—p. 1012.
14 *Removal of Appendix for Cure of Trifacial Neuralgia and Other Nerve Pain About Head and Face. M. I. Rosenthal, Fort Wayne, Ind.—p. 1031.
15 Pemphigus Neonatorum. F. H. Falls, Chicago.—p. 1048.

1, 2 and 3. Abstracted in The Journal, Oct. 21, 1916, p. 1251.

4. Abstracted in The Journal, Oct. 21, 1916, p. 1252.

5, 7 and 10. Abstracted in The Journal, Oct. 28, 1916, p. 1324.

14. Abstracted in The Journal, Oct. 28, 1916, p. 1326.

American Journal of Physiology, Baltimore

December, 1916, XLII, No. 1

16 *New Evidence in Favor of Chief Vasoconstrictor Center in Brain. S. W. Ranson, Chicago.—p. 1.
17 *Afferent Spinal Path for Depressor Reflex. S. W. Ranson and P. R. Billingsley, Chicago.—p. 9.
18 *Id. S. W. Ranson and P. R. Billingsley, Chicago.—p. 16.
19 Oscillatory Variations in Contractions of Rhythmically Stimulated Muscle. W. B. Cannon and C. M. Gruber, Boston.—p. 36.
20 *Factors Affecting Coagulation Time of Blood: Epinephrin. G. P. Grabfield, Boston.—p. 46.
21 Physiology of Stomach. Gastric Hunger Contractions in Amphibia and Reptilla. T. L. Patterson, Kingston, Canada.—p. 56.
22 Physiology of Atrioventricular Connection in Turtle. H. Laurens, New Haven, Conn.—p. 89.
23 *Some Features of Osteogenesis in Light of Vital Staining. P. G. Shipley and C. C. Macklin, Baltimore.—p. 117.
24 Staining of Amphibian Larvae with Benzidine Dyes: Behavior of Lymphatic Endothelium. G. B. Wislocki, Baltimore.—p. 124.
25 *Physiology of Mammalian Auricle. Influence of Vagus Nerves on Fractionate Contraction of Right Auricle. C. J. Wiggers, New York.—p. 133.

26 *Id. Time Relations of Auricular Systole. C. J. Wiggers, New York.—p. 141.
27 Physiology of Reproduction in Birds, Variations in Chemical Composition of Reproductive Tissues in Relation to Variations in Functional Activity. O. Riddle and J. V. Lawrence, Chicago. —p. 151.
28 Conditions Involved in Accumulation of Dissolved Substances in Blood. Relation of Acidity to Retention of Sugar and of Urea by Colloids of Blood and Kidney. E. B. Reemelin and R. Isaacs, Cincinnati.—p. 163.
29 *Vagus Nerves in Pneumonia. W. T. Porter and L. H. Newburgh, Boston.—p. 175.

16, 17 and 18. **Afferent Spinal Paths and Vasomotor Reflexes.**—Experiments made by Ranson and Billingsley resulted in the following observations. Afferent pressor impulses travel up the spinal cord in the apex of the posterior horn on both sides of the cord but somewhat better homolaterally. It is probable that a small portion of the pressor impulses passes directly forward through the gray matter to the efferent vasomotor neurones of the white rami. Most of the pressor impulses ascend through the apical path in the posterior horn to the vasoconstrictor center of the brain. There is some evidence which points to the location of the reflex vasoconstrictor center in the region of the fovea inferior in the floor of the fourth ventricle. The efferent path from the vasoconstrictor center to the vasomotor neurones of the white rami is located in the ventral or lateral funiculi. The depressor path is located in the ventral part of the lateral funiculus and its conduction is bilateral, although somewhat better on the contralateral side as indicated by the results of hemisection. There is some evidence that a separate vasodilator center may exist in the region of the area postrema lateral to the obex in the floor of the fourth ventricle. Weak stimulation of an afferent spinal nerve causes a drop in blood pressure which is a true vasomotor reflex and independent of respiratory movements. A drop in blood pressure obtained from strong stimulation may be due to excessive respiratory movements. True pressor reflexes are produced only by strong stimulation. There is little evidence in favor of the conception of two kinds of afferent vasomotor fibers and considerable evidence against it.

The glossopharyngeal and vagus nerves and the depressor branch of the latter are all visceral nerves and are connected with the visceral afferent column in the medulla, while the fifth cranial and the spinal nerves are all connected with the somatic afferent column. This difference in the central connections of the two groups of nerves is sufficient to account for the difference in the vasomotor reactions obtained from them. No clearly defined path for afferent impulses to the respiratory center could be found. The fibers which carry these impulses seem to be somewhat widely scattered in the cord. In the cat pain conduction in the spinal cord is bilateral and effected through a series of short relays. For a few days following bilateral injury to the apices of the posterior gray columns there is hyperesthesia of the hind limbs and all parts of the body behind the lesion.

20. **Effect of Epinephrin on Coagulation.**—Grabfield found that the intravenous administration of minimal doses of epinephrin (0.143 c.c. of a 1:100,000 solution per kilo) decreases coagulation time by increasing the amount of prothrombin in the circulating blood.

23. **Osteogenesis in Light Vital Staining.**—Young and growing animals were stained by Shipley and Macklin with azo dyestuffs and metallic colloids and the young osseous tissue was studied. A report of such a histologic study is presented in this paper. The avidity with which cells eat the vital dye granules places them in the category of macrophages, and demonstrates the phagocytosis of which they are capable. The osseous tissue is stained very darkly, and this color is much more marked in the growing than in the fully developed bone. Especially dense staining marks the actively growing areas of the bone. The primary ossification centers are stained only if they are areas of osteoblastic activity at the time of the giving of the dye. This is most evident in the thin bones of the developing skull where the primary centers are almost without color and the rapidly advancing edge of the membrane bone is heavily stained. It was expected that the osteoclasts would be found loaded with blue granules. Instead of this no blue at all was to be seen in their bodies. In other words these cells are nontrypanophilic and nonphagocytic. They can therefore not be classed with the pyrrhol cells on a physiologic basis.

The only cells which manifested the characteristic trypanophil reaction were the ordinary reticulo-endothelial cells of the marrow reticulum. Though these were everywhere present throughout the marrow cavities of the young bone, they seemed to be most numerous in the areas where erosion of cartilage and bone was going on most actively. At the margin between cartilage and bone at the epiphysis there was a narrow zone in which these macrophages were very numerous, and a distinct line of them could be made out along the edge of the cartilage to which they were apparently closely applied. In a region of the new endochondral bone, just behind the advancing osseous border, namely, in the region in which the new spicules of endochondral bone were being most actively resorbed, they were more thickly grouped than in the rest of the marrow cavity. The pyrrhol cells or macrophages may therefore be considered to take some part in osteogenesis and it is believed that they ingest the débris and assist in clearing it away. Any office of the osteoclasts in the resorption of calcified cartilage or bone must be performed by the agency of chemical solution or mechanical erosion through pressure exerted by them on the material which is being broken down.

25. **Influence of Vagus on Auricle.**—The depression of the mechanical contraction of the mammalian auricle which follows vagal excitation, Wiggers says, is due to an actual decrease in the contraction of the individual cardiac units. The decrease is not secondary to changes in rhythm or to alterations in conductivity. The decrease may be favored by the depression of irritability produced by vagus stimulation but is primarily due to the depressant effect of the vagus on the function of contractility.

26. **Time Relations of Auricular Systole.**—About 0.02 second after an impulse is emitted from the sino-auricular node the right auricle begins to contract, as evidenced by the rise of intra-auricular pressure. The precise onset of this mechanical shortening, Wiggers says, cannot be determined from the waves of the venous pulse, but may be approximated by the peak of the P wave taken by Lead II. This mechanical shortening is due to a series of fractionate contractions which spread across the auricle in the wake of the excitation wave. The auricle continues to shorten as long as the contracting units of cardiac tissue overbalance the relaxing units. As soon as an exact balance is established no further shortening is possible and the termination of the systole has come. This period lasts about 0.11 second. The contraction of the auricle exerts a dynamic action by elevating intra-auricular pressure. This occurs early in systole but continues for only 0.05 second; during the remainder of systole the intra-auricular pressure falls. This dynamic interval, as the period during which pressure rises is called, may be estimated from the rise of the presystolic wave of the venous pulse, a-wave, but the total duration of systole can be determined neither from the venous record or the electrocardiogram.

The auricle continues to contract after excitation of the ventricle has occurred, as shown by the fact that it terminates during the R variation of the electrocardiogram. The ventricle normally never contracts until auricular systole is completed. Occasionally ventricular systole follows immediately but usually an intersystolic interval, averaging 0.024 second, intervenes. The duration of this interval can be accurately determined neither from the jugular tracing nor from the electrocardiogram. The a-c interval of the jugular pulse in normal and regular rhythms very nearly equals or at least varies with the A_s-S_s interval, but the latter is not a criterion of the intersystolic interval and does not vary with it.

29. **Vagus Nerves in Pneumonia.**—Since the respiratory disorder in pneumonia is manifested both in the lungs and in the respiratory bulbar center, and since these two are connected by the vagus nerves, a causal relation between the dyspnea and the exhaustion of the respiratory center was sought by Porter and Newburgh by section of these nerves. This procedure led to the discovery that section of the vagus

nerves protects the respiratory cells and prevents their exhaustion in pneumonia. Moreover in pneumonic dogs in which both vagus nerves have been cut, the rate of respiration remains normal.

Annals of Surgery, Philadelphia

December, 1916, LXIV, No. 6

30 *Tissue Fragments and Wound Infection. K. Taylor, France.—p. 641.
31 *Blood Pressure and Graphic Vasomotor Changes in Periphery During Ether Anesthesia. W. E. Muns, Columbia, Mo.—p. 645.
32 Blood Pressure and Prostatectomy. A. H. Peacock, Seattle, Wash.—p. 659.
33 Anatomy of Sinus Frontalis in Man. J. P. Schaeffer, Philadelphia.—p. 665.
34 *Tooth Germ Cysts of Jaw. M. G. Wohl, Omaha.—p. 672.
35 *Two Cases of Thoracic Aneurysm Wired Four Years Ago. W. C. Lusk, New York.—p. 680.
36 Chronic Cystic Mastitis or Abnormal Involution of Breast. P. Syms, New York.—p. 696.
37 Regressive Changes in Breast. G. Barrie, New York.—p. 707.
38 Spondylitis Deformans Relieved by Albee Operation. H. Finkelstein, New York.—p. 713.
39 Felons. G. M. Dorrance, Philadelphia.—p. 716.

30. **Tissue Fragments and Wound Infection.**—With a view to determining the relative importance of a foreign body and of dead tissue in the initiation and rate of extension of infection in wounds, experiments were undertaken by Taylor. The implantation of a sterile foreign body or a small piece of sterile dead muscle alone produced no macroscopic lesions. The implantation of a foreign body infected with tetanus bacilli, *Staphylococcus aureus, B. aerogenes-capsulatus,* or streptococci produced usually a localized abscess formation without invading the surrounding normal tissues. The addition of a small portion of dead muscle tissue in the region of the infection produced a more rapid and diffuse inflammatory process with earlier and more extensive abscess formation than the wounds containing only bacteria or those containing infected cloth. The implantation of infected cloth together with muscle tissue produced a more active and destructive lesion than the implantation of either alone. When infected with tetanus bacilli the presence of dead muscle fragments determined a high mortality. Of the two substances, cloth and devitalized muscle, in the presence of infection, the muscle produced the more acute infective process. The result of these experiments suggests that in the cleaning of fresh wounds at least as much care should be exercised to remove separated and devitalized fragments of soft tissue as is taken to remove other foreign bodies. In all operative procedures where blunt dissection is practiced it should be remembered that torn fragments of devitalized tissue may remain to become a ready soil for the incubation of any bacteria which may gain access to the wound.

31. **Blood Pressure During Ether Anesthesia.**—The purpose of Muns' investigation was to demonstrate graphically the actual changes in the condition of the peripheral circulation and in blood pressure accompanying long continued ether anesthesia, and the relation which the vasomotor changes may have to the blood pressure. He found that ordinary third stage ether anesthesia prolonged beyond one hour results in more or less marked vasodilatation in the periphery. This is a progressive change, more or less regular in character, increasing directly in proportion to the lengthening time of administration. In most cases the limit of vasodilatation is not reached seven hours after the beginning of the anesthetic, but occasionally the extreme of the condition may be reached after a shorter administration of ether. There is a direct relationship between the condition of the vasomotor control and the blood pressure. The end-result of ether depression is loss of function. The syndrome, known as postoperative shock, is a combination of the effects of excitation and depression, and varies directly with the algebraic sum of these two factors. The vasomotor center is the variable factor in bringing about the vasomotor change; the variation is directly dependent on the changes in the vasomotor center produced by ether.

34. **Tooth Germ Cysts of Jaw.**—Cystic tumors of the jaw are divided by Wohl into (*A*) inflammatory; (*B*) tooth germ (chorioblastoma); (*a*) unilocular; (*b*) multilocular; (*c*) solid. Chorioblastomatous cysts of the jaw originate from the embryonal rests of epithelial cord of enamel organ.

35. **Thoracic Aneurysm Wired.**—Both cases cited by Lusk were given antispecific treatment after the wiring operation and they developed an ability to endure very severe exertion. Special attention is called to the need for treatment of aneurysm with the antispecific remedies.

Archives of Diagnosis, New York

October, 1916, IX, No. 4

40 Clinical Diagnosis of Syphilitic Aortitis. I. J. Levy, New York.—p. 295.
41 Clinical and Laboratory Manifestations of Malignancy. A. Sturmdorf, New York.—p. 302.
42 Thymus Disease in Children; Case of Thymus Hypertrophy. H. B. Sheffield, New York.—p. 312.
43 Roentgen Diagnosis of Stomach Ulcer, Duodenal Ulcer and Stomach Cancer. I. H. Levy, Syracuse.—p. 316.
44 Tonsil as Portal of Infection Other Than Rheumatic. H. Hays, New York.—p. 323.
45 Diagnostics of Some Abdominal Diseases of Orthopedic Origin. S. Epstein, New York.—p. 327.
46 Clinical Diagnostics of Diseases of Heart. E. E. Cornwall, Brooklyn.—p. 331.

Boston Medical and Surgical Journal

December 14, 1916, CLXXV, No. 24

47 History of Growth of Antituberculosis Movement in Massachusetts. V. Y. Bowditch, Boston.—p. 847.
48 Shock at Front. W. T. Porter, Boston.—p. 854.
49 Failing Heart Compensation During Pregnancy. C. H. Lawrence, Boston.—p. 858.
50 Etiology of Epilepsy; Condition of Teeth as Factor in Its Production; Relation to Alcoholism and Mental Defect. H. Powers, Brookline.—p. 861.
51 Case of Epidural Intraspinal Abscess of Pyogenic Origin. W. J. Mixter, Boston.—p. 864.
52 Intraspinal Epidural Abscess (Pyogenic); Case with Necropsy. J. B. Ayer and H. R. Viets, Boston.—p. 865.

December 21, 1916, No. 25

53 Workingmen's Compensation Act. J. C. Crosby, Pittsfield.—p. 883.
54 Consideration of Workingmen's Accident and Sickness Insurance in Their Relation to Medical Profession. F. J. Cotton, Boston.—p. 893.
55 History and Operation of Massachusetts Workingmen's Compensation Law. F. D. Donoghue, Boston.—p. 897.
56 Workingmen's Compensation for Accident and Sickness, from Point of View of General Practitioner. W. H. Merrill, Lawrence.—p. 902.
57 Workingmen's Compensation for Accident and Sickness, from Point of View of Organized Labor. J. P. Meade, Brockton.—p. 905.
58 Administration of Workingmen's Compensation Act by City of Cambridge. H. J. Cronin, Cambridge.—p. 906.
59 Industrial Health Legislation. F. W. Anthony, Haverhill.—p. 911.
60 Medical Department of Modern Industrial Plant. F. O. West, Woburn.—p. 914.

Indiana State Medical Association Journal, Fort Wayne

December, 1916, IX, No. 12

61 *Hyperthyroidism and Its Relation to Certain Pelvic Disorders. T. B. Eastman, Indianapolis.—p. 465.
62 *Influence of Modern Immunity Research on Surgery. M. N. Hadley, Indianapolis.—p. 470.
63 Influence of Modern Immunity Research on Medicine. C. B. Dauruther, La Porte.—p. 475.
64 Blood Cultures in Epilepsy. J. A. MacDonald and S. R. Edward, Indianapolis.—p. 482.

61. Abstracted in The Journal, Oct. 21, 1916, p. 1250.

62. Abstracted in The Journal, Oct. 28, 1916, p. 1326.

Journal of Cutaneous Diseases, Boston

December, 1916, XXXIV, No. 12

65 Keratosis Blennorrhagica; Report of Case. M. Haase, Memphis, Tenn.—p. 817.
66 *Calamine Liniment. W. A. Pusey, Chicago.—p. 826.
67 Relations of Diets to Seborrhea. D. W. Montgomery, San Francisco.—p. 829.
68 Case of Darier's Disease (Keratosis Follicularis) in Its Early Stages. M. Scheer, New York.—p. 837.

66. **Calamine Liniment.**—In order to overcome the drying effect of a simple calamine lotion, Pusey uses a liniment whose formula is practically that of the common calamine lotion with the addition of olive oil and enough tragacanth to make a permanent emulsion. The essential feature of this liniment is that by utilizing the emulsifying action of

tragacanth a permanent emulsion is produced which maintains an even mixture of all the ingredients. The formula for this liniment is as follows:

	gm. or c.c.		
Pulvis tragacanthae	4		ʒ i
Phenolis et glycerini (mixed)...āā		66	♏ x
Zinci oxidi et calaminis ....āā	30		℥ i
Ol. olivae	120		℥ iv
Aquam ....q. s.			O i
Ol. bergamoti			gtt. xx-l

The few drops of phenol keep the liniment sweet indefinitely. The formula gives a thick emulsion, like very thick cream or a cod liver oil emulsion. If a thinner emulsion is desired an equally permanent one about the consistence of ordinary cream can be made by using ½ dram of tragacanth, instead of a dram, to the pint.

Journal of Nervous and Mental Disease, Lancaster, Pa.

December, 1916, XLIX, No. 6

69 *Hyperplasia of Pineal Body. H. H. Bell, St. Louis.—p. 481.
70 Types of Neurologic Cases Seen at Base Hospital. J. J. Thomas, Boston.—p. 495.
71 *Case of Posterolateral Sclerosis Following Streptococcus Infection, Transmitted to Rabbit as Myelitis. E. M. Williams, Sioux City, Iowa.—p. 503.
72 Three Cases of Familial Spastic Paralysis. C. E. Riggs, St. Paul, Minn.—p. 505.
73 *Intentional Hypertonia; Cortical Localization of Muscular Tonus. S. I. Schwab, St. Louis.—p. 510.
74 Epileptic Dementia with Recovery. D. A. Thom, Palmer, Mass.—p. 517.

69. **Hyperplasia of Pineal Body.**—The pineal gland in two cases was examined by Bell. In each instance it was enlarged and contained cysts. Bell says that in none of the organs of internal secretion are there cells with characters similar to those of cells of the pineal body. The pineal cells in young individuals are similar in number and structure to those in pineal bodies of older individuals after involution is established. Pineal cells are intimately related to fibers which resemble those of neuroglia and there are transitional forms between neuroglia cells and pineal cells. Pineal cells appear to be modified neuroglia cells. In association with the process of involution there may be tumor-like enlargement of the pineal body characterized by proliferation of the pineal cells. In association with hyperplasia of these cells there is no functional disturbance in other organs of the body.

71. **Posterolateral Sclerosis Following Streptococcus Infection.**—The first patient whose history is cited by Williams had the symptoms of a posterolateral sclerosis with no definite or evident cause. Six old roots in the anterior lower jaw, were removed and a culture made. A hemolytic streptococcus was found which, injected into a rabbit, gave a posterior paraplegia with incontinence of urine and feces fourteen days after the inoculation. Further culture from the cord did not show anything, as the rabbit was probably killed too soon after the occurrence of the paralysis (third day). The cord showed an area of myelitis and softening.

73. **Intentional Hypertonia.** — By intentional hypertonia Schwab means this: muscle groups which in a state of flaccidity or semiflaccidity shows to palpation no spasm of contracture whatever, when they become the subject of intended movement associated with emotion or desire show incontestable evidence of hypertonia, just as hypertonic muscles are seen as the result of resistance movements. There is, therefore, overaction, adductor attitudes, flexor overaction at the elbows, and all the phenomena which accompany innervation, both as to gait, attitude, facial expression, etc. This condition of intentional hypertonia is unaccompanied by any evidence, so far as the reflex or the existence of plantar extension is concerned, of involvement of the pyramidal tract except in one case. When the patient is at rest or when volition, intention, or emotion are not in force the patient's arms and legs are flaccid, hypotonic and relaxed. Schwab has seen five such cases; four patients showed some degree of mental deficiency.

Medical Record, New York

December 16, 1916, XC, No. 25

75 Personality and Behavior in Siberian Prisons. L. P. Clark, New York.—p. 1057.
76 Anterior Poliomyelitis. Principles of Treatment. R. Whitman, New York.—p. 1062.
77 Treatment of Infantile Paralysis. H. W. Wright, San Francisco.—p. 1064.
78 After-Care of Infantile Paralysis Cases. O. H. Bartine, New York.—p. 1066.
79 Fallacy of Intestinal Stasis. M. J. Synnott, Montclair, N. J.—p. 1068.
80 Present Treatment of Diabetes Mellitus. H. M. Moses, Brooklyn.—p. 1069.
81 Rôle Played by Fear in Diseases of Stomach and Intestines. L. H. Levy, New Haven, Conn.—p. 1072.
82 Prevention and Treatment of Weak Feet Occurring During Pregnancy and Puerperium. J. Grossman, New York.—p. 1074.
83 Report on Old Case of Parenchymatous Nephritis. F. M. Johnson, Boston.—p. 1075.

December 23, 1916, No. 26

84 Use of Constant Dry Heat in Inoperable Peripheral Gangrene. W. G. Thompson, New York.—p. 1103.
85 Medical Corps of Army as Career. L. P. Williamson, U. S. Army.—p. 1106.
86 Retrospections, Medical and Otherwise. A. D. Rockwell, Flushing.—p. 1109.
87 Extra-Uterine Pregnancy. E. M. Stanton, Schenectady.—p. 1112.
88 Heliophobia. F. Robbins, New York.—p. 1114.
89 Tonsillectomy Under Novocain. P. M. Lewis, New York.—p. 1116.
90 Tuberculin Dispensary. R. C. Newton, Montclair, N. J.—p. 1118.
91 Operations on Uterus and Vagina without an Anesthetic. H. A. Wade, Brooklyn.—p. 1119.
92 Bacterial Etiology of Poison Oak Dermatitis (Rhus Poisoning). L. C. Frost, Los Angeles.—p. 1121.

Nebraska State Medical Journal, Norfolk

December, 1916, I, No. 6

93 Injuries of Head; Report of Cases. F. A. Long, Madison.—p. 167.
94 Some Conclusions from One Hundred Operations for Cholecystitis. C. H. Newell, Omaha.—p. 169.
95 Immediate Repair of Perineal Lacerations. B. R. McGrath, Grand Island.—p. 174.
96 Methods Which May Be Employed to Avoid Open Operations for Fractures. J. P. Lord, Omaha.—p. 176.
97 Starvation Treatment of Diabetes; Report of Cases. R. W. Bliss, Omaha.—p. 178.
98 Therapeutic Artificial Pneumothorax in Treatment of Tuberculosis. F. M. Conlin, Omaha.—p. 184.

New York Medical Journal

December 23, 1916, CIV, No. 26

99 Present Management of Poliomyelitis Epidemic in New York City. F. Tilney and J. C. Rushmore, New York.—p. 1221.
100 Points in Diagnosis and Treatment of Poliomyelitis. B. Sachs, New York.—p. 1225.
101 South American Travel Notes. A. Schachner, Louisville, Ky.—p. 1231.
102 Surgical Treatment of Goiter. J. W. Vaughan, Detroit.—p. 1235.
103 Alleged Passing of Hypophosphites. T. J. Mays, Philadelphia.—p. 1239.
104 Some Recent Tendencies in Surgical Literature. W. F. Fowler, Rochester.—p. 1241.
105 Case of Leprosy in Connecticut. J. E. Lane, New Haven.—p. 1244.

Northwest Medicine, Seattle

December, 1916, XV, No. 12

106 Diagnosis of Kidney Disease. H. J. Whitacre, Tacoma.—p. 387.
107 *Conception of Urethral Stricture that Admits of Scientific Treatment. G. S. Peterkin, Seattle.—p. 394.
108 Vesical Fistula. G. S. Whiteside, Portland, Ore.—p. 398.
109 Pyonephritis Complicating Pregnancy. E. G. Braddock, Lewiston, Ida.—p. 400.
110 Sources of Pyuria. A. E. MacKay, Portland, Ore.—p. 402.
111 Kidney Calculus in Child of Seven Years. H. G. Lazelle, Seattle.—p. 403.
112 Diagnosis and Treatment of Chronic Gonorrhea. F. A. Goeltz, Salt Lake City.—p. 405.
113 Two Cases of Epidemic Cerebrospinal Meningitis Occurring in Portland. W. House, Portland, Ore.—p. 408.

107. **Urethral Stricture.**—A stricture, Peterkin says, signifies swelling, infiltration, not cicatricial contraction. What is the most common, yet most efficient factor, in reducing swelling, infiltration? Hot water! Every physician and surgeon, therefore, should remember the efficiency of hot water in treating stricture mechanically; also they should remember the stopcock, the compressor urethrae, is a voluntary muscle, and teach the patient to irrigate the entire urethra under hydrostatic pressure, not with a catheter, but with a glass nozzle, doing this at home, using a very hot mild antiseptic solution three or four times daily between mechanical treat-

ments and practically discontinuing the same after the mechanical treatments have ceased. Then note the quick subsidence of the infiltration, and of the symptoms, and the increased percentage of cures. For strictures that have become strictures and are strictures requiring no delineation, no science, in diagnosis, the remedy is operative.

Psychiatric Bulletin, Utica, N. Y.

October, 1916, IX, No. 4

114 *Clinical and Anatomic Features in Alzheimer's Disease and Related Conditions. C. I. Lambert, White Plains.—p. 413.
115 *Occurrence of Acetone in Urine of Acutely Insane. G. W. Mills and R. G. Wearne, Central Islip.—p. 433.
116 Mental Regression; Its Conception and Types. F. L. Wells, Waverley, Mass.—p. 445.

114. **Alzheimer's Disease.**—Lambert cites two cases, both men of 49, without significant heredity or make-up, but with a history of alcoholism. In each there developed slowly and insidiously, without attacks of unconsciousness or convulsions, a most profound dementia. The onset was first evident in inattention, indifference and absentmindedness; later became more manifest in declining efficiency, progressive impairment of memory, retention, grasp and poverty of thought, followed by aimless, restless, foolish behavior and increasing mental dilapidation which went on apace toward an apathetic dementia, incapacity to comprehend, to talk, to walk and a bedfast state in which the patient muttered and mumbled and fussed and fumbled, and pulled at his bedding, wet and soiled himself, chewed a little and gulped what was put in his mouth and vegetated for a time and died like a decerebrated animal. Among the more striking symptoms in these cases were the outstanding symptoms of agnosia, aphasia and apraxia. In two other patients, one 61 and the other 71, there likewise developed gradually, without cerebral irritation, apoplexy or paralytic phenomena, evidences of deterioration. In addition to the diffuse nonsystemic symptoms of dementia there stood out in the first case a diffuse aphasic or paraphasic disorder, largely of a sensory type at first, later of both a sensory and motor transcortical type. There was little motor or ideatory apraxia in this case. In the second case there was also considerable paraphasia and jargonaphasia but more prominent were the symptoms of motor, more particularly ideatory apraxia. There was absence of objective paralyses, although in the second case a right hemianopsia was suspected and anatomically properly so.

115. **Acetone in Urine of Acutely Insane.**—In necropsy material Mills and Wearne noted the regular appearance of casts and albumin prior to death, and postmortem they found various kidney changes, which, at least in some cases, seemed the most important pathologic finding. It, therefore, seemed that a kidney irritant or toxin was at work. The authors then found that the urine in these acute cases often contained acetone; that the acetone would appear before the casts and albumin. Treating these cases from a nephritic viewpoint was entirely unsuccessful, but from a gastro-intestinal autointoxication standpoint they had very fair success. The appearance of acetone indicates a metabolic disorder, probably dependent on a gastro-intestinal condition, and also an inherent personal fault. Its appearance shows that the toxemia is reaching a stage when ill effects on the kidneys may be expected. These will be shown simultaneously, or, in a few days, by the appearance of casts and albumin, and there is apparently some danger of the kidney change becoming chronic. Patients treated along expectant and symptomatic lines died. Treatment to improve renal functions, including diuretics, stimulants, baths, packs, cathartics, rectal irrigations, hypodermoclysis, etc., failed. Alkaline treatment, such as the administration of large amounts of soda, also gave very little benefit. The treatment eventually resolved itself into: free catharsis; free washings of the lower bowel by enemas or, preferably, saline irrigations; forcing fluids as much as possible; forced feeding with skim milk and cereals; usually oatmeal gruel, and addition of either cane sugar or lactose; use of intestinal antiseptics, preferably either thymol or betanaphthol; stimulation where necessary, sponging for temperature and other routine measures as in any serious illness.

Tennessee State Medical Association Journal, Nashville

December, 1916, IX, No. 8

117 Uterine Hemorrhage. F. D. Smythe, Memphis.—p. 307.
118 Tuberculosis of Kidney. W. C. Dixon, Nashville.—p. 311.
119 *Significance and Mismanagement of Acute Abdominal Pain. L. L. Sheddan, Knoxville.—p. 314.
120 *Intestinal Obstruction. W. M. McCabe, Nashville.—p. 320.
121 *Menstrual Disorders. L. E. Burch, Nashville.—p. 323.
122 Treatment of Eclampsia. J. T. Altman, Nashville.—p. 327.
123 Birth Control. H. Lockhart, Coalmont.—p. 331.
124 Quinin Intravenously in Treatment of Chronic Malaria; Report of Case. J. Witherspoon, Nashville.—p. 334.

119 and 120. Abstracted in The Journal, April 22, 1916, pp. 1346 and 1348.

121. Abstracted in The Journal, April 22, 1916, p. 1347.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

December 9, 1916, II, No. 2919

1 Work of National Medical Research Committee. C. Allbutt.—p. 785.
2 *Case of Arsenic Cancer. J. Bland-Sutton.—p. 788.
3 *Cases of Gunshot Wounds of Blood Vessels from Mesopotamia. O. W. J. Wynne, D. T. Richardson and G. E. Dodson.—p. 789.
4 Case of Traumatic Aneurysm Dealt with by Obliterative Arteriorrhaphy. J. C. Jefferson.—p. 794.
5 *One Hundred and Seventy Cases Operated Under Spinal Anesthesia. T. A. Weston.—p. 794.
6 Case of Comminuted Fracture of Humerus Produced by Muscular Action. N. H. Mummery and P. L. Giuseppi.—p. 795.
7 *Projectile Injuries of Blood Vessels. W. Pearson.—p. 796.
8 Physiologic Work of Ivan Petrovich Pavlov. W. M. Bayliss.—p. 799.

2. **Arsenic Cancer.**—A woman, aged 60, came under Bland-Sutton's care with a large ulcer just below the left knee; it had the usual signs of cancer of the skin. In shape and position the ulcer resembled a patch of psoriasis. The scaly, onion-like patches peculiar to this disease were present on her legs and elbows. She had suffered from psoriasis for thirty years and during this period had taken arsenic more or less continuously. In 1913 a pimple appeared at the lower border of a scaly patch on the skin, just below the patella. This pimple gradually became an ulcer that was frequently scraped and cauterized. In spite of this treatment it increased in size; in 1916 it had become a typical cancerous ulcer as big as the palm. There were enlarged lymph nodes in the groin. August 23, Bland-Sutton removed the lymph nodes from the groin, ligatured the common femoral artery, resected the upper 2 inches of the internal saphena vein at its junction with the femoral vein and amputated the limb through the middle of the thigh. Tissues from the edges of the ulcer had the microscopic characters of squamous celled cancer, but there were no cell nests. The big lymph nodes from the groin were examined and found free from cancer, but they showed the changes common to nodes enlarged from septic infection. The patient made a quick and satisfactory recovery after the amputation.

3. **Gunshot Wounds of Blood Vessels.**—Treatment of a series of twenty-one cases has suggested to the authors the conclusion that bullet wounds of large blood vessels coming under observation on an average four weeks from the date of injury most frequently show signs of either diffuse false aneurysm or arteriovenous aneurysm, and that the former and more urgent cases can be treated successfully by a local operation at this period, provided that the circulation above can be controlled efficiently either by tourniquet, digital compression, or, in the case of the upper extremity, by ligature of the main artery at some point above the lesion. Fifty per cent. of arteriovenous aneurysms benefit, temporarily at any rate, by delay in operative treatment, considering the known results of operation in these cases. Where the advent of sepsis is suspected in cases of diffuse false aneurysm, free drainage after operation is unattended by danger of secondary hemorrhage. Efficient collateral circulation is established in most cases of destructive gunshot arterial lacerations within a month of the date of injury.

5. **Operations Under Spinal Anesthesia.**—For operations on the abdomen and lower limbs the lateral posture was used for the injection; for perineal, the sitting-up posture. The height of anesthesia reached in each case was carefully noted and found to be usually the nipple line, although in some cases it extended a little higher. The average time at which anesthesia was complete was found to be three and a quarter minutes, the moment of injection being carefully recorded in each case. The duration of the anesthesia was found to be ample for the cases under consideration, lasting usually fifty to sixty minutes, though in some cases longer. Three complete failures to obtain anesthesia occurred, but in each of these Weston believes that he was to blame for faulty technic, as they were all early cases. No failures occurred in the later cases. No serious untoward effects were observed either during or after the injections. A few patients experienced slight dyspnea during abdominal operations if the anesthesia reached above the nipple line, but this disappeared rapidly on slightly elevating the shoulders and head. Slight headache occurred in one or two patients after operation, but was immediately abolished by the administration of phenacetin and caffein. Weston says that if the patient be moved with extreme care no headache occurs. In each case Barker's stovain glucose solution was used.

7. **Projectile Injuries of Blood Vessels.**—During the past nine months Pearson has operated on fourteen patients for lesions of the blood vessels. All cases of aneurysm and a case of varicose aneurysm were treated by intrasaccular operation. In one case (popliteal aneurysm) restorative endoaneurysmorrhaphy was performed; in the others "transsaccular ligation" was necessary, although in three of them suturing operations were at first attempted, and in one of these restorative endo-aneurysmorrhaphy was actually completed before it was recognized that the case was complicated by the addition of aneurysmal varix. There was no mortality in the series, and in every case the vascular lesion was cured.

Edinburgh Medical Journal

December, 1916, XVII, No. 6

9 *Histology of Disseminated Sclerosis. J. W. Dawson.—p. 377.
10 *Marked Spastic Paraplegia of Fifteen Years' Duration; Death Due to Diabetes Mellitus and Boils. B. Bramwell and J. W. Dawson.—p. 411.
11 Action of Veratrone in Treatment of Eclampsia; Report of Three Cases. W. F. T. Haultain.—p. 416.

9. **Histology of Disseminated Sclerosis.**—The tentative nature of the explanations on many points, and the fact that no uniform conception of the process can be offered, have been taken into account in formulating the following conclusions drawn by Dawson: The process underlying disseminated sclerosis is a subacute disseminated encephalomyelitis, which terminates in areas of actual and complete sclerosis. There are no sufficient grounds for distinguishing between primary and secondary forms of disseminated sclerosis. There is much to favor the view that true disseminated sclerosis is due to a specific morbid agent which calls forth a clearly defined clinical and anatomic picture; other disseminated affections of the central nervous system, such as disseminated arteriosclerotic, syphilitic, endarteritic and acute encephalomyelitic processes, may all produce a symptom complex very similar to that of disseminated sclerosis, but they, in their further course, differ from the later in the characteristic remissions and relapses; and, further, acute infective diseases, trauma, chill, shock and all known exogenous factors may act as exciting factors in lowering the resistance of the organism, and thus allowing the final determining factor to operate.

The causal agent is of the nature of a soluble toxin, and it is conveyed to the nervous tissues probably by the blood channel rather than by the lymphatics. The restriction and distribution of the pathologic process is in some way related to the selective action of the toxin on certain areas of the blood supply, or unknown factors determine an irregularly distributed paralytic dilatation, with an increased filtration through the vessel walls. Remissions and relapses necessitate the assumption of the latent presence of the morbid agent in the body, or, if this is an autogenous toxin, either its intermittent evolution or its accumulation from deficient elimination.

It is suggested that fleeting early motor paralyses and psychic symptoms may be related to the presence of areas in association paths; that remission of these symptoms is possibly due to the linking up of other association paths, or their compensation by the opening up of new paths; and, further, that the variation of the symptoms in all stages of the disease emphasizes the importance of the mental factor in the symptomatology; that the cortical areas share in the production of psychical symptoms; that volitional tremor, alterations in speech, and nystagmus, may be the result of sclerosis spreading in form the several ventricles and the aqueduct; that as the lesions are disseminated through the cerebrospinal axis the disturbances are, therefore, especially liable to affect systems which are extensive. The areolar zones, the true areolar areas, and the perivascular sieve-like areas are secondary processes, the result and not the cause of the sclerotic areas. Sites of predilection are probably related (1) to the vessels and (2) to areas in which much glia is normally present.

10. **Spastic Paraplegia; Death Due to Diabetes Mellitus and Boils.**—The case reported by Bramwell was carefully observed for seven years; most marked spastic paraplegia was the only condition present. The patient was again and again examined in the hope of detecting some of the characteristic symptoms of disseminated sclerosis. Such symptoms never developed; but postmortem examination showed the characteristic lesions in the spinal cord of disseminated sclerosis. The amount of sugar passed per diem varied from 700 to 1,300 grains. The patient died with symptoms of acetone poisoning.

Indian Journal of Medical Research, Calcutta

January, 1916, III, No. 3

12 Lesions of Biliary Passages of Rabbits Dying After Repeated Intravenous Injections of Living Vibrios. E. D. W. Greig.—p. 397.
13 Alteration in Serologic and Morphologic Characters of Strain of Vibrio. E. D. W. Greig.—p. 442.
14 Revision of Nomenclature of Indian Anophelini. S. R. Christophers.—p. 454.
15 Indian Tree-Hole Breeding Anopheles A. Barianensis. James-A. (Coelodiazesis Plumbeus), Haliday. S. R. Christophers.—p. 489.
16 Male Generative Organs of Some Indian Mosquitoes. B. Prashad.—p. 497.
17 Halteres of Mosquito and Their Function. B. Prashad.—p. 503.
18 Specific Differences in Genus Musca. P. R. Awati.—p. 510.
19 Life History of Hematobia Sanguisugens, Austen. J. L. Mitter.—p. 530.
20 Life History of Bdellolarynx Sanguinolentus, Austen. J. L. Mitter.—p. 538.
21 Some Centipedes and Their Venom. J. W. Cornwall.—p. 541.

Indian Medical Gazette, Calcutta

November, 1916, LI, No. 10

22 Some Recent Advances in Cardiology. W. S. Willmore.—p. 401.
23 Supernumerary Fingers and Toes. J. W. Cornwall.—p. 407.
24 Cataract Operation "Old and New." W. Corry and H. Shanker.—p. 408.
25 Some Experiences in Depot Hospital. H. L. Treston.—p. 413.
26 Septic Shell Wounds. A. N. Bose.—p. 415.
27 Bullets Extracted from Sepoys in France and Mesopotamia. N. W. Mackworth.—p. 420.
28 Case of Hypertrophy of Male Breast. A. B. deCastro.—p. 420.

Journal of Tropical Medicine and Hygiene, London

December 1, 1916, XIX, No. 23

29 Need of Organized Application of Tropical Hygiene to Prevent Excessive Wastage from Disease in Armies in East. W. J. Simpson.—p. 273.

Lancet, London

December 9, 1916, II, No. 4867

30 Injuries of War. A. M. Sheild.—p. 967. To be concluded.
31 *Agglutinating Properties of Certain Serums against B. Typhosus and B. Enteritidis Gaertner (Delépine, 7160). T. T. O'Farrell.—p. 970.
32 Chronic Gonorrhea Cured by Electrolysis. C. Russ.—p. 977.
33 Case of Bullet in Sphenoidal Sinuses; Removal Through Left Nostril. H. E. Harris.—p. 978.
34 Retained Placenta in Rudimentary Horn of Uterus. M. C. S. Lawrence.—p. 979.
35 *Case of Congenital Absence of Nails. B. O'Neill.—p. 979.

31. **Agglutinating Tests in B. Typhosus.**—Out of the 270 serums of inoculated men examined by O'Farrell, 87.1 per cent. gave positive agglutination for *B. typhosus*. The serums of men inoculated twice give more positive reactions than men inoculated only once. The presence of syphilis (as indicated by a positive Wassermann) does not affect the agglutinating power of a serum for *B. typhosus*. Out of 366 serums, consisting of both inoculated and noninoculated men who either had or were suspected of having syphilis, 19.6 per cent. agglutinate *B. enteritidis* Gaertner (Delépine, 7160) when a 1 in 25 dilution is used. A much smaller percentage may agglutinate this bacillus up to a 1 in 250 dilution. None of these serums were found to affect 7160 in a higher dilution. Out of thirteen cases with a previous history of typhoid only three agglutinated 7160. These cases had had typhoid eight, ten and eighteen years, respectively, previous to the date of examination. The ten cases not agglutinating 7160 had histories of typhoid four months to twenty-two years previously. Any of the serums clumping 7160 which were examined for coagglutinins for paratyphosus A or B proved negative.

35. **Congenital Absence of Nails.**—O'Neill's patient had no nails at all on the thumbs or fingers or great toes and only tiny fragments of nails on some of the other toes. The nail beds were present on all the digits of the hands and feet, and the fragments of nails found on some of the toes were placed round the edges of the nail beds or on the nail beds themselves. The thumbs, fingers and great toes had a hooded appearance at the extremities. In the fingers and thumbs the nail bed had an upper paler part and a lower shining and more vascular part, the latter corresponding to the lunette in the nail of a normal digit. Two younger sisters, aged 25 and 6 years, respectively, were similarly afflicted. The mother had the operation of avulsion performed on the nail of one of her great toes during the time when she was carrying the subject of this note.

Medical Journal of Australia, Sydney

November 11, 1916, II, No. 20

36 Administrative Control of Pulmonary Tuberculosis in Australia. J. K. Patrick.—p. 401.
37 Insecticidal Fumigation in Ships, with Special Reference to Use of Hydrocyanic Acid and to Prevention of Ship Borne Yellow Fever. C. E. Corlette.—p. 405.
38 Thyroid Mechanism and Its Relation to Endemic and Thyrotoxic Goiter. S. Pern.—p. 409.
39 Large Ovarian Cyst. G. P. O'Day.—p. 410.

November 18, 1916, II, No. 21

40 Poliomyelitis; Epidemiology, Pathology and Symptomatology. H. D. Stephens.—p. 423.
41 Poliomyelitis; Diagnosis, Prognosis, Prophylaxis and Medieal Treatment. A. J. Wood.—p. 426.
42 Poliomyelitis; Surgical Treatment. W. K. Hughes.—p. 429.
43 Case of Acute Hydrocephalus in Cerebrospinal Meningitis. R. O. Douglas.—p. 430.

Annales de Médecine, Paris

September-October, 1916, III, No. 5, pp. 461-566

44 Reflex Vasomotor and Temperature Disturbances with Paralysis and Contractures. (Des troubles vaso-moteurs et thermiques dans les paralysies et les contractures d'ordre réflexe.) J. Babinski, J. Froment and J. Heitz.—p. 461.
45 The Syndrome with Total Color Blindness. (Le syndrome-"achromatopsie totale".) M. Landolt.—p. 498.
46 Technic for and Interpretation of Agglutination Tests. (Remarques sur la technique de l'agglutination des bacilles typhiques et paratyphiques.) P. P. Lévy and P. Vallery-Radot.—p. 504; (Absence ou diminution momentanée de l'agglutinabilité de certains bacilles typhiques ou paratyphiques après leur isolement de l'organisme.) Id.—p. 515.
47 War Psychoneuroses. G. Roussy and J. Lhermitte.—p. 525.

Archives des Maladies de l'Appareil Digestif, etc., Paris

1916, IX, No. 2, pp. 61-108

48 *Glycuronuria with Disease of the Liver. (La glycuronurie dans les affections hépatiques.) H. Roger.—p. 61.
49 *Cancer of the Esophagus and Cardia. (Quelques notions cliniques sur une statistique de 172 cas de cancers de l'oesophage et du cardia.) F. de M. Sarmento.—p. 71.
50 *Spasm Closing Gastro-Enterostomy. (Sur l'occlusion spasmodique de la bouche anastomotique comme cause d'insuccès de la gastro-entérostomie.) L. Urrutia.—p. 84.
51 *Cure of a Case of Hemorrhagic Rectocolitis. A. Mathieu and A.-S. Alivisatos.—p. 88.
52 Vomiting Attacks in Tabes Outside of Crises. (Vomissements par réaction colique ou par faim nauséeuse, survenant en dehors des grandes crises gastriques typiques chez une malade atteinte de tabes dorsal. Hématémèse au cours d'une crise tabétique.) A. Mathieu and A.-S. Alivisatos.—p. 92.
53 *Irresistible Desire to Sleep after Eating. (La narcolepsie digestive.) R. Goiffon.—p. 95.

48. **Glycuronuria with Liver Disease.**—Roger enumerates the various factors liable to influence alimentary glycosuria, the greater or less absorbing power of the bowel, the eliminating power of the kidneys, and the power of sugar consumption by the tissues. Induced alimentary glycosuria is thus unreliable as a test, but we have learned that sugar and glycogen aid in defending the organism against poisons. In normal conditions there is enough glycogen on hand to combine with the poisons into compounds—conjugated glycuronic acids—which are comparatively harmless and are readily eliminated by the kidneys. In normal conditions the urine contains about 0.04 gm. glycuronic compounds to the liter. Most of them are conjugated with phenol and indol. The glycuronuria subsides during starvation along with the glycogen content of the liver. On a milk diet it also subsides; at the same time there is less putrefaction in the intestines. After a dose of 0.5 to 1 gm. of camphor before starchy or sweetened food, intense glycuronuria follows if the liver is functioning properly. With the Tollens and Rorive reaction it is easy to estimate and follow the proportions of glycuronic acid in the urine. He gives the exact technic, saying that the naphthoresorcin method is so sensitive that the reaction is distinct even with 0.002 gm. in a liter of water, and shows up variations even of 0.01 per thousand.

Among the clinical experiences related are the absolutely concordant findings with cirrhosis of the liver, and in 32 cases of jaundice from retention of bile. Chronic nephritis and cerebral hemorrhage do not seem to modify the glycuronuria. In 14 cases of heart disease, the glycuronuria was far below normal in the 7 severe cases with asystole. In 3 other cases of asystole the glycuronuria was normal in one and this patient recovered. The other 2 had no appreciable glycuronuria and both died. Of the 40 pregnant women examined, 65 per cent. of the 20 with stomach trouble or albuminuria with edema showed complete absence of glycuronuria; 30 per cent. had very little, and only 5 per cent. had very pronounced glycuronuria. Of the 20 healthy women, all had a little glycuronuria and it was quite pronounced in 70 per cent. These figures are startling as they show that the liver is suffering more or less in even mild pathologic cases. They emphasize the instructive importance of tests to determine the conditions in regard tc elimination of glycuronic acid as a routine procedure in pregnancy, when there is anything to suggest abnormal conditions. The findings in pneumonia are suggestive also. In short, Roger declares, glycuronuria is to date the most practical index of the protecting power of the liver, and the technic for gaging it is comparatively simple and is now ready to be adopted into general practice.

The most sensitive method, albeit a little more complicated, is to add to 5 c.c. of urine in the centrifuge tube, 0.2 of ammonia water (*ammoniaque*) and then 2 c.c. of the commercial solution of lead subacetate. The tube is filled up with distilled water containing 1 per cent. ammonia water. After moderate centrifuging, the fluid is decanted and washed twice with the ammoniacal solution, centrifuging each time. Filtering may answer instead of centrifuging but it takes very much longer. The precipitate thus purified is mixed with 5 c.c. distilled water and the whitish mass resulting is poured into a test tube and, after this, 0.5 c.c. of a 1 per cent. alcoholic solution of naphtho-resorcin. The rinsings of the centrifuge tube with 5 c.c. pure hydrochloric acid are added, and the test tube is placed in the boiling water bath for fifteen minutes. It is then cooled in running water and agitated with 10 c.c. ether. The tint is yellow or slightly tends to pink if there is no glycuronic acid present in the urine. With a positive reaction, the ether turns violet, the tint more or less pronounced. This method is particularly instructive when the urine contains quantities of reducing substances. This is readily recognized by heating with a little Fehling's solution. The tint then becomes yellow, brown or greenish.

49. **Cancer of the Esophagus.**—Sarmento relates that of the 716 cases of cancer in Mathieu's service, 1910-1915, fully 20 per cent. were in the esophagus or cardia, and one in every 2.36 were in the middle third of the esophagus. Of the total 172 cases, all but twenty-five of the patients were men. The proportion of cancer cases was 716 to 8,397 patients in the

service during the six years in question. The Roentgen findings in some typical cases are reproduced. Progressive difficulty in swallowing is the most important and most constant sign of cancer of the esophagus. The survival was never longer than twelve months after dysphagia appeared.

50. **Spasmodic Closure of a Gastro-Enterostomy.**—The gastro-enterostomy proved a success only part of the time. At intervals it seemed to close up completely. The operation had been done and the pylorus shut off to aid in curing an ulcer at the pylorus. Zweig has reported a demonstrative case of the kind, cured by a sedative to relax the spasm. In the case here reported by Urrutia the gastro-enterostomy closed up by the end of the first week, and the man vomited everything taken into the stomach. A secondary operation was contemplated and the stomach was rinsed out morning and evening. Sometimes the stomach was found empty, at other times it contained all that had been ingested since the last lavage or vomiting attack. After failure of papaverin to relieve, belladonna three times a day, half an hour before meals, arrested the spasms completely, and in the first three weeks of freedom from vomiting the man regained over 15 pounds. Zweig encountered seven cases of this kind in twenty-seven patients after gastro-enterostomy, but this is the first in Urrutia's sixty gastro-enterostomies followed to date. In a number of them it was noticed during the operation that the stomach contracted spasmodically more than once while it was exposed.

51. **Treatment of Hemorrhagic Rectocolitis.**—There did not seem to be ulceration in the case reported, but the condition had grown so grave in the course of seventeen months that a fatal outcome seemed inevitable and cancer more than probable. Persevering local treatment for seven months finally cured the patient, and disproved the assumption of malignant disease. The treatment was by injection into the rectum of bismuth subgallate and zinc oxid. The patient was a woman of 43 and the rebellious bloody diarrhea had induced much emaciation. Only brief if any benefit had been derived from dietetic measures.

53. **Imperious Desire to Sleep After Eating.**—Narcolepsy is the term used by Gelineau to express a sudden imperious desire to sleep for a few moments or minutes, recurring more or less regularly. Lhermite presented a report on this subject at a neurologic congress in 1910, with full bibliography. Gelineau explained the narcolepsy as an autonomous neurosis, but others regard it merely as a symptom in various intoxications, etc. Goiffon here emphasizes its import as a sign of indigestion. He publishes a number of typical cases of this acute somnolency after eating even a small and light meal. The desire to sleep comes on so suddenly and irresistibly that it constitutes an actual danger. In one of his cases the man was chopping wood, and the irresistible desire to sleep came on him with such sudden force that the ax, dropping from his relaxed hand, cut his foot seriously. The slumber is actual sleep, not an epileptiform "absence." It lasts only a few minutes; fifteen is the average, and on waking the persons feel refreshed. There was always a history of stomach troubles in these cases, but they were of a mild type, mostly sensory-motor disturbances with deficient gastric secretion. Only four of his patients of this type had hyperchlorhydria and tardy pains. All were thin and inclined to asthenia, but the correction of the abnormal conditions in the stomach, supplemented with a little psychotherapy, cured in every case. In some of Gelineau's cases, emotional stress brought on the narcolepsy, but in Goiffon's cases the dyspepsia was evidently the exciting cause. In one case a man with hyperchlorhydria had this sudden narcolepsy occur for the first time; it lasted for twenty minutes, and when he roused he vomited quantities of blood, his first hematemesis.

Archives des Maladies du Cœur, etc., Paris

November, 1916, IX, No. 11, pp. 473-520.

54 Case of Pseudoleukemic Splenic Anemia of Malarial Origin. G. Paisseau and H. Lemaire.—p. 473.

55 The Manifold Manifestations from the Oculocardiac Reflex. (Dissociation sino-auriculo-ventriculaire, extrasystoles et fibrillation auriculaire provoquées par la compression oculaire. Action favorisante de l'atropine.) M. Petzetakis.—p. 477.

Bulletin de l'Académie de Médecine, Paris

November 28, 1916, LXXVI, No. 47, pp. 403-436

56 The Predisposition to Joint Troubles as a Diathesis. (Qu'est-ce que l'arthritisme? Avec considérations sur les diathèses.) Fernet.—p. 406.

57 Extraction of Projectile in the Mediastinum or Lung. R. Le Fort.—p. 424. S. Mercadé.—p. 430.

58 Bacteriologic Study of Dysentery as Modified by the War. (Cointribution â l'étude de la dysenterie. Nouveaux bacilles dysentériques, pathogènes pour les animaux d'expérience.) F. d'Hérelle.—p. 425.

59 Exophthalmic Goiter and the War. (La maladie de Basedow et la guerre.) L. Bérard.—p. 428.

60 Experimental Generalized Vaccinia in the Heifer and Monkey. (La vaccine généralisée expérimentale chez la génisse et chez le singe.) L. Camus.—p. 433.

Paris Médical

November 25, 1916, VI, No. 48, pp. 453-468

61 *Sorting Field Hospital. (De l'ambulance de triage.) A. Mignon.—p. 453.

62 Simple Device for Immobilizing Fractured Humerus. (Traitement des fractures de la diaphyse humérale.) R. Grégoire.—p. 456.

63 *Influence of Quantity and Activity of Vaccine on the Speed of Immunization. L. Camus.—p. 460.

64 Trench Fever. (Fièvre des tranchées.) R. Morichau-Beauchant.—p. 463.

61. **Sorting Station.**—Mignon discusses the arguments for and against having a special field hospital to classify and direct to specialist centers the wounded as they are brought in. His final conclusion is that such an institution is not needed during periods of comparative calm, and it would not be useful even when the wounded are being brought to it in large numbers unless there are plenty of beds available, so the severely wounded could be kept and only the minor cases sifted out and sent to the rear.

63. **To Hasten and Intensify Vaccine Immunization.**—Camus has found that given a vaccine of a known strength and using exactly the same quantities we can count with precision that the results will be the same. Changes in the quantity and in the activity of the virus bring differences in the vaccinal response. He experimented with rabbits and tested the immunity by intravenous injection. In ordinary times it is immaterial whether five days or ten days or longer are required to ensure immunization. His experiments teach that when it is important to shorten the interval, the vaccine should be exceptionally active and it might be inoculated at several points. He urges others to make practical tests of this in vaccinating children, comparing the interval before immunity to a second vaccination in children inoculated only once and those inoculated at six points.

Presse Médicale, Paris

November 30, 1916, XXIV, No. 66, pp. 537-544

65 Technic of the Carrel Treatment of Infected Wounds. P. Desfosses.—p. 537.

66 *Soap in Treatment of War Wounds. (Traitement des plaies de guerre par le savon.) M. Ratynski.—p. 540.

December 4, No. 67, pp. 545-560

67 *Diagnosis of Death on the Firing Line. (Le diagnostic de la mort sur la ligne de feu.) A. Satre. Title page.

68 *Suprarenal Insufficiency in Malaria. Paisseau and Lemaire.—p. 545.

69 *The Stimulating Phase of Atropin. Petzetakis.—p. 548.

70 Hemorrhage from Wounds of the Gluteal Artery. (Interventions pour hemorrhagies de l'artère fessière.) H. Bousquet.—p. 551.

71 Simple Fracture below War Wounds Involving Only Soft Parts. (Fracture fermée sous-jacente à une blessure de guerre n'intéressant que les parties molles.) Monprofit and L. Courty.—p. 553.

66. **Soap in Treatment of War Wounds.**—Ratynski deplores that more use is not made of soap in cleansing wounds and in local treatment afterward. His experience with it has been remarkably favorable as he describes in detail. He uses 25 gm. castile soap to the liter of water, or doubles this strength for the cleansing procedures. For local treatment he applies it in a 20 per cent. solution in which the compresses are dipped. In his 1,500 dressings of the kind the results were at least equal to those of any other methods of treatment while the invariable absence of pain is a special advantage of the soap treatment.

67. **Diagnosis of Death at the Dressing Station.**—Satre relates that in many of the wounded and shell-shock cases

the men owe their lives to the persistence with which the physician kept up artificial respiration or other means to start the vital functions anew when the man wounded in the head or spinal cord or asphyxiated by gases seemed dead beyond redemption. In some cases resuscitation was realized after four or even six hours of the continuous application of such measures. Subcutaneous injection of 10 c.c. of a 20 per cent. solution of fluorescein can be done without interrupting the artificial respiration or rhythmic traction of the tongue. [The fluorescein has to be dissolved in a dilute alkaline solution.] If there is still the slightest circulation, the stain diffuses readily and is particularly evident in the conjunctiva. "The eyeball looks like an emerald in its orbit." This encourages all concerned to keep up the life-saving measures, when without it the aids are inclined to think that not only the efforts are being wasted but that the dead body is being profaned. It is better to treat a dead man as if there was still life, than to let one live man be left for dead when he might have been saved. Another test for certain death is the change of the alkaline reaction of the spleen and liver to an acid reaction. This occurs half an hour after death and persists a long time. A fine puncture needle is pushed into the spleen or liver; the scrap of visceral pulp thus obtained is spread on blue litmus paper, drawing it apart from blood that may come with it. The pink tint is very pronounced two hours after death. Before this it may be necessary to lift up the scrap of pulp to see the change in tint under it. If this characteristic color reaction does not occur within five minutes, the spark of life is not extinct. The question of real or apparent death comes up again and again on the firing line as men perfectly sound a few minutes before, until the explosion of a shell nearby, are brought in inanimate, sometimes without any signs of physical injury.

68. **Suprarenal Insufficiency in Malaria.**—Paisseau and Lemaire affirm that the suprarenals are responsible for the attacks of coma, the algid phase and the choleriform symptoms in pernicious malaria. Necropsy has revealed acute degeneration or acute hemorrhagic disease in the suprarenals in their fatal cases of pernicious malaria. The knowledge of this acute or subacute pathologic state of the suprarenals explains many features of the clinical picture of malaria, especially the changes in the arterial tension, the asthenia, the lumbar and abdominal pains, the vomiting and diarrhea. The conclusion is inevitable that epinephrin should take its place next to quinin in treatment of severe forms of malaria.

69. **The Initial Stimulating Phase of Atropin Action.**—Petzetakis reports clinical and experimental data which confirm that atropin has first of all a stimulating action. During this initial phase it acts on the vagus nerve, and the effect is manifest in extrasystoles and dissociated functioning of sinus and auricle and of the auricle and ventricle. Testing the direct and reflex excitability of the vagus at different times reveals the initial period of hyperexcitability of the vagus manifested by the change in the heart rhythm and tendency to irregularity.

Correspondenz-Blatt für Schweizer Aerzte, Basel

December 2, 1916, XLVI, No. 49, pp. 1633-1664

72 Spurious Aneurysm from War Wounds; Forty-Three Cases. Rusca.—p. 1633.
73 *Medical Secrecy in Medicolegal Matters. (Aerztliche Fragen über die Schweigepflicht und über rechtmässige Handlungen im Sinne von Art. 192 und Art. 25 des Entwurfs zu einem Schweizerischen Strafgesetzbuch.) P. VonderMühll.—p. 1645.

73. **Medical Secrecy in Medicolegal Matters.**—This article sets forth the views of jurists and of leading physicians as recently enunciated in connection with proposed legislation in Switzerland.

Medizinische Klinik, Berlin

October 29, 1916, XII, No. 44, pp. 1143-1166

74 *Diagnosis of Typhus. (Ueber den augenblicklichen Stand der mikrobiologischen Fleckfieberdiagnose.) R. Otto.—p. 1143.
75 *Advice and Treatment of Nursing Women. (Ueber fehlerhafte Behandlung stillender Mütter.) A. H. Kettner.—p. 1147.
76 Analysis of the Functions of the Hand. M. Cohn.—p. 1151.
77 Splints Permitting Joint Functioning. (Gelenkmobilisationsschienen nach Dr. Schede.) Neumeister.—p. 1153.

74. **Diagnosis of Typhus.**—Otto discusses the present status of the microbiologic differential diagnosis of typhus, saying that microscopic examination of lice from the patient is a simple and reliable measure, as also the Weil-Felix reaction. He gives three illustrations of the microscopic findings in a typhus louse, showing the rickettsia in the epithelium of the louse intestine. The only absolutely conclusive test is the artificial infection of normal lice, but this is too complicated a procedure for common use. The finding of rickettsias in a number of lice is practically adequate for the diagnosis, without waiting for their proliferation. Louse smear preparations show up the rickettsias instructively even though we are not certain as to their nature. Otto mentions that the Wassermann reaction is sometimes positive in typhus; quite often, if active serum is used. It is not specific, as it occurs with both syphilitic and typhus organs. The precipitin reaction was always negative in his experience. The Widal agglutination test is instructive only when persistingly negative. The Weil-Felix agglutination seems to be conclusive. He got agglutination with it at 1:50 up to 1:1,600 with typhus patients, but never with other patients, even at 1:20.

75. **Advice to Nursing Women.**—Kettner denounces a number of prevailing prejudices and customs in regard to lactation, saying that the woman should merely be advised to live, eat and drink what she wishes as in health before she became pregnant, only taking a little larger quantities as she is now "living for two." At first it may be advisable to take smaller and more frequent meals, but after she is up and about the ordinary meals may be resumed. He advocates considerable exercise, especially in the open air; light sports and gardening are particularly beneficial and not used often enough by nursing women. About 1.5 liter of fluid daily is enough, including 1 liter of milk and the rest in mild beer or, better yet, pure water. During the summer, water should be taken more freely, not quenching the thirst with gruels, teas, etc., but merely with water. This applies to the infants also.

He explains that various factors combine to induce constipation after delivery. It may be regarded as physiologic, and the giving of purgatives only enhances the tendency after the immediate action is over. They have the disadvantage further that they attract the blood into the abdomen, drawing it away from the breast, where it is needed most. The purgative checks or arrests completely the work of milk production in the mammary glands, and this is the opposite of what should be done. A dose of castor oil or other purge may turn the scale against the normal development of lactation, especially if the child does not take hold well. This is most likely with the first child, and midwives and attendants often find it less trouble to give up the attempt to have the child fed at the breast. When this occurs at the first childbirth, the woman assumes as a matter of course that she is unable to nurse any of her later children. "At the same time" Kettner continues, "these infants who take hold weakly are the very ones that need prolonged breast feeding most imperatively on account of their constitutional weakness, and the war has increased the numbers of such." The bowels can be moved with enemas, but chemical purgation interferes with the development of the mammary gland function which may be under way days before delivery. If we have chronic constipation to combat, then the bowels should be regulated with mechanically acting substances rather than the chemical purges. Regulating the diet and keeping up these measures usually brings success in time while it does not interfere with lactation.

Kettner comments further on the efforts being made at various infants' hospitals, etc., to train young girls in the care of babies, saying that many mothers shrink from letting their daughters take the course from fear of contagion. This drawback can be overcome by decentralizing the work. Instead of large institutions, organizing a number of smaller establishments, like the two already at work at Charlottenburg, affiliated with the infant welfare stations. Each has only a few beds, conditions thus approximating better those in the home, and enabling the young girls to be trained practically in the duties of motherhood.

In conclusion he insists that not enough care is spent on preparing the nipples for nursing. Inappropriate clothing and nonuse render them soft, and they have to be toughened. Air and water are what is required. The clothing should be loose and light over the breasts; they should be given air baths during the day, and, several times during the day, at least on rising and retiring, the whole breast should be doused with cold water. If the nipples are particularly tender they can be dabbed in the morning with a little alcohol to harden them, and at night a little glycerin or tannin-glycerin applied to make them pliable.

At the first sign of smarting, indicating a crack in the nipple, it should be treated with alcohol without the slightest delay, or touched with a silver nitrate pencil. Salves and moisture undo what has been accomplished in toughening the nipple. The main thing, however, is that the child must be allowed to nurse the nipple as before, even if it does hurt. If the woman is very sensitive, a nipple cap can be used, and in extreme cases a local anesthetic salve may be applied half an hour before the nursing. The breast must be emptied as completely as the other. Even if phlegmonous mastitis develops, cases are known in which the phlegmon opened into a lacteal gland and the contents were taken by the child in its milk without harm. There is no need for such anxiety about the child, when there is mastitis, as is often felt. Even if operative treatment is required we should not dress the breast so nursing is impossible or warn the mother against it. The dressings should leave the nipple exposed. All antiseptics should be scrupulously avoided on account of the infant's sensitive sense of smell. The mother should be persuaded to give each breast in turn to the child as usual. It generally nurses as if nothing was wrong, or any distaste at first is soon overcome. It is remarkable that while stasis hyperemia is directly beneficial in phlegmonous processes elsewhere, stasis of milk has the opposite effect and prompt aggravation ensues. In a recent case the surgeon protested against treatment on these principles, but finally yielded and applied the dressing so the child could nurse freely. Instead of the three weeks' course he had anticipated, the process had completely healed in ten days; lactation had not been interfered with, and the weakly child had its natural food throughout and for a long time afterward, while the mother's period of suffering had been materially abbreviated.

Monatsschrift für Kinderheilkunde, Berlin

September 18, 1916, XIV, No. 2, pp. 123-170

78 *Composition of Gruels Commonly Used in Infant Feeding. (Ueber die Zusammensetzung der in der Säuglingsernährung gebräuchlichen Schleime.) H. Bratke.—p. 123.
79 *Severe Epidemic of Measles. (Klinische Beobachtungen über Erscheinung und Nachwirkung einer schweren Masernepidemie 1915 in Göttingen.) L. Landé.—p. 143.
80 Are Infants Born with Much Vernix Caseosa Particularly Liable to Skin Disease Later? (Vernix caseosa und Erythrodermie.) K. Stolte.—p. 168.

78. **Gruels in Infant Feeding.**—Bratke refers to very thin gruels made by cooking a tablespoonful of oatmeal or other grain in a pint of water, filling up the water to this measure as it evaporates. He reviews the literature on the subject, and describes his own tests and research to determine with precision the various chemical elements in gruel. The unmistakable superiority of oatmeal, barley or rice gruel seems to be due, he thinks, to the better utilization of the starch on account of the long cooking. If flour soups were cooked as long in comparison, they would be utilized equally well.

79. **Severe Epidemic of Measles.**—Landé relates that between April and November last year there were 192 children with measles or its sequels at the Göttingen children's clinic and policlinic. All ages were represented, including 4 infants between 3 and 6 months old, but over two thirds were between 6 months and 3 years old. Ten per cent. of the 192 children died and only 27 were not left with some serious complication or sequel. Several cases developed in the hospital in infants kept in adjoining cubicles, of the L. F. Meyer box system, confirming the view that the box system does not protect against measles. Pneumonia and influenza were prevalent during the epidemic, which explains the frequency of complications on the part of the lungs or bronchi. Just as in malignant scarlet fever, the fatalities seemed to be due mainly to mixed infection for which the measles prepares an exceptionally favorable field. Thirty-one of the children developed some infectious disease or it had been already installed, including whooping cough in 12 cases; in 45 there was pneumonia, with some other respiratory affection in 6; diarrhea during the prodromal period in 11; throughout the disease in 22, resembling dysentery in an additional 5, and actual dysentery in 2. There was otitis media in 26, and conjunctivitis, sometimes with ulcer of the cornea, in 9; hemorrhagic nephritis in 3, meningitis in 3, and sepsis in 13. The measles children in the homes, even of the well to do, were found in dark unventilated rooms as the popular prejudice demands protection against light and air for measles. The exact ear findings in a number of cases early in the disease are given in tabulated form. Many of the previously robust children were left pale, languid and irritable by their measles, not only their physical but their intellectual development showing impairment. Treatment was symptomatic, with care for adequate intake of fluid and food, stimulating tepid sponges, warm baths with dash of cool water or mustard bath, stimulating respiration and circulation, and preventing the child from sinking into dangerous somnolency, with efforts to ward off mixed infection by air, light and cleanliness. In 92 of the 192 cases described, the children were first brought to the hospital after the actual measles had run its course. In one such case a formerly healthy boy of 3 died six weeks after the measles from a combination of pneumonia, pleurisy, pericarditis and nephritis; another, somewhat younger, died seven months after the measles from pneumonia which had run a protracted course and he succumbed to another attack.

Münchener medizinische Wochenschrift, Munich

October 31, 1916, LXIII, No. 44, pp. 1541-1576

81 *The Arc Light in Phototherapy. (Anwendung des Kohlenbogenlichtbades bei primären und sekundären Tuberkulosen der Haut und Schleimhaut.) L. Spitzer.—p. 1541.
82 *Nephritis with Albuminuric Neuroretinitis, Eclamptic Amaurosis and Pseudo-Uremic Disturbances in Vision. (Klinische und funktionelle Studien über Nephritis. II.) H. Machwitz and M. Rosenberg.—p. 1543.
83 Quantitative Determination of Ammonia and Sulphur Compounds in the Urine. (Ueber die quantitativen Bestimmungen des Ammoniaks und der Schwefelverbindungen im Harn.) R. Weiss.—p. 1547.
84 Advantages of Universal Military Training and of Beginning It in the Schools, and of Batallions of the Weakly. (Eigene Truppenteile für Tuberkulöse und Schwache.) Liebe.—p. 1548.
85 Gas Gangrene. (Zur Actiologie und Pathogenese des Gasbrands.) H. Conradi and R. Bieling.—p. 1561.
86 *Para-Agglutination in Differential Diagnosis. (Ueber die praktische Bedeutung der Paraserumreaktionen.) K. Baerthlein.—p. 1564.
87 Vaccination Against Typhoid One of the Great Achievements in Recent Medicine. (Ueber Typhus und Schutzimpfung.) E. Schott.—p. 1567.
88 Advantages of Using Typhoid and Cholera Vaccines as Antigens in Deviation of Complement Tests. (Die Verwendung von Typhus- und Choleraimpfstoffen als Antigene bei der Komplementbindungsreaktion.) F. Kutscher and Schäfer.—p. 1570.
89 *Transmission of Relapsing Fever by Lice. (Uebertragung der Rekurrens durch Läuse.) H. Töpfer.—p. 1571.
90 Collargol Intravenously in Endocarditis. F. Klewitz.—p. 1572.
91 *Diagnosis of Gas Gangrene. Biermann.—p. 1573.
92 Protecting Sheath after Operating on a Nerve. (Zur Frage der Nerveneinscheidung mittelst Galalith.) S. Auerbach.—p. 1573.
93 Simple Splint to Correct Radial Paralysis. (Eine einfache Radialis-Schiene.) F. Staffel.—p. 1574.
94 Skeleton Cart to Convey Litter on Track. (Verwundetenbeförderung auf den Förderbahnen.) M. v. Hövel.—p. 1575.
95 *Weak Tincture of Soap Wards off Rust from Instruments. R. Frank.—p. 1575.

81. **The Carbon Arc Light in Treatment of Tuberculosis of the Skin and Mucosa.**—Spitzer reports experiences at Vienna which confirm the statements of A. Reyn of Copenhagen in regard to the therapeutic efficacy of exposure to the carbon arc light. The lamp used in the Lupus Sanitarium of which he has charge has an 80 ampere current, 60 volts, while Reyn worked only with 7 and 20 ampere currents. The stronger light enables a number of patients to be treated at once.

Spitzer was amazed at the way in which acute tuberculous ulcerations in the mouth and also the chronic granulating form healed completely in a month or two. He had six cases of these types, including one in which the ulcerations had burrowed deep into the tongue, with extensive ulceration in the lips and extreme cachexia. The arc light seems to be the sovereign cure for such cases. The quartz light gave better results in joint cases. He gave daily exposures of an hour each, beginning with fifteen minutes and increasing by fifteen minutes to an hour by the fourth day, and continuing with hour sittings. There seems to be a favorable general action in addition to the local effect. He aims to induce an erythem with casting off of the epidermis and continuous exfoliation for the first two weeks.

82. **Disturbances in Vision with Nephritis.**—The conclusions from the clinical and functional study of nephritis here reported are to the effect that albuminuric neuroretinitis seems to be causally related to that disturbance of kidney functioning which leads to azotemia. It is very seldom found with acute, diffuse glomerular nephritis, but occurs in about 50 per cent. of the cases of malignant sclerosis in the kidneys and also in chronic glomerular nephritis in the stage of insufficiency. It is thus shown to be connected with the glomeruli. It aids in differentiating early stages of malignant sclerosis of the kidneys from the benign form. In chronic cases it indicates a fatal outcome in two years at longest. Eclampsic amaurosis is encountered as part of the syndrome of eclampsic uremia. The fundus is normal except for the occasionally noted edema of the papilla. The prognosis is generally favorable. In exceptional cases it may be combined with albuminuric neuroretinitis. Lumbar puncture is recommended in treatment.

Pseudo-uremic disturbances in the visual apparatus are encountered exclusively with sclerosis of the kidney. They are generally briefly transient, and are probably traceable to arteriosclerosis and spasm of the cerebral arteries. Among his 51 cases of acute diffuse glomerular nephritis, two of the men had albuminuric neuroretinitis and although the kidney disease soon retrogressed, the neuroretinitis persisted unmodified for the months the men were under observation. One of the men had, besides, acute eclampsic uremia with transient amaurosis. Among the total 150 cases of acute diffuse glomerular nephritis, 25 of the men died during the uremic stage; in the other 125 cases the men recovered or the disease passed into a chronic phase. In 74 in this group there were no signs of azotemia at any time, and no tendency to albuminuric neuroretinitis was ever detected in any in this group, nor in 48 cases of acute and chronic nephritis, 15 of focal nephritis, and 20 of chronic diffuse glomerular nephritis in the second phase, but it was pronounced in 45 per cent. of the 20 cases in the third stage, also in 52.8 per cent. of 36 cases of malignant sclerosis of the kidneys.

86. **Agglutination of More than One Infectious Germ.**—Baerthlein relates instances of para-agglutination of the saprophytic germs with the cholera vibrio, typhoid or paratyphoid, Flexner or Y dysentery bacilli in various combinations. In one case, for example, there was agglutination for cholera at 1 : 50, for typhoid at 1 : 200 and for dysentery bacilli at 1 : 100, with marked agglutination of certain bacteria found which are not usually regarded as pathogenic. With a syndrome suggesting dysentery, for instance, the only germs that could be cultivated were some resembling the colon bacillus, but there was agglutination with these bacilli at 1 : 2,000 when tested with Flexner dysentery bacilli. In the blood serum there was clumping of the latter and also of the colon bacilli at 1 : 400. The cure was soon complete under treatment as for dysentery. He emphasizes the importance of this para-agglutination as an aid in the diagnosis of typhoid and of dysentery in particular. It differs from coagglutination in that the latter is a group reaction from receptors naturally and permanently allied, while with para-agglutination the common receptors are only a transiently acquired property. It seems likely that the colon and coccus strains in question adsorb the agglutinating substances produced by the dysentery or other bacilli. Baerthlein has been able to induce para-agglutination in vitro with ordinary colon bacilli kept for a time in contact with killed cultures of cholera, typhoid, paratyphoid, or dysentery germs.

89. **Relapsing Fever and Lice.**—Töpfer states that he found the spirochetes of relapsing fever proliferating in lice after they had bitten relapsing-fever patients. The spirochetes retained their shape, motility, virulence and staining properties, and no special developmental phases were noted. Infection does not seem to be transmitted by the bite of the louse, but the spirochetes released by crushing of the louse get into the lesions made by scratching.

91. **Diagnosis of Gas Gangrene.**—It has been proposed to detect incipient gas gangrene by determining the specific gravity of an excised scrap of muscle. Biermann merely strikes the suspected region with the thinnest pincers available, held as a tuning fork is held. When there is accumulated gas, even in the depths of the muscle below, there is a dull note like the cracked-pot sound on percussion of a tuberculous cavity in the lung. The exact area involved can be outlined in this way. The odor of a gas phlegmon is so unmistakable that there is little danger of confusing the findings with a simple emphysema in the skin.

95. **To Keep Sharp Instruments from Rusting.**—After thorough mechanical cleansing, Frank stands the instrument in a bottle filled with alcohol containing 5 or 10 per cent. soap spirit. The addition of the tincture of soap prevents rusting. An illustration is given of a Pravaz syringe thus kept ready for use. It is filled with the fluid, and stood upright over a bottle, the needle projecting nearly to the bottom of the bottle, and the handle held between two nails driven into the wall.

Wiener klinische Wochenschrift, Vienna

October 19, 1916, XXIX, No. 42, pp. 1321-1352

96 *Typhus. (Zur Epidemiologie und Prophylaxe des Fleckfiebers.) J. Fonyó.—p. 1321. Concluded in No. 44, p. 1397.

97 *The Behavior of the Mononuclear Leukocytes in Malaria. W. Zweig and J. Matko.—p. 1328.

98 *Parenteral Injection of Proteins in Treatment of Eye Affections. (Therapeutische Erfahrungen bei parenteraler Injektion von Proteinkörpern und ihren Spaltprodukten in der Augenheilkunde.) W. Friedländer.—p. 1329.

99 Subretinal Echinococcus Disease; Two Cases. (Zwei Fälle von subretinalem Zystizerkus.) F. v. Herrenschwand.—p. 1332.

100 *Pathology of Chvostek's Sign: the Facialis Phenomenon in Connection with the Tonsils. E. Pulay.—p. 1334.

101 Fistula from Gravity Abscess Persisting for Two Years after Intramuscular Injection of Salvarsan. (Eigentümliche Folgen einer intramuskulären Salvarsaninjektion.) R. Polland.—p. 1339.

96. **Typhus.**—This monograph on typhus and lice presents the present sum of our knowledge on the subject. Fonyo states that the body louse dies in five days if it is unable to feed on human blood during that time. The nits hatch out in two or three days, and if the young lice are unable to get blood they also die within five days. Consequently closing a lice-infected building for two or three weeks, all human beings keeping away from it, kills off all the lice, young and old. The outer covering of the louse is extremely resistant to water, acids and alkali, but its respiratory apparatus is exceptionally sensitive to gases and fumes, and they pass thence into the protoplasm. This explains the effectual action on them of mercurial salves, as they breathe the fumes. Ethereal oils, benzin and 10 or 25 per cent. water of ammonia (*Ammoniak*) have also been found effectual in warding them off or destroying them. Lice are so prolific that Leuwenhock has estimated that the progeny of a single louse can within eight weeks total 5,000. Fonyo emphasizes further that to get rid of vermin all the persons involved must be rid of vermin all at practically the same time. If even one person is overlooked, the success of the whole measure is compromised.

97. **Behavior of the Mononuclears in Malaria.**—Zweig and Matko have been making a comprehensive study of the modifications in the blood picture under the influence of malaria, with and without quinin. They describe them in detail, calling attention in particular to the segmentation of the mononuclears in the blood stream.

98. **Parenteral Injection of Protein in Treatment of Trachoma and Other Eye Diseases.**—Friedländer made intra-

gluteal injections of 10 c.c. milk in forty-two cases of trachoma, all of the severer type. The effect was surprisingly good. A number of particularly demonstrative cases are reported in detail, as also some of rebellious catarrhal ophthalmia which promptly subsided under one or two of the injections four days apart. The interval was never less than forty-eight hours; he always waited for the temperature to return to normal. In some of the cases a long previous course of office treatment had given no relief, but the earning capacity was restored the day after a single injection at 5 p. m. One hour afterward the temperature was 36.6 C.; at four hours 36.8; at seven hours, 37; at 3 a. m. 37.5; at 6 a. m. 36.1, and at 4 p. m. 36.2 C. In conclusion he remarks that the epidemic of trachoma was thus stamped out so promptly and effectually that he has had no opportunity since to apply the method.

100. **Significance of the Facialis Phenomenon.**—Pulay found Chvostek's sign pronounced in 24.6 per cent. of 211 male adults in the hospital in his charge, and, with scarcely any exceptions, in every one of the positive cases there was macroscopic evidence of tonsil disease. The intensity of the facialis phenomenon seemed to be proportionate to the severity of the tonsil lesions. With a unilateral Chvostek sign the tonsil on that side was the one affected. These findings testify that the facialis phenomenon must be regarded as almost invariably a sign pointing to pathologic conditions in one or both tonsils. The findings in sixty-three cases are tabulated. Pulay adds that the presence of the Chvostek sign early in pulmonary tuberculosis is thus explained, and it suggests that prompt treatment of diseased tonsils may prove an important aid in treatment in all forms of acute and chronic disease. Plugs in the tonsils, he continues, may not set up any appreciable local inflammation and yet they may be responsible for lassitude, drowsiness, slight rise in temperature and depression—a condition often labeled neurasthenia from ignorance of the tonsil plugs. He adds that there was probably unsuspected tonsil disease in the cases of tetany in which the Chvostek sign has been recorded.

Policlinico, Rome

November 19, 1916, XXIII, No. 47, pp. 1357-1382

102 *Autoserotherapy of Tuberculous Meningitis. (Meningite tubercolare. Tentativi di cura con re-iniezioni sottocute del liquido cefalo-rachidiano del paziente.) P. Tilli.—p. 1357.
103 Triple Vaccines. (Vaccinazioni combinate.) A. Castellani.—p. 1361.
104 Causes of Error in Roentgen Localization of Projectiles in the Tissues. F. Ghilarducci.—p. 1363.

November 26, No. 48, pp. 1383-1414

105 Milk Hygiene. (Studi sulla produzione igienica del latte. Importanza e controllo della microflora mammaria per la selezione degli animali lattiferi.) C. Gorini.—p. 1383.
106 Field Hospital Unit. (A proposito di un giudizio sulle Unita chirurgiche al campo.) B. Rossi.—p. 1387.
107 Progressive Hysteric Myoclonus. E. Trocello.—p. 1395.
108 Aphasia in Typhoid in Children. E. Iraci.—p. 1400.
109 Neuralgia in the Feet. (Nevralgie ai piedi da freddo.) A. Pagliuso.—p. 1402.

102. **Autoserotherapy in Tuberculous Meningitis.**—Tilli reinjected subcutaneously the cerebrospinal fluid, obtained by lumbar puncture, in three cases of tuberculous meningitis in children 3 months, 18 months and 8 years old. In the youngest child the disease subsided and there was an interval of health, but the meningitis returned ten months later and proved fatal. The 8 year old child recovered and has had no return of the trouble during the three years to date, but the meningitis had entailed blindness and the head is much enlarged. The other child recovered completely under the subcutaneous injections of 1, 2 or 3 c.c. of the lumbar fluid, injected every third day, with tonics and massage. In a month the child had improved so it could be taken into the country and the cure was soon complete and has been permanent during the two years to date, with no sequels. This was the only case in which no bacteriologic tests were made.

Brazil-Medico, Rio de Janeiro

November 11, 1916, XXX, No. 46, pp. 361-368

110 Pigeon Protozoon Disease. (Pesquisas sobre o "Hemoproteus columbae".) H. de B. Aragão.—p. 361. Concluded.
111 *Chagas' Disease Involving the Serous Membranes Near the Diaphragm. (Polyorrhomenose e cruzi-trypanose.) P. Valladares.—p. 362.

November 18, No. 47, pp. 369-376

112 *Superficial Fungus Infection. ("Alcurophora benigna" N. g. n. sp.) O. de Magalhães.—p. 369.

111. **Chagas' Disease with Polyserositis.**—Valladares calls attention to the form of Chagas' disease in which the serous membranes adjoining the diaphragm are affected. He suggests the term polyorrhomenosis for this involvement of the serosas. He also suggests the term cruzi-trypanosis for Chagas' disease, which seems to be caused by the *Trypanosoma cruzi*. He has encountered several cases of the disease within a year in which the predominating symptoms were those indicating inflammation of one or more of the serous membranes adjoining the diaphragm (Picchini's syndrome). This adds another form of Chagas' disease to those already on record.

112. **Fungus Skin Affection.**—De Magalhães has recently encountered five cases of a benign superficial affection, confined mainly to the thorax and causing no subjective disturbance except possibly a little pruritus. The parasite seems to be of the hyphomycetes family. He describes its characteristics saying that it seems to be localized exclusively in the horny layer of the skin.

Prakticheskiy Vrach, Petrograd

1916, XV, No. 28-29, pp. 216-227

113 Camphor in Treatment of Disease of the Respiratory Organs. L. L. I. Sheiniss.—p. 217. Continued.

No. 38-39, pp. 276-287

114 Appendicitis in Strangulated Inguinal Hernia. (K voprosu ob app. v ushtshemlennoi pakhovoi gruizhie.) V. M. Volkovich.—p. 276. Commenced in No. 36, p. 264.
115 *Acute Articular Rheumatism. (Ob ostrom sustavnom revmatizmie.) L. M. Frenkel.—p. 278. Conclusion.

115. **Acute Articular Rheumatism.**—Frenkel's experience with patients with acute febrile polyarthritis has convinced him of its remittent or intermittent character. This is the reason, he explains, why salicylic medication has obtained such a vogue in the treatment of the disease. As the natural intermission comes on after taking the drug, the attenuation of the symptoms is ascribed to the drug, when in fact the drug is not responsible for it. Parallel cases in his clinic passed through parallel phases of exacerbation and remission, whether any salicylate had been given or not. In short, he declares in conclusion, the administration of salicylic acid preparations as a specific in the treatment of rheumatic polyarthritis is based on a grievous misapprehension.

Russkiy Vrach, Petrograd

1916, XV, No. 41, pp. 961-984

116 Salt in Preservation of Cadavers and Anatomic Preparations. II. (O primienenii povarennoi soli dlya sokhraneniya trupov i anat. preparatov.) G. M. Yusifoff.—p. 961.
117 Heubner's Error in Question of First Dentition. (Zabluzhdenie prof. Heubner' a—Berlin—v voprosie o 1-om proriezivanii zubov u dietei.) A. O. Karnitsky.—p. 962. Concluded in No. 42, p. 989.
118 Import of Fusiform Bacilli in Pathology of Scarlet Fever. (Znachenie veretenoobraznikh bakterii v patologii skarlatini.) V. N. Klimenko.—p. 966.
119 War Wounds of the Chest. (Pronikaiushtshiya ognest. raneniya grudnoi klietki.) S. K. Solovieff and G. K. Videman.—p. 969.
120 Mode of Spread and Prophylaxis of Typhus. (K voprosu ob epidemiologii i kontagioznosti sipnogo tipha.) L. A. Silberberg.—p. 972.
121 Treatment of War Fracture of the Femur. (O liechenii perelomov bedrenoi kosti po dannim russkoi i inostrannoi literaturi za tekushtshuiu voinu i na osnovanii 67, sobstvennikh sluchaev.) M. L. Nobel-Oleinikova.—p. 976. Concluded in No. 43.—p. 1017.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

November 11, 1916, II, No. 20, pp. 1769-1848

122 *Origin of Hallux Valgus. (Over het ontstaan van den hallux valgus.) J. G. Milo.—p. 1774.
123 *The Parathyroid Glands. (Epitheellichaampjes.) H. A. Vermeulen.—p. 1779.
124 *Phagocytosis of Red Corpuscles by Polynuclear Leukocytes. (Phagocytose van erythrocyten door polynucleaire leucocyten.) L. Schaap and J. W. Wolff.—p. 1789.

122. **Origin of Hallux Valgus.**—Milo has had casts taken of the feet in a dozen cases of hallux valgus, and study of them has convinced him that the generally prevailing views as to the origin of this trouble are erroneous. It is in reality the inevitable consequence of loss of the transverse elasticity of the fore part of the foot. When the fore part of the foot has lost its transverse resilience from insufficiency of the transverse muscle, it may entail metatarsal neuralgia, Morton's disease, ostitis, etc., and dislocation of the great toe—hallux valgus—is practically inevitable. He gives an illustration of the cast from the foot of one young woman. Her feet had been normal until a tuberculous process developed in the middle metatarsal bone. This was operated on successfully but the transversus pedis muscle was severed. Although the foot seems clinically normal, yet hallux valgus followed within three months. He emphasizes the necessity for detecting early this spreading of the foot and counteracting it, thus warding off secondary hallux valgus.

123. **The Parathyroid Glands.**—Vermeulen is a professor in the Veterinary College at Utrecht. He here describes and illustrates the parathyroids as found in domestic animals, and reviews the literature on the subject. To obtain parathyroids for therapeutic purposes he has found that for various reasons the sheep seems to be the best available animal. The parathyroids in them are large and comparatively accessible after removal of the salivary glands. The stroke to slaughter the animal should be made a little lower than is customary, to avoid injury of the parathyroids, and the skin should be removed with care. The sheep should also be over two years old. This can be told from the teeth, as he describes in detail. The parathyroids in hens are also available; they are small, but compact and accessible. The parathyroids offered now on the market are not always reliable, and his analysis of the anatomic conditions readily explains the mistakes liable to be made in removing the parathyroids.

124. **Phagocytosis of Red Corpuscles by Polynuclear Leukocytes.**—The experiments described were made with sheep or rabbit red corpuscles injected into the peritoneum of guinea-pigs. The abdominal fluid was withdrawn by puncture at hour intervals afterward. The red corpuscles were found incorporated in the polynuclear leukocytes, which had accumulated in large numbers in the peritoneum. By the end of the fifth hour the large mononuclears take up the task.

Hygiea, Stockholm

1916, LXXVIII, No. 20, pp. 1553-1616

125 *Modification of Skin Tuberculin Reaction after Repeated Application of This Test. (Iakttagelser över tuberkulinsensibiliseringen vid v. Pirquets reaktion och dess diagnostiska betydelse.) G. Lindberg.—p. 1553.

126 Present Status of Knowledge in Regard to Action of Light on the Living Organism. (Om ljusets inverkan på levande organismer.) V. Malmström.—p. 1579.

No. 21, pp. 1617-1680

127 *Pathology of the Movements of the Eyes and Diagnostic Import. (Till blickrörelsernas patologi.) N. Antoni.—p. 1617.

128 *Means to Promote Lactation. (Några erfarenheter angående digivning.) H. Ernberg.—p. 1636.

125. **Diagnostic Findings on Repeated Skin Tuberculin Tests.**—Lindberg has applied repeated skin tuberculin tests to 129 children in the hospital and sanatorium with which he is connected. The ages ranged from 1 to 12 years. The tuberculin skin test was applied to each arm and again after an interval of a week. The reaction twenty-four hours after the test and a week later, was measured in both the axial and transverse diameters. When neither diameter was over 5 mm. the reaction was recorded as negative. The findings are tabulated for the entire number, with further details as to the general condition, etc. Of the 129 children, 33.3 per cent. showed a much more pronounced response at the second double test than at the first. In 60 per cent. the response was weaker than at the first; in 6.7 per cent. there was but slight difference.

Classifying the cases in three groups as certain active tuberculosis, probable tuberculosis, and the nontuberculous, he found this intensification of the reaction, or positive sensitization, in only 5.3 per cent. of the 36 cases in the first group; in 28.5 per cent. of 16 in the probable group, and in 78 per cent. of the 18 nontuberculous. These data confirm the assumption of a connection between this sensitization and the phases of tuberculosis, in that as a rule the response to the second application of the test is weaker when there is active tuberculosis, and stronger when it is latent. Of the total 129 children, 75 had given a positive response when first tested. In Bessau-Schwenke's research along similar lines, 129 of 153 children had responded with a positive reaction in the Pirquet test. The proportional findings with the repeated tests harmonized in both series, confirming the reliability of the above deductions. In a further series, Lindberg obtained the positive sensitization in only 15 per cent. of 20 children with manifest tuberculous processes in bones or joints. A fourth table gives the findings in 15 supposedly healthy children and 15 healthy adults.

The results of the whole research testify that with inactive tuberculosis the response to the repetition of the tuberculin skin test is more pronounced than at the first test, while the reverse is the rule with active tuberculosis. The attenuation of the response to a second application of the test has thus a favorable instead of an unfavorable significance. He found it most instructive to record the sum of the diameters of the reaction, including both the twenty-four hour and one week measurements.

127. **Diagnostic Import of Abnormal Conjugated Movements of the Eyes.**—Antoni reports in detail an instructive case of left hemiplegia with conjugated deviation of head and eyes to the right, positive Wassermann reaction and typical response to the Bárány caloric and other tests, all testifying to an extensive lesion in one hemisphere. The phenomena observed confirm the assumption that an antagonistic inhibiting impulse proceeds from the center on the opposite side, and this persists after destruction of one center. This explains the different behavior during and outside of coma, according as the brain is capable of the inhibiting action or not. As consciousness is regained, the inhibiting function of the intact center is restored. Antoni's research during general anesthesia has apparently disproved certain current assumptions in regard to vestibular reflexes, as he describes, and also in regard to a possible subcortical center and the so-called syndrome of Deiter's nucleus.

128. **To Promote Lactation.**—Ernberg remarks that nowhere in practical medicine is prophylaxis of such vital importance as in pediatrics, and means to ensure breast milk for the child take the lead in this respect. When the mother does not yield enough milk in the first five or six days this may be because the efferent passages are not fully permeable. The amount of milk is also liable to dwindle during the third or fourth week, probably because the woman is resuming her usual household tasks before she is quite strong enough. In all these cases the milk secretion has to be stimulated, and the natural stimulus for this is the sucking of the child. The oftener it sucks the better the breast responds, but it must suck vigorously to be effectual. In such cases he advises letting another babe nurse at the same time or at alternate times with the mother's own babe. It may be necessary for this to have the woman go to some hospital or asylum where other babies are available. By this means he has restored lactation even when it had been suspended for some time, having the breast nursed eight or ten times a day. He gives the charts from four such cases. In one after three weeks of nursing and two weeks of exclusive bottle feeding, ample lactation was restored in three weeks. In another, after four breast weeks and five bottle weeks, it took seven weeks for ample lactation. In the other cases there had been no breast feeding at all, but after five or six weeks of bottle feeding the breast milk was gradually brought up to 600 gm. in four weeks in one case and to over 1,000 gm. in nine weeks in the other. Three were primiparae. He supplements the insufficient meal with artificial food, weighing the infant after each breast feeding and giving enough of the bottle food to bring the total up to the desired amount. As the mother is tranquilized by seeing that the child gets enough nourishment, this peace of mind has a further favorable influence on the lactation, and the amounts of supplementary artificial food required grow less and less.

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VACCINE THERAPY

ITS POSSIBILITIES AND LIMITATIONS *

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A discussion of the possibilities and limitations of any topic involves more or less prediction. In science it is dangerous to predict and especially is this so just now concerning the subject at hand, because we are in the midst of a revolution in methods and in interpretations as applied to this field. It is with reluctance, therefore, that I attempt to present this subject, because I feel it cannot be done adequately at this time.

After an attack of many infectious and contagious diseases, such as typhoid fever, smallpox, measles, scarlet fever, the body becomes for a long time highly resistant to the given disease, but not to any other disease. The conception of specificity is here clear and definite.

Many years ago Jenner found that smallpox in the modified and relatively harmless form of cowpox could be given to human beings and that they were then almost as resistant to smallpox as if they had had the disease.

Pasteur, years later, showed that by injecting into animals certain modified living viruses (chicken cholera and anthrax) the animals then became resistant to natural infection and also to experimental infection with that germ. This was true, however, of certain viruses only. The injection of the virus of many other diseases did not so protect against subsequent infection.

Later, Pasteur in his great work on rabies took advantage of the long incubation period in this disease and by the early injection of the modified virus contained in the spinal cord of infected rabbits was able to protect animals and man against the fatal outcome sure to follow in case symptoms once appeared. This method, it is important to note, is in reality protective and not curative, because it is not effective if begun late or after the first symptoms have set in.

Based on such experimental and clinical facts, which accumulated rapidly following the work of Pasteur, animals and man were given dead or modified living germs for protection in a variety of diseases. Up to the present time this method has been used with marked success in man in typhoid fever and with some, but less definite, success in plague and in cholera. In animals, in symptomatic anthrax, swine erysipelas and rinderpest, marked success has been attained.

For certain few diseases, then, the prophylactic use of specific vaccines has been thus far successful in both animals and man, but in the great majority of infections it has not been successful to any appreciable degree. I wish to emphasize this point because it is in prophylaxis that we have the most favorable conditions possible, according to our fundamental principles of immunity, for the action of vaccines. However, the marked success that has attended their use in such diseases as above enumerated establishes a practical and rational basis for their possible value in all infections. Whether or not they will be efficacious in a given disease will of course have to be determined in each instance.

I have referred to the above facts concerning prophylaxis because of their bearing on the curative use of vaccines. A priori, on the basis of immunity principles, we could hardly expect to obtain better or even as good results when the virus is introduced during the course of the disease as when introduced previously. What are the facts?

It was early observed that vaccination with cowpox virus during or after the onset of smallpox had no effect on the course of the disease. Pasteur was well aware of the possibilities of a curative therapy as well as of a prophylactic one, but he reports no results of importance along curative lines. Even to this day it is interesting to note that in the domain of animal diseases, which have been so fertile in furnishing valuable data for prophylactic therapy, there are no natural diseases known in which vaccines for curative purposes have been of any appreciable value. Indeed, there is empirical evidence that vaccination just before or during an attack of a disease may do harm. Veterinarians are careful not to expose cattle to infection soon after they have received prophylactic anthrax vaccine.

Koch's work on tuberculosis in 1890 was perhaps the first serious attempt to apply vaccine therapy to the human and it was, as we all know, a failure at that time. Scores of attempts with almost every imaginable modification of the bacillus, including extracts and bodies, have since been made. Biggs states that treatment with tuberculin on the whole is being gradually given up in this country. This is after a trial of twenty-five years. It should not be understood from this statement that such treatment has no virtue whatever. Trudeau's results would seem to indicate that when used discriminately tuberculin has some value perhaps in immunizing against the toxin. A curative vaccine against the bacillus has, however, not been found.

Fraenkel in 1893 used subcutaneously dead typhoid bacilli in the treatment of typhoid fever, with what he

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

considered good results. Rumpf shortly after claimed as good results when pyocyaneus bacilli were used in typhoid, thus very early questioning the specificity of vaccine treatment. In recent years many reports have appeared dealing with this subject, the results being somewhat conflicting. Beginning with the use of intravenous injections by Ichikawa in 1912 and by Gay and Chickering soon after, the treatment of typhoid, on account of termination by crisis in a considerable proportion of cases (30 to 40 per cent.) thus treated, has excited much interest.

Wright in 1902 inaugurated a new era in the use of vaccines by his discovery of opsonins. This subject is so well known I will not enter into detail. As contrasted with Koch's and Fraenkel's work, it attempted to place the use of bacteria and their products in the treatment of disease on a rational basis, controlled by a carefully determined standard, the opsonic index. According to Wright, vaccines were suitable in certain subacute and chronic infections, the object being to stimulate the protective agencies of the body in order to rid it of localized and perhaps more or less protected foci. Acute infections were not considered suitable for the use of vaccines, though it should be stated that from time to time reports appeared indicating that good results were occasionally obtained in acute cases. Such results were not altogether in harmony with Wright's theoretical conceptions, because in severe acute infections the defenses of the body were considered already overwhelmed and vaccines merely added to this toxemia.

Wright's work has been based on the principle of specificity, as was nearly all the work on this subject before his time. It is interesting here to note how thoroughly this principle has dominated the thought of men since the beginning of the bacteriologic era. The idea of specificity rests on an absolutely secure basis of clinical and experimental facts. Yet it is perhaps not an overstatement to say that for many workers it has become a dogma. Wherever the principle seemed to apply it was not thought necessary even to use controls in the observations. So in the therapeutic application of vaccines, if good results were obtained, it was taken for granted that this was dependent on the specific effect of the vaccine and no thought was given to the possibility of other vaccines or substances producing the same effect. This was due, I think, largely to the very indefinite results obtained by the subcutaneous use of vaccines in many diseases. For since the intravenous use of vaccines and other products, decidedly more definite results are possible and control observations with numerous substances can more readily be made.

Following the work of Wright, careful and scientific as it was, there occurred a flood of commercialism in connection with the preparation of vaccines and bacterial products of all kinds. Apparently it matters little in this age what the therapeutic agent may be, if it is possible to commercialize it, this will be done. The abuse of these products has been discussed so well and so recently by Pearce, Theobald Smith, Hektoen, Billings and others that I will not dwell longer on this point.

Scattered throughout the literature are the reports of more or less isolated observations that in the treatment of infections, both acute and chronic, good results have followed the use of nonspecific substances. Though many of these reports are quite definite, indeed some decidedly more so than those obtained by specific therapy, since they did not appear to be in keeping with the dominating conception of specificity, they were regarded with skepticism or indifference. This subject has very recently been thoroughly developed and the specific facts stated by Jobling and Petersen.[1] The problem largely centers around the toxic effect of colloidal substances, especially the foreign proteins, on injection into the body.

The favorable results first reported by Kraus, Ichikawa and others by the intravenous injection of typhoid vaccine in typhoid fever were soon followed by the further reports of Kraus, of Luedke[2] and of J. L. Miller[3] that equally good results could be obtained with other substances, such as colon vaccine or even with solutions of proteins, albumose, etc., in this infection. Mueller and Weiss[4] have obtained striking results in arthritis, especially gonorrheal arthritis, by the intragluteal injection of sterile milk and of sodium nucleinate, both of which substances cause a marked reaction. Smith[5] calls attention to the value of an anaphylactic reaction, in gonococcus infections obtained with horse serum, normal or antigonococcic, it matters not, provided the allergic phenomenon is manifested. Miller and Lusk[6] report striking results in acute, subacute and chronic arthritic conditions of various types by intravenous injections of typhoid vaccines and proteose.

In our laboratory Culver, engaged recently in this work, reports that in the treatment of gonorrhea and its complications, especially arthritis and epididymitis, with the intravenous injection of bacterial suspensions, there seems to be no specific reaction when gonococci are used as compared with other organisms. The results have been very pronounced in most cases, marked relief following a single injection. The suddenness of the reaction and the severity as characterized by chill, high temperature and leukocytosis are more marked following the injection of meningococci than following either gonococci or staphylococci. The improvement seems to be in proportion to the temperature and leukocytic reactions. As to recurrence of the infections, nothing can be said at present as sufficient time has not yet elapsed.

Mathers,[7] working especially on lobar pneumonia and erysipelas, reports that these infections have been treated during the acute stage by intravenous injections of various vaccines and protein solutions. Suspensions of typhoid bacilli, pneumococci, staphylococci and streptococci have been used, as well as normal horse serum, diphtheria antitoxin and various protein solutions, both animal and vegetable. All of these substances, when used in sufficient dosage, may give rise to a characteristic febrile and leukocytic reaction which in some instances was followed by a temporary clinical improvement. No evidence has been gained, however, which would indicate that the specific vaccine in these diseases excels in any way the nonspecific antigen. Mathers infers from his experience with erysipelas and pneumonia that the therapeutic results from this method of treatment do not warrant the general application of this method. He has also observed that citrated human blood produces a reaction similar to that described above when injected intravenously in amounts usually advised in transfusions.

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[1] Jobling, James W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, The Journal A. M. A., June 3, 1916, p. 1753.

[2] Luedke: München. med. Wchnschr., 1915, **62**, 321.

[3] Miller, J. L.: Illinois Med. Jour., 1916, **29**, 8.

[4] Mueller and Weiss: Wien. klin. Wchnschr., 1916, **29**, 249.

[5] Smith, L. D.: The Value of Anaphylaxis in the Treatment of Gonorrheal Complications, The Journal A. M. A., June 3, 1916, p. 1758.

[6] Miller, J. L., and Lusk, F. B.: The Treatment of Arthritis by the Intravenous Injection of Foreign Protein, The Journal A. M. A., June 3, 1916, p. 1756.

[7] Unpublished data.

Since these very striking results have been obtained by the use of nonspecific protein substances, the specificity of treatment with serums in pneumonia and other infections and with vaccines, especially in typhoid, as reported by Gay, and in the many other diseases in which apparently good results have been obtained, may be called into question.

My own experience with vaccines, which began in 1904, has included a variety of infections, both acute and chronic. I have observed in certain cases, especially arthritic cases, and also in some colon infections, definite reactions, with chill, fever, leukocytes, etc., followed by a striking improvement. This experience, I think, has been a common one, especially by those who have used large doses as well as small doses of vaccine. Naturally, the interpretation usually given to such reactions has been that they were specific responses on the part of the body to its autogenous virus. In the light of newer facts we are inclined now to view such reactions as probably nonspecific and of the same nature as those following injection of any foreign protein.

One difficulty in vaccine therapy has been to explain the good effects sometimes seen in the treatment of acute infections with vaccines. Wright himself and many other conscientious workers report such instances. As stated above, on the basis of the opsonic theory of Wright, this mode of treatment of acute infections was not a rational one and indeed was contraindicated. We may now believe that such favorable results were no doubt due to the nonspecific reaction caused by the bacterial protein.

At the present moment the facts would seem to indicate that the nonspecific substances referred to are able to do almost everything the specific vaccines have done in the cure of disease. In other words, the curative effects of vaccines reported heretofore may be explained by the action of the nonspecific substances in the vaccine rather than by its specific factors.

Jobling and Peterson,[1] in their analysis of the mechanism of the action of nonspecific therapy, call attention to a number of factors involved in this process. Selective stimulation of the hematopoietic tissues occurs, which results in flooding the body with antibodies which are specific, but the stimulus may be nonspecific. Hyperpyrexia and leukocytosis, emphasized especially by Gay and his associates in recovery from typhoid by this form of therapy, and the mobilization of serum protease and lipase, with an ultimate rise in the antiferment titer of the serum following injection of various foreign substances, are considered significant processes. These processes, they suggest, are dependent on certain changes resulting in the state of increased dispersion of colloids affecting both the serum proteins and the serum lipoids. Such changes are able to be brought about by a variety of substances which result in reactions clinically and therapeutically almost identical.

In such infections as the local staphylococcus infection of the skin and in some others in which, since Wright's first work, so many favorable reports have appeared it is quite possible that so far as immediate results are concerned a nonspecific foreign protein might act as well. However, in such cases there seems to be another factor concerned, namely, the specific immunity factor operating to prevent a recurrence of the infection. The nonspecific protein would probably not influence this factor and the use of autogenous organisms would be desirable for its immunizing effect. Therefore, where both a curative and preventive effect is desired, it would seem that the autogenous vaccine would be advantageous over a nonspecific protein substance, which might have only a curative action.

Subcutaneous injection of foreign proteins may behave quite like the intravenous injections, though the action is slower and the dose required for the desired effect is probably somewhat larger. On account of the very severe reactions occurring at times after the intravenous method, the question may be properly raised as to its possible dangers. Evidently further data are needed here, but if a proper reaction can be elicited by subcutaneous use, this route might be preferred on account of simplicity and perhaps safety. Even subcutaneous use of large doses may not be entirely free from harm. The writer knows of a case which, following a large subcutaneous dose of dead meningococci, developed a typical reaction manifested by a severe chill in thirty minutes, followed by fever of 103, nausea, vomiting, with leukocytes on the third day numbering 45,000. On the second day the urine contained albumin and large numbers of granular and hyaline casts, which persisted for several days.

An enormous number of patients are now being treated and will be treated throughout the country by this method. Much of it will be done by inexperienced men and no doubt we may expect some serious accidents to occur. I think it behooves us to take a conservative stand in the administration of these preparations and to advise strongly against the use of all sorts of unstandardized bacterial products which are now offered and will be offered to the profession.

In case it is shown conclusively that, for therapeutic purposes, any foreign protein may serve, the logical preparation for use would seem to be a sterile pure chemical preparation of some proteose, which can be carefully standardized. Such a substance would be far more reliable and satisfactory than the various vaccine mixtures and extracts now flooding the country.

SUMMARY

Recent work tends to show that many substances, the so-called foreign proteins and their derivatives, may, when injected especially into the veins, quickly cause a severe chill followed by high fever, leukocytosis and certain changes in the blood, especially the appearance of ferments. These proteins may be derived from disease germs or they may consist of other animal substances, as serum, proteoses and milk. After the rather severe reaction, marked improvement and even permanent cure may result in certain diseases, especially typhoid, and in rheumatic and gonococcus infections. This may be due to the high fever and to increase in the ferments and leukocytes of the blood. Other factors are probably at work.

The nonspecific effect of vaccines is just now probably the most important problem that concerns the vaccinationist. The possibilities of development along this line are many, for the principle concerns an immense number of diseases, both in man and the lower animals. Questions concerning ultimate cure, recurrences, relapses and dangers cannot now be justly appreciated because of lack of data.

This form of treatment should be referred to neither as specific nor as vaccine therapy. It is nonspecific, and usually, but not necessarily, protein therapy.

The important domain of vaccines is protective, not curative, according to present data.

CLINICAL EXPERIENCE WITH THE USE OF VACCINES IN DISEASES OF THE EAR, NOSE AND THROAT *

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In the consideration of such a subject as is indicated by the title, it is evident that full justice cannot be done to each disease of the upper air passages with which immunotherapy has been tried. The option will therefore be exercised by the writer of selecting those which have been most extensively studied or are most prominently before our branch of the profession today, and endeavoring from the works of others, as well as from his own experience, to arrive at a just appreciation of their present value. He may as well confess at the start that he is a believer in this form of treatment, although admitting that it is often far from satisfactory in the light of our present knowledge. He feels somewhat diffident in presenting this subject to you and commenting favorably on the results obtained, in view of the present tendency to belittle vaccine therapy, either prophylactic or curative, specific or nonspecific.

In reality, only the threshold has been passed in the study of immunology as applied to ear, nose and throat diseases, many problems remaining to be investigated, among which might be mentioned improved methods of taking cultures and of determining the infecting organism or organisms, the preparation of more efficient vaccines, whether by sensitization or otherwise, some accurate method of counting organisms and of determining the dosage for different organisms and different individuals. And it is well to sound a note of warning at the outset, that vaccine therapy, much as may be hoped for it in the future, will probably never supersede the surgery that is necessary for drainage and for the correction of abnormalities that by their presence keep up irritation of the tissues and thus are conducive to reinfection by the same or another type of organism. Much as we should like to immunize permanently against everything, in spite of such malformations, it seems hardly probable that this Utopia will ever be reached.

In the popular craze for giving vaccine treatments which has pervaded alike the specialist and the general practitioner, vaccines have been administered for every known and unknown disease, with reason or without, more often the latter. This has been, to a large extent, due to the many commercial brands on the market and the often absurd claims put forth for them by their makers. By this it should not be inferred that these popularly called stock vaccines are without use or value, for many men have obtained results by their employment. From the very nature of the case their use is imperative in certain conditions, even the much abused mixed varieties, often miscalled polyvalent; and these vaccines must not be confused with the stock suspensions of the home laboratory, also at times a most useful product. Warning must also be issued against the confusion existing in many minds, or at least on many tongues, and this not by any means confined to the laity, between serology and vaccine therapy. It is needless to define the terms to this audience, but bacterins are so often miscalled serums that it has seemed necessary to call attention to these two distinct immunity-producing methods of treatment, since only the first will be considered here.

THE NOSE

Acute Rhinitis.—Probably the most general adaptation of vaccines to ear, nose and throat practice has been their use for the prophylaxis of acute rhinitis or common cold, not only by the specialist, but by the general practitioner, the country over. So much so, indeed, that patients now demand the so-called serum treatment. The mere fact that it has come into such general use by physicians and general demand by the laity would indicate at least some value in this method. Most of the immunization is, of course, necessarily done with the aid of commercial mixed vaccine of the many well-known different brands on the market. It would be manifestly impossible to culture the causative organisms for the next cold from every nose at present in healthy condition, although it is probable that in a certain proportion of cases organisms would be obtained from which competent vaccines could be made. In case the patient is subject to repeated acute colds, cultures taken during one of these may be used for vaccine preparation and prophylaxis against future ones, with most excellent results.

Taking it for granted then that the use of vaccines for the prophylaxis of acute rhinitis is of value, one would naturally ask of how much value this method is. Many cases, of course, will fail to respond, due probably to the fact that the organism causing the cold is not in the vaccine used whether it be autogenous or commercial mixed. For it is quite possible that in taking the culture from the nose the causative organism may not be obtained. In this relation the work of G. B. Foster,[1] recently published, in which he seems to demonstrate as an etiologic factor in acute rhinitis minute filterpassers or filterable toxins, would very readily explain these failures. By accepting this work as being of great value, we must not forget that the old, well-known organisms do cause a certain percentage of rhinitides, or at least by secondary infection prolong them to their customary length, and when due to them, vaccine treatment will prevent or cure a very considerable proportion.

The duration of immunity depends much, of course, on the amount of exposure, the individual peculiarities of the patient, the amount of vaccine given, and the presence of epidemics. For instance, a patient subject to attacks of acute rhinitis every few weeks may be so immunized that the interval will be stretched to six, eight or ten weeks or longer. The individual who has one or two bad colds during the winter may be immunized so that he will go from year's end to year's end without any. These immunized patients frequently start apparently to have colds, that is, sneezing, sniffling, coryza, etc., which symptoms pass off in the course of a few minutes or a few hours. This is readily explained if we consider the probable etiology of many colds. Change in temperature of the air inspired or impinging on certain dermal surfaces excites reaction in the vasoconstrictor and vasodilator and secretory centers and a corresponding relaxation of the nasal mucosa, an increase of blood, secretion, sneezing, etc. Here it probably is that the infection takes place and prolongs the cold. If the patient is immune to infection the cold disappears with these few symptoms.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Foster, G. B.: The Etiology of Common Colds, THE JOURNAL A. M. A., April 15, 1916, p. 1180.

In this connection, a word or two on the treatment of acute colds is appropriate. If colds are treated early, there is no doubt that a great many of them may be stopped short, that is, within twenty-four hours. But, of course, to do this an autogenous vaccine cannot be used, nor can a bacterial diagnosis, as a rule, be made on account of the shortness of the time. Acute tonsillitis is in precisely the same category. The well-known rôle that acute rhinitis in repeated attacks plays in diseases of the ear will at once convince the aural practitioner of the value of this prophylaxis. While the actual condition may or may not be improved by the vaccine, there can be no question that the lengthened interval between attacks and the diminished severity of them makes it possible to obtain results in the treatment of recurrent acute catarrhal otitis media and chronic catarrhal otitis media that are not possible without some such method of treatment for the nasal condition.

Accessory Sinuses.—What has been said here in relation to diseases of the ear applies equally to acute and recurrent diseases of the accessory sinuses of the nose. Vaccines, as a rule, have but little influence on suppurations of the various sinuses, except under certain conditions. When free drainage is obtained, the use of appropriate potent vaccines will usually hasten a cure. Or if given before operation, the individual's immunity will be so raised that it will accomplish the same result. But, as in diseases of the ear, perhaps their greatest value is in preventing the recurrent acute infections that so often terminate in an attack of sinusitis. The reports would indicate that the use of vaccines in cases in which the given sinuses are filled with pus with insufficient drainage is entirely useless.

Much of what has just been said is, of course, well known and to a certain extent may be considered established, although the numerous failures that everybody has have produced many pessimists in regard to vaccine therapy.

There are two new subjects to be included under the title of this paper that are of interest, besides the pollen treatment of hay-fever, which is not, of course, a vaccine treatment, although it approximates it and will, therefore, not be considered.

Ozena.—The treatment of ozena by any method has, as every one knows, been most unsatisfactory, and commissions have, at times, been appointed by various national scientific societies to study the question, but without obtaining any results. Within the last few years Hofer of Vienna, working in collaboration with Kofler, unearthed the forgotten contention of Perez that a bacillus, supposed to be of the Friedländer group and called by him the *Bacillus ozaenae-foetidae* was the cause of ozena, and could be found on and isolated from the mucosa underlying the crust. Two of the early workers in this field were Skillern and Holmes[2] of this section and their report was one of the earliest. Their findings were, as far as they went, similar to the above. Hofer and Kofler followed the lines laid down by Perez, and later Skillern, treating their patients with vaccines, not autogenous, but made by themselves from half a dozen different strains, and therefore polyvalent. Their results, while by no means uniformly good, were on the whole very encouraging, and a number of Americans in the last two years have studied with Hofer and have obtained various results by his own or modified methods. Some reports have given us total failure, others, notably Horn of San Francisco and Klenk and Guggenheim of St. Louis, claim almost universal success.

Horn, however, disproves the contention of Hofer that the *Bacillus ozaenae-foetidae,* or the coccobacillus, as he calls it, is at all related to the Friedländer group, but claims that it is a motile and flagellated organism similar to, if not identical with, that which causes distemper in dogs, the *Bacillus bronchosepticus.* He uses agglutination tests to aid in his diagnosis and administers to his patients a polyvalent stock vaccine of his own preparation and claims almost 100 per cent. of improvements or cures. Klenk and Guggenheim prepare autogenous vaccine for their patients with good results. If Horn's contention proves to be correct, that the coccobacillus is not of the Friedländer type, but belongs to the colon and typhoid group, it would seem that most investigators have been on the wrong track and have been working with the Friedländer itself, which is probably a normal inhabitant of the nose. In this connection, however, Friel[3] claims excellent results from the intravenous injection of a sensitized living vaccine of Friedländer's bacillus. He gives this in very small doses, 2 million only, and avoids severe constitutional symptoms. If the etiologic factor in ozena is not an organism of the Friedländer group, this treatment would only avail by immunizing against a secondary Friedländer infection, which might improve the patient's condition greatly. Indeed, the writer has seen some apparently good results with a killed, nonsensitized vaccine of this organism given hypodermically.

Dan McKenzie of London, a keen and usually capable observer, has just issued a claim and offered proof, that ozena is a manifestation of tubercular infection, not nasal, and believes the acid-fast bacilli which he invariably finds underlying the crusts to be attenuated forms of tubercle bacilli. His reasoning in reaching this conclusion is out of place here, but he claims very great improvement, if not cure, following tuberculin treatment, the usual small dose, without reaction, being used. While he noted marked improvement in a large percentage of cases, he found a tendency to relapse following the cessation of treatment. There was also a concomitant gain in strength and health.

Asthma.—Babcock, as well as others, has called attention to the value of autogenous vaccines in the treatment of essential asthma, and it seems not out of place to refer to it in this paper. He considers essential asthma to be an anaphylactic reaction to some form of foreign protein, whether it be animal emanations, pollen, food substances, such as fruits, vegetables, meats and shell fish, bacterial proteins from the accessory sinuses, the ears, the tonsils, pyorrheal pockets, gastro-intestinal absorption, gallbladder infection, etc. His method of combating this distressing infection is to search most industriously for the source of the protein absorption and to eradicate it, if possible, using an autogenous vaccine, in addition to the surgery, if the focus is found in the body. Besides that, or if no such focus is found, he makes an autogenous vaccine from the bronchial sputum, which can always be obtained in large quantities in these cases.

He finds the usual organisms of bronchitis or tracheitis and in addition an anaerobic organism, which he cannot classify, but which he believes to be the main cause of the asthmatic attacks, and whose inclusion in the mixed vaccine prepared seems to be necessary. By this technic he claims that most patients with essential asthma, uncomplicated by organic disease of the heart or kidneys, can be cured or at least permanently relieved. This is of the utmost importance to us who make a study of the diseases of the upper respiratory tract, and must of necessity be intimately connected with our line of work. It emphasizes perhaps as much as anything else the fact that we must not depend on vaccine alone for the treatment of our patients. The necessary surgery to secure drainage and the eradication of foci of infection is absolutely essential, and given these conditions, and an intelligent use of vaccines, great results may be anticipated. And this applies not only to asthma, but to all diseases of the ear, nose and throat.

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[2] Skillern, R. H., and Holmes, E. B.: New York Med. Jour., Aug. 15, 1908.

[3] Friel: Lancet, London, January, 1916.

THE EAR

There are six more or less distinct conditions of aural infection, all but one related to each other, in which vaccines have been used with some degree of success, and it is proposed to consider them in their order of severity.

Otitis Externa Diffusa et Circumscripta (Furunculosis of the External Ear).—It is well known how trying, though seemingly how trivial, this affection often is to patient and physician alike, and its well-known tendency to a succession of infections or recurrences in one or both ears or alternating between the two. It is analogous to the ordinary acne vulgaris, but it is not identical with it, and it is preeminently a very localized process and distinctly amenable to vaccine treatment. As the furuncle yields ordinarily to local treatment or is self-limiting, it is not until there is a succession of them that there is a distinct call for more definite immunization and prophylaxis against the recurring crops. Then a vaccine made from the infection evacuated by the knife will often prove most efficient in terminating the trouble. For treating the initial lesion this is manifestly impossible since by the time pus has formed in sufficient quantity for obtaining a culture that particular infection is almost at an end.

If from the history of the case it is feared that there will be more following, the wise immunologist will proceed to have a vaccine made and administer it to guard against this contingency. In case the infection is of that obstinate, painful type that shows no tendency to localize and soften, to "point," in common parlance, a stock vaccine may be utilized, since most, if not all, of these infections are caused by either the *Staphylococcus albus* or *aureus*. Left-over suspensions of these organisms, prepared for the treatment of other patients and properly preserved, frequently answer well for this purpose, or for use pending the preparation of an autogenous vaccine. If these preparations were polyvalent perhaps they would be more uniformly successful even than they are, although frequently they are most efficient. Naturally, if the infection has localized and pus is present there is a positive indication for drainage, whether vaccines are used or not. If they are a very fair prognosis for freedom from recurrence may be given.

Acute Catarrhal and Suppurative Otitis Media.—Like the preceding, acute catarrhal otitis media is a more or less self-limited affection hardly calling for the artificial production of immunity except in the treatment of the nasal condition in which it has its origin. However, if we have it in the recurrent form, cultures taken from the tympanum, or in default of this, from the nasopharynx, will produce a vaccine that will have a distinct limiting and prophylactic effect. Here again necessary drainage must be obtained either through the eustachian tube or the membrana tympani, and the contributory tonsils and adenoid removed. It must also be remembered in estimating the results in this as well as the more severe variety of the same disease, acute suppuration, that the natural tendency is to get well, almost in spite of treatment, and the mere fact that this is accomplished must not be attributed solely to the vaccine until a large number of cases has been carefully studied in detail. This has been done by Weston and Kolmer, as quoted in a previous paper, and it was shown that in a large number of cases the length of time for cessation of discharge in these suppurations was very materially reduced by the preparation and administration of autogenous vaccines.

Chronic Catarrhal Otitis Media.—So far as the writer can learn by a search of the literature, by his own experience or by the process of reasoning, vaccine therapy can have but a small direct influence on our chronic catarrhal ears. In these the damage is done, and except for the treatment of the tubal and nasopharyngeal condition, aggravated by repeated acute nasal infection, which has been discussed above, little can be expected from it. In this latter respect, however, results, albeit not brilliant, may be obtained.

Chronic Suppurative Otitis Media.—Some years ago, when it was first announced that the use of vaccines would in large part supersede the accepted methods of treatment for chronic suppurative otitis media, much doubt was expressed, and many workers took up the question to achieve, in the main, only disappointment. While not as brilliant, on the whole, as many were led to expect from one or two notable series reported, the method undoubtedly has its uses, if also its limitations, and it is the feeling of the writer that it should always be given a fair trial before proceeding to the court of last resort, namely, the radical operation, except where very distinct contraindications exist that may endanger life by delay or at least make all chance of success hopeless. Such contraindications are any symptoms pointing to the imminence of intracranial involvement, probably labyrinth suppuration, extensive caries of the tympanic walls, chronic mastoiditis and cholesteatoma.

However, even when success is not obtained by the use of vaccines in this condition and it eventually becomes necessary to proceed to the radical operation, the ground has been well prepared, a certain amount of immunity established, and the chances are that healing will be more rapid and satisfactory. The treatment of chronic suppurative otitis media by vaccines is perhaps as complicated and difficult as that of any other disease in the body. Almost always a mixed infection, it is extremely difficult to detect and isolate the causative organism or organisms, and all depends on the technic employed and the success obtained in this very first particular. The method adopted by most workers in this line is to cleanse the external canal and middle ear thoroughly by swabbing or suction, sterilize with alcohol for various lengths of time, then by inflation or suction, produce a drop of pus or moisture in the middle ear and from this take the culture with a sterile platinum loop. In this way only can contaminating saprophytes be avoided. The sterilization may be too complete, in which case no growth will result and it will be necessary to repeat the process, but no particular harm has been done other than the delay of a few days.

With a potent vaccine made from the proper organism results will depend on the proper dosage, intervals between doses and possibly to a certain extent on the local treatment which should be carried on simultaneously with the vaccine administration, except when cases are being cared for by this method experimentally to determine its value. In these cases, no local treatment should be given. If a case is about to respond favorably to the vaccine, a local reaction is first obtained on the arm at the site of injection and a focal reaction in the ear consisting usually of a sensation of heat, an increase and a thinning of the discharge, followed after a few days by a diminution and thickening. If no improvement is observed after five or six doses have been given, or if improvement has followed up to a certain point and then ceased, the vaccine treatment is discontinued, the patient allowed to rest for a few weeks, and further cultural studies made of the ear, at which time it may be determined that the type of organism has changed and that a fresh vaccine will be made up of a new group of organisms. No one is justified when a mixed culture is obtained, as it usually is, in picking out one or two organisms and discarding the others. All organisms included when the culture has been taken in the way outlined above should be made into vaccine. By this it is meant they should be plated out and grown separately and mixed finally. Many early failures in the hands of the writer were due to arbitrarily picking out certain organisms which were thought to be causative and discarding others, notably the *Bacillus pyocyaneus,* which was not supposed to be pathogenic. It was found, on the contrary, that the *B. pyocyaneus,* when included in the mixtures or when used in pure cultures, gave probably the best results of all vaccine treatment.

It is impossible to say in what proportion of chronic suppurative otitis media the discharge can be arrested. It is not well to use the word cure because of the well-known tendency to recurrence after any method of treatment, and while it seems probable that this tendency is much less after proper immunization, still it must be recognized that it exists. In studying results also, just as in the acute diseases mentioned above, it must not be forgotten that many of these ears become dry under ordinary treatment or even without, so that due allowance for this must be made. In arriving at conclusions as to the value of vaccine in this disease, care should be used in excluding as far as possible this spontaneous result by taking only cases of proved chronicity which have been under all other methods of treatment for a long period of time.

A series of fifty cases of this type, recently reported by the writer and his assistant, M. S. Ersner, showed dry ears obtained in only 46 per cent. But in view of the fact that otherwise all of these cases would have gone to radical operation for a cure, it would seem that something has been gained. The problem here, it would seem, is to find some method of determining which organisms are the true pathogenic ones. This was attempted last year in connection with the series just mentioned and twenty-five complement fixations were done on these cases, with a negative result in all. The reasons for failure were possibly the facts that only three polyvalent collections of organisms were used as antigens or because of the extreme local character of the process in the middle ear and the constant lack of sufficient antibodies in the blood to give the reaction. Much work might be done along this line to very great profit. In this same series of cases there were no positive Wassermann reactions among the failures, but there were five positive von Pirquet tests.

Mastoiditis and Its Complications.—No one will advocate dependence on vaccines for the treatment of a case of acute mastoiditis if this is avoidable, though it is conceivable that they may be used if for some reason operation is out of the question or might bring added danger. There would be no objection to their use during the period before operation of a slowly developing mastoiditis. They would at least do no harm and would probably raise the patient's resisting power sufficiently to make quick recovery possible. They must, however, in no sense be considered to take the place of the mastoid operation in case this is possible and imperative, but several times in the practice of the writer, and many times by personal reports to him from other practitioners, the administration of vaccines has put a definite check to a slowly progressive mastoiditis or has been the determining factor toward resolution in one that was at a standstill.

While definite failures to produce this result have also been reported, it is the opinion of many that it is often a useful procedure. That it is dangerous teaching is evident, as it may hold out hope for recovery until the time of election for operation is past, and vaccine should therefore be used with the greatest care and judgment in mastoiditis and the indications for operation closely watched. At the time of operation, pus recovered from the mastoid should always be sent to the laboratory for bacterial diagnosis, and it is the writer's custom either to have a vaccine made at once or at least to keep subcultures going until it is determined that a vaccine will not be needed. The first method is preferable, as it is very little more troublesome and the vaccine is ready for use if the case does not progress satisfactorily. Indeed, it would seem wise to use the vaccines in all cases as soon as prepared after operation, since healing is more prompt by their use. When we come to intracranial complications and general septicemia, vaccines are of no avail. In this acute general process antitoxins and serums should be the more scientifically correct, but evidently do not seem to have been of very much use in practice.

STOCK VACCINES

The writer has an open mind as to the relative values of autogenous and stock vaccine. That the latter is often of value in cases in which the autogenous product has failed is beyond question from any one who has done much of this work. Indeed, the whole theory of prophylactic immunization depends on this fact, so well exemplified in the case of typhoid fever. So far as it has gone, also, the vaccine treatment of ozena by a polyvalent stock vaccine has proved eminently satisfactory in the hands of Horn. It can readily be seen how this may be so, if the suggestion of a basic protein common to all bacteria, or at least to associated groups, be accepted, giving at least partial immunity, and it is equally evident that it may fail in certain instances, notably the streptococcus group, since there are so many different varieties with widely separated characteristics and of greatly differing degrees of toxicity.

The subject of bacterial therapy is an absorbing one to most practitioners, and since commercial vaccines have been supplied in such quantities and made so readily obtainable, it has been used by thousands who doubtless understand little of the therapeutic action of the agent being used. Frequent warnings have been issued against the indiscriminate use of vaccines and the dangers attendant on their employment. The question is often asked whether under the circumstances a nonbacteriologist is justified in their use and if the danger is not greater than the chance of cure. The writer, while he formerly inclined toward this view, after having given several thousand injections in clinic and in private practice and being cognizant of as many more, has yet to see any more harm result from their use, even if not always intelligent, than from an equal number of ordinary hypodermic injections. One or two cases have been reported to him with somewhat severe reactions, alarming at the time, but this may happen with almost any form of therapy. Of course the claims of the makers of commercial vaccines are usually absurd and misleading, although it is surprising how many men of intelligence will accept them at times, even in the face of all reason.

SUMMARY

To summarize briefly, the writer feels that if vaccines have not fulfilled all of their early promise, they have at least given us a very effective extra means of combating infection, especially if used in conjunction with skilful and intelligent surgery, and that little harm will or can result from their use, even by the novice, provided the injections are given hypodermically, rather than intravenously, as in the latter method the reactions are at times exceedingly severe and alarming. In a number of instances, notably ozena, it seems as if vaccine therapy alone might solve a problem which has been puzzling clinicians hopelessly for years, and until some more efficient substitute is discovered, vaccine therapy has its distinct place as a therapeutic measure in diseases of the ear, nose and throat.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DAVIS AND COATES

Dr. Daniel W. Layman, Indianapolis: I have had some experience in the use of autogenous vaccines in the treatment of cases of chronic suppuration of the accessory sinuses. As far back as 1912-1913 I used the autogenous vaccine in the first group along with the regular routine treatment. In almost all of these cases we established thorough drainage by operative procedure, whether it was a conservative or radical case, and after the effects of the operation subsided we commenced this series of cases with autogenous vaccines, made both in the regular way and by animal experimentation. Most of these cases were of the staphylococcus type, *Staphylococcus aureus* predominating. In the second group we used the autogenous vaccine without the necessary operative procedure. These patients refused nasal surgery and so I carried them along as well as I could with only the vaccine. Then in the third group of cases, just for comparison, I used the regular method of treatment without any vaccine whatsoever. I think that my results were about the same as Dr. Coates reports; that is, that the vaccine is a material aid in the treatment of chronic suppurative disease of the accessory sinuses along with the routine treatment and necessary nasal surgery. In other words, it is absolutely necessary to establish thorough drainage and ventilation, and vaccine therapy per se, that is, without the assistance of other treatment, failed to be of any benefit as a therapeutic agent.

In the third group I used routine treatment and operative procedures when necessary, but without the aid of vaccines. Compared with the first group they did not do as well. In other words, I found that autogenous vaccine is a valuable aid in the treatment of chronic suppurative conditions of the sinuses where the treatment has been given to establish proper drainage and aeration of the sinuses. In regard to the treatment of acute rhinitis, I have not had any experience with autogenous vaccines, but I have had some experience with the stock vaccines. Two or three men who worked in a drug house came to me with bad colds in the head. They brought with them some stock vaccines and wanted me to try them out. I did so and got fairly good results. I did not use the stock vaccines during the acute attack, but waited until the acute attack was over and then gave the vaccine at three or four day intervals, about three or four doses altogether, increasing the strength from time to time. The treatment with stock vaccines of ordinary colds not only with the clerks as above mentioned, but with other patients, has been quite satisfactory.

Dr. John A. Pratt, Aurora, Ill.: I have been lucky in my vaccine cases. I have had very good results. I use both the autogenous and the stock vaccines. In cases in which I do not have the time to make the autogenous vaccine, I have taken the autogenous vaccine of other cases and mixed it with the stock vaccine and injected that. In that way I thought I should be able to obtain a vaccine of the local germ, of a local infection that was going round, and these patients have seemed to improve. Patients with sinus trouble have improved rapidly in my hands with vaccines. It does not seem to make much difference whether it is autogenous or stock. One case of tuberculous middle ear discharge ran a long time. The patient, a woman, did not improve under the autogenous vaccine, and at that time an old gentleman came in who had a running ear for years, so I decided to try this woman's autogenous vaccine on the old man. I gave him three injections and the ear dried up and was cured. That was about five years ago. He was in my office before I came away and I asked him about his ear and looked at it, and it was perfectly dry. In the woman I had no improvement whatever. This possibly may be, as Dr. Davis indicates, leukocytosis, but I have seemingly had some results from the vaccines.

Dr. David John Davis, Chicago: Many phases of this problem are unsatisfactory to discuss at the present time. We need more data and especially do we need control observations. It is remarkable how few control data exist in vaccine work. There is no doubt that reactions occur after vaccines and that good results have followed their use in some cases but the question centers around the idea of specificity. In other words, have these reactions a specific curative value? At present, data are rapidly accumulating indicating the nonspecific character of the results. It is an interesting fact that so far as animal diseases are concerned we do not know of any instance in which vaccines are curative. This is in striking contrast to the rôle that vaccines play in animal diseases for prophylactic purposes. This is true of natural and experimental animal diseases. For example, Dr. J. J. Moore has shown that in rabbits already infected with streptococci, vaccines have no appreciable effect on the course of the infection. However, if the vaccines have been given some time previous to the inoculation the animal may be protected to some degree at least.

Dr. George M. Coates, Philadelphia: Laboratory men and clinicians are very apt to differ, and it seems to me very necessary that they should get together more closely than they have in the past. Animal experiments prove a great deal from their standpoint, but it is only by using the results of these in combination with the work of the clinicians that we get ideas about the value of our methods of treatment. In regard to specificity, I always supposed that if we did not get results with the autogenous vaccines it was due to the fact that we did not have the specific organism. If this new theory is to be accepted it wipes that out—the stock vaccines will probably give as good results as the specific vaccines. We are at the beginning of this method of therapy, after all.

An Estimate.—But nothing is more estimable than a physician who, having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which will benefit it, exercises his art with caution and pays equal attention to the rich and the poor.—Voltaire.

STUDIES OF THE GASTRIC RESIDUUM

I. A STUDY OF EIGHTY SAMPLES OF GASTRIC RESIDUUMS OBTAINED FROM APPARENTLY NORMAL WOMEN *

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AND
ZELMA ZENTMIRE, M.S.
AMES, IOWA

Extensive studies of the gastric residuum of normal men have been made by Hawk and collaborators.[1] These investigations have demonstrated that the average volume is quite large (in over 100 normal cases the average was 52.14 c.c.), quite contrary to the views of Loeper,[2] Zweig,[3] Kemp,[4] Wolff,[5] Strauss,[6] Riegel,[6] and Soupalt,[6] who assert that the quantity of residuum in the normal fasting stomach should not exceed 20 c.c. Rosin and Schreiber[6] suggest a maximum limit of 60 c.c. for the volume of the gastric residuum. A variation of from 17 to 180 c.c. in the volumes of the various residuums examined by Hawk further demonstrates the unimportance of the quantity of residuum as an aid in diagnosis. These findings of Hawk and collaborators have recently been confirmed by Talbot.[7]

The residuum is a physiologically active secretion[8] and is probably in part the result of the activity of the gastric glands[8] and in part the result of fluid which passes by osmosis[8] through the stomach walls into the lumen of the stomach. The fact that bile and trypsin are both quite frequently found in the residuum leads one to believe that a portion of it at least is due to regurgitation of fluid from the duodenum.[9] Swallowed saliva and esophageal secretions may also give rise to another portion.[10] The last factor was greatly eliminated in the work of Hawk and collaborators[1] by encouraging the subjects to reject as much saliva as possible by expectoration. That the residuum is not wholly due to saliva was clearly demonstrated by Fowler, Rehfuss and Hawk, in the case of Subject B 106 a. This subject, normal in every way, submitted to the passage of the tube on the empty stomach in the morning. Forty-nine c.c. of liquid were removed, and tests showed that the stomach was empty. Two hours later, during which time the person in question attended a lecture, was free from psychic stimuli, and swallowed no saliva, 29 c.c. were withdrawn (Case B 106 b). Furthermore, these two secretions were essentially the same in every particular. Carlson[11] has also demonstrated that a fluid is being continuously secreted into the empty stomach.

The total and free acidities are subject to almost as wide variations as is the volume. The total acidity, in the cases presented by Hawk, ranged from a minimum of 2.4 c.c. of tenth-normal sodium hydroxid to titrate 100 c.c. of juice (about 0.009 per cent. acidity in terms of hydrochloric acid) to a maximum of 77.6 c.c. (about 0.28 per cent. hydrochloric acid), with a mean average of 29.9 c.c. (about 0.11 per cent. hydrochloric acid). The free acidity averaged 18.5 c.c. (about 0.07 per cent. hydrochloric acid), with a range from 0 c.c. (0 per cent. hydrochloric acid) to 65.8 c.c. (about 0.24 per cent. hydrochloric acid). These acidities are much smaller than those given by Carlson,[12] and obtained from a subject with a gastric fistula. The acidities of the contents of the empty stomach of this subject were 0.23 per cent. hydrochloric acid and 0.18 per cent. hydrochloric acid for total and free, respectively.

A definite relation between the pepsin content of the gastric residuum and total acidity has been demonstrated for low acid values, but this relation has been shown to disappear as high acid values are approached (Fowler, Rehfuss and Hawk).[1]

The same investigators found trypsin to be present in practically every specimen of residuum which was examined for it. Dorner[13] showed the presence of trypsin in practically all of the residuums obtained from 154 patients, most of whom had gastro-intestinal disturbances. The cases reported by Hawk and co-workers[1] were nonpathologic. The occurrence of trypsin in the stomach has been more completely studied by Spencer, Meyer, Rehfuss and Hawk.[9]

The present investigation was undertaken for the purpose of determining whether or not there existed any pronounced differences between the residuums of normal men, and the residuums of normal women.

METHODS

The subjects of the experiments described in this paper were young women students in the courses in physiologic chemistry at Iowa State College. They willingly submitted themselves for the experimental work, and were requested to drink no water at any time after their evening meal on the night previous to the experiment. They came for the removal of the residuum at 8 o'clock the following morning, and every residuum was removed as near that time as was compatible with the experiment. Each woman was given a thorough examination, physically and by questioning, to detect any abnormalities if they existed.

The residuums were removed by means of a modified stomach tube described by Rehfuss.[14] The swallowing of the tube was accomplished without the aid of water. The tube and tip were first coated with a thin film of petrolatum, and then the tip was placed in the lower part of the pharynx, back of the tongue, and swallowed without much difficulty. When the tube had reached the stomach (which was ascertained by measurements), the contents were aspirated from it while the subject was reclining on her back, stomach and on each side and breathing deeply. The liquid was immediately measured, placed in an Erlenmeyer flask, and its characteristics noted. The residuum

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* From the Laboratory of Physiological Chemistry, Iowa State College.

* Because of lack of space, this article is abbreviated in THE JOURNAL by omission of a table of tests of the normal gastric residuum of women. The complete article appears in the reprints, a copy of which will be sent by the authors on request.

[1] Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, I, The Question of the Residuum Found in the Empty Stomach, THE JOURNAL A. M. A., July 4, 1914, p. 11. Fowler, C. C.; Rehfuss, M. E., and Hawk, P. B.: Gastro-Intestinal Studies, X, An Investigation of the Gastric Residuum in Over One Hundred Normal Cases, Sept. 18, 1915, p. 1021.

[2] Loeper; Leçons de pathologie digestive, Series 2, 1912, pp. 17-19.

[3] Zweig: Magen und Darmkrankheiten, p. 459.

[4] Kemp: Diseases of the Stomach, Intestine and Pancreas, 1912, p. 133.

[5] Wolff: Taschenbuch der Magen und Darmkrankheiten, p. 22.

[6] Cited by Loeper (Footnote 2).

[7] Talbot, E. S., Jr.: The Examination of Normal Gastric Secretion by the Fractional Method, THE JOURNAL A. M. A., June 10, 1916, p. 1849.

[8] Fowler, Rehfuss and Hawk (Footnote 1).

[9] Fowler, Rehfuss and Hawk (Footnote 1). Spencer, Meyer, Rehfuss and Hawk: Am. Jour. Physiol., 1916, **39**, 459. Boldyreff: Quart. Jour. Exper. Med., 1914, **8**, 1.

[10] Sokolow: Dissertation, St. Petersburg, 1904 (Babkin: Die Aeussere Sekretion der Verdauungsdrusen, 1914, p. 110). Grobbel: Ztschr. f. physiol. Chem., 1914, **89**, 1.

[11] Carlson: Am. Jour. Physiol., 1913, **31**, 151.

[12] Carlson: Am. Jour. Physiol., 1915, **38**, 248.

[13] Dorner: Deutsch. Arch. f. klin. Med., 1915, **117**, 540.

[14] Rehfuss: Am. Jour. Med. Sc., June, 1914.

was then filtered through moistened qualitative filter papers, and the first few drops of filtrate were discarded. The following determinations were then made, as far as possible, on the filtered residuum: total acidity, free acidity, pepsin and trypsin.

The methods[15] for total acid, free acid and pepsin were those used by Rehfuss, Bergeim and Hawk.[16] Trypsin was determined by the method of Spencer.[17]

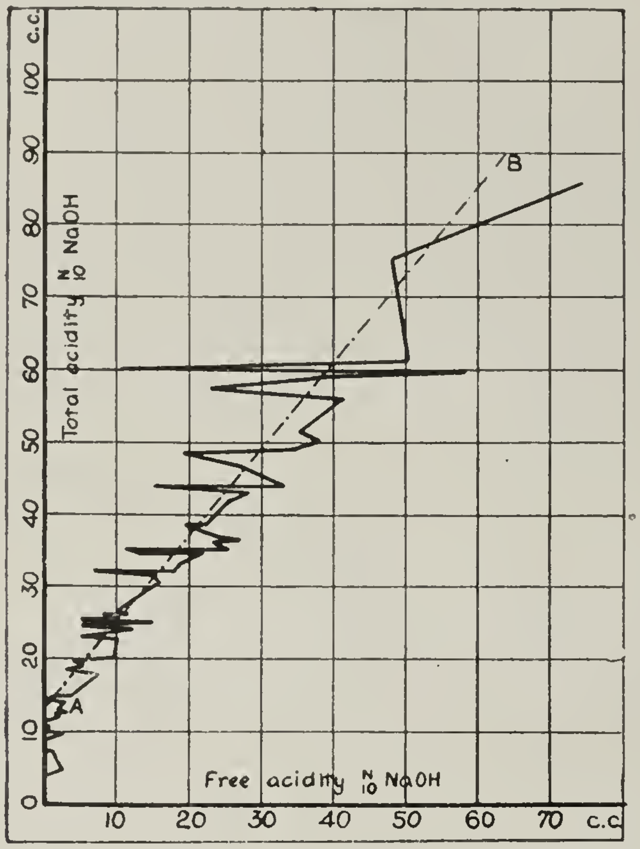

Chart 1.—Relation of total to free acidity of residuums.

DATA

Eighty-one samples of residuums were collected from sixty different subjects; twenty-one of the subjects submitted to the passage of the tube twice.

Averages on the Compilation of the Normal Gastric Residuum.—1. The average quantity removed in eighty-one cases was 49.44 c.c., the largest quantity being 135 c.c. and the smallest 12 c.c.

2. In sixty-nine cases noted, the residuum was in twenty-two cases (32 per cent.) colorless, and in forty-seven cases (68.1 per cent.) yellow or green.

3. The total acidity recorded in eighty-one instances averaged 30.3 in terms of tenth-normal sodium hydroxid, with the highest figure at 86.0 and the lowest at 4.0.

4. The free acid (seventy-nine cases) averaged 15.6, with figures ranging from 74.5 to 0.

5. The pepsin concentration as measured by the Mette method was determined in seventy-nine cases, and gave an average[18] of $(3.3)^2$, highest $(6.7)^2$ and lowest $(0.0)^2$.

6. Trypsin was tested for in sixty-three cases, with an average of 5.2 units; ten cases gave 16 units, and fifteen no reaction. Thus in 23.8 per cent. of the cases there was no evidence of trypsin.

7. Microscopic examination revealed on no occasion gross food residues. On several occasions vegetable débris was found, but never meat fibers. Leukocytes, in considerable number, were found almost constantly, and occasionally swallowed material from the throat with bacteria.

COMMENT

In eighty-one cases the average volume of the gastric residuum of normal women was 49.44 c.c. This quantity is greatly in excess of the generally accepted limit of 20 c.c., and very close to the average value of 52.14 c.c. obtained from over 100 cases of normal men.[8] The range of volumes was likewise extremely wide (from 12 to 135 c.c.), similar to the range of from 23 to 160 c.c. obtained by Fowler, Rehfuss and Hawk.[1] Hence in regard to volume there appears to be little or no variation in the residuums of normal men and normal women. The volumes of the residuums obtained from women were only slightly lower than those obtained from men.

Decided variations in the color of the residuums of normal women were observed (similar to variations observed in the case of men);[8] 31.9 per cent. of the observed cases were colorless, while 68.1 per cent. were colored. This shows a slightly lower percentage of colorless samples and a slightly higher percentage of colored samples in the case of women than in the case of men (men 43 per cent. colorless, 56 per cent. colored).[8] Both colorless and bile colored residuums were obtained from the same individual at different times, and even were occasionally obtained during the course of a single aspiration. This was especially noticeable after the subject had rolled from one side to the other. The color is apparently controlled by the flow of bile through the pylorus into the stomach, rather than as Sartory[19] has suggested by the growth of a chromogenic yeast (*Cryptococcus salmoneus*). This point is being made the subject of an extended experiment in this laboratory and will be reported on in a later paper.[20]

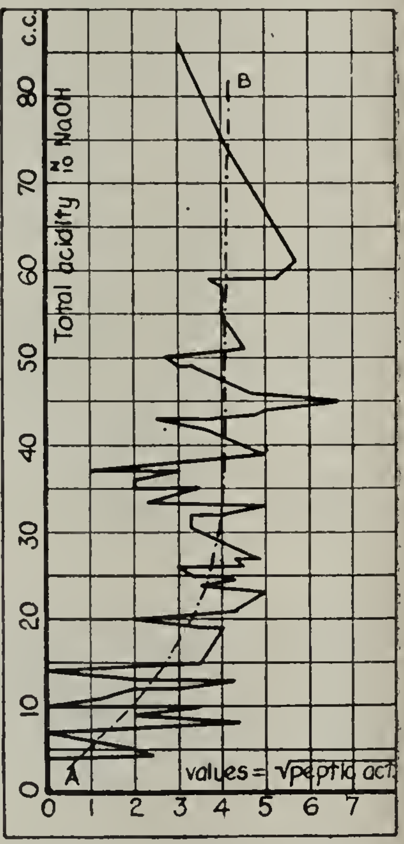

Chart 2. — Relation of pepsin content to total acidity of the residuums.

The color is more often seen in cases of high acidity. Of the forty-seven colored cases reported, about 85 per cent. appear in acidities over 30, while only 15 per cent. appear in acidities of less than 30. This would appear further to support Boldyreff's[9] idea of duodenal regurgitation to regulate gastric acidity.

The relation of total acidity to free acidity is shown by Chart 1. As in the instance of the previously cited cases of men, free acidity is rarely encountered until the total acidity exceeds 10. In total acidities of over 14 there were no cases in which free acidity was not demonstrable (over 13.5 found by Fowler, Rehfuss and Hawk[1] for men). The greater number of the residuums lie between total acidities of 20 and 60

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[15] Hawk: Practical Physiological Chemistry, Ed. 5, pp. 162, 165, 166.

[16] Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, II, The Fractional Study of Gastric Digestion, with a Description of Normal and Pathologic Curves, The Journal A. M. A., Sept. 12, 1914, p. 909.

[17] Spencer: Jour. Biol. Chem., May, 1915.

[18] In this paragraph, the superior 2 (²) indicates the square of the preceding quantity.

[19] Sartory: Bull. Soc. de biol., 1906.

[20] Fowler, Levine and More: Unpublished data.

(from 25 to 52 for men).[8] A few lie above 60, and considerably more below 20. The average total acidity was 30.3, and the average free acidity was 15.6 (the average acidities in the case of men were: total, 29.9; free, 18.5).[8] The range in total acidity for women was found to lie somewhat higher (from 86.0 to 4.0) than it was found to lie for men (from 77.6 to 2.4),[8] and the same was true for free acidity, women, (from 74.5 to 0); men, (from 65.8 to 0).[8] Only two cases were above 70 in total acidity.

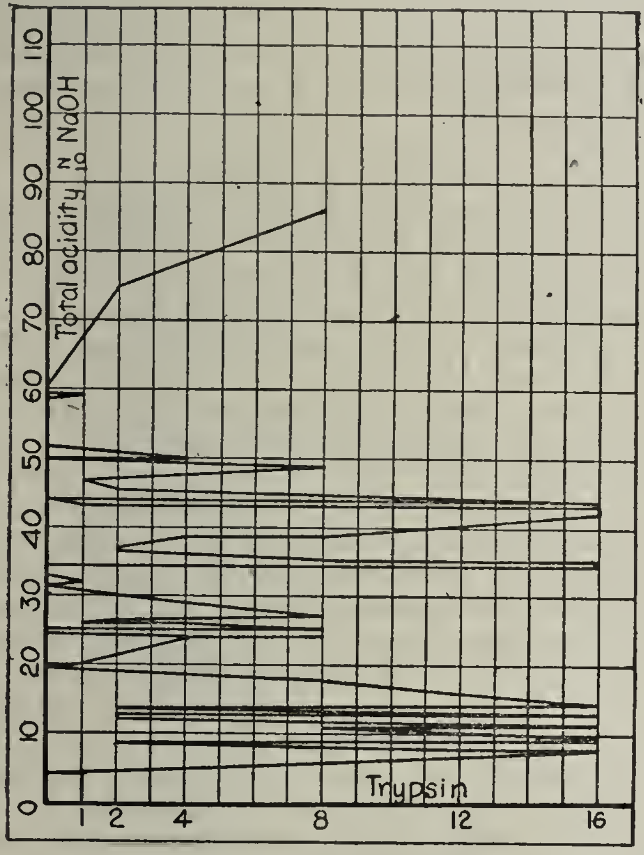

Chart 3.—Relation of trypsin to total acidity of residuums.

In regard to acidities, and also volumes, it is worth mentioning that we have noticed at various times during our investigation a remarkable constancy in the volume and total acidity of residuums from the same person collected at widely different times. This point is worth further investigation.

Pepsin was tested for in every case studied but two, and was found in all cases tested, except three of low acidity. The average value[18] of peptic activity was $(3.3)^2$, somewhat higher than the value of $(2.8)^2$ obtained for men.[8] The highest value was $(6.7)^2$, compared to $(5.0)^2$ for men,[8] and the lowest were $(0.0)^2$, men[8] $(0.7)^2$.

In the case of women the same relationship between the quantity of pepsin and total acidity for low acid values is seen (Chart 2) as was observed in the case of men.[8] This view is contrary to that of Pawlow,[21] who asserts that no such relation exists. This relationship is likewise seen to disappear as high acid values are reached, more or less supporting the view of Gregersen[22] who states that the relation of pepsin to hydrochloric acid is not an absolute one. In none of our cases were we able to demonstrate the presence of pepsin in the absence of total acidity. Aliprandi[23] asserts that pepsin may occur in the absence of hydrochloric acid, and also that there is no strict parallelism between pepsin and hydrochloric acid.

The trypsin content of the gastric residuum of women was determined in sixty-three cases. Our results do not bear the striking similarity to the trypsin content of the gastric residuum of men[8] (only twenty-six cases determined) that the volumes, total acidities, free acidities and pepins do. Charts 3 and 4 show the relation of trypsin to total and free acidity, respectively. From these charts the relation of trypsin to free acidity is not as evident as it was in the work on men.[8] Furthermore, several cases of low acidity were obtained in which there was no trypsin or only a little, while one case, the acidity of which was over 70, presented a trypsin content of 8. In the case of men,[8] a content of trypsin equivalent to 16 was not found above a free acidity of 20; several were found between 20 and 30 in the case of women. Of the sixty-three cases examined, fifteen, or 23.8 per cent., contained no trypsin as compared to 7.7 per cent. in the case of men.[8] An average value of 5.2 units was obtained for trypsin in the cases of women, as compared to 9.1 units for men.[8] This and the previously mentioned differences may constitute a fundamental difference between the residuums of men and women; but we are inclined, for the present at least, to consider these differences to be due mainly to the smaller numbers of cases examined in the work of Fowler, Rehfuss and Hawk.[1] This can be settled only by a more extensive investigation.

SUMMARY

1. No striking differences between the gastric residuums of normal women and of normal men have become evident during the course of this investigation.
2. The accepted limit of 20 c.c. for the volume of the residuum of the empty stomach of normal women is too low. An average volume of 49.44 c.c. was obtained in eighty-one cases.
3. Both colorless and bile-colored residuums may be found. The two may occur in the same individual on different days or during the same aspiration.
4. The colored residuums are found more frequently in higher acidities. This is explained, as before, by the greater frequency of regurgitation in higher acidities.

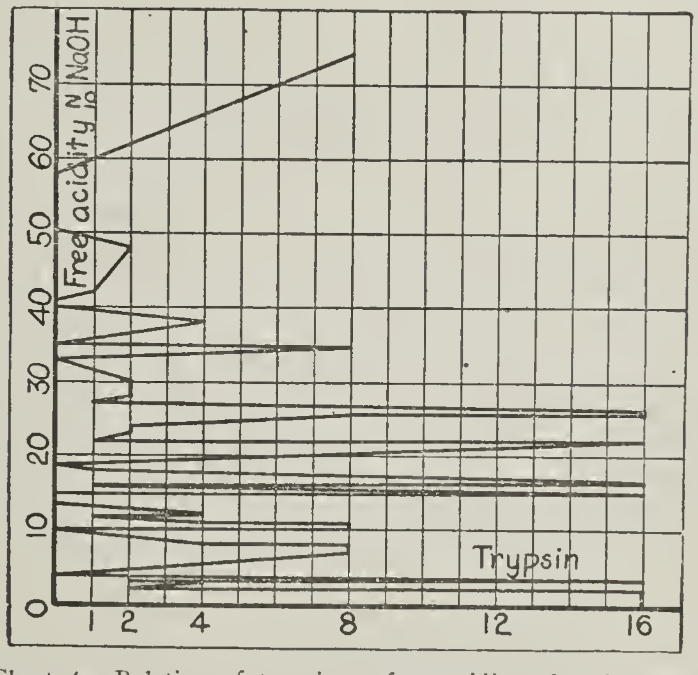

Chart 4.—Relation of trypsin to free acidity of residuums

5. Total and free acidity vary directly with each other, free acidity rarely being found with a total acidity of less than 10, and always being found when the total acidity was greater than 14.
6. Two cases were observed in which the total acidity was greater than 70. In general, the total and free acidities of the residuums of the women subjects

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[21] Pawlow: The Work of the Digestive Glands.
[22] Gregersen: Arch. f. Verdauungskr., **19**, 263.
[23] Aliprandi: Lavor. riv. chem. micros. clin., **1**, 230.

observed run higher than those of the men subjects reported by Fowler, Rehfuss and Hawk.[1]

7. The definite relation of pepsin to acid in low acid concentrations has been confirmed. Also, this relation is seen to disappear as high acid values are approached.

8. The trypsin content of the gastric residuums obtained from women was shown not to bear the striking inverse relation to the free acidity that was demonstrated to be true in the case of residuums obtained from men.[5] This is thought to be due to the larger number of samples examined in the present investigation, and not to be due to any fundamental difference in the residuums of men and of women.

ABSOLUTE DIABETES WITH RETURN OF FUNCTION

REPORT OF A CASE *

C. D. CHRISTIE, M.D.
CLEVELAND

By an absolute diabetes is meant one in which the patient so afflicted is not able to utilize any carbohydrate which is taken in the food or any of the sugar which is yielded from protein metabolism. There is no very good evidence that fat is converted to sugar in the diabetic. All diabetics of the severity of this case, it is reasonable to assume, have no deposits of glycogen in their tissues. The only two sources for sugar, then, would be that which was fed to the patient and that derived from the breaking down of the protein molecule. Each 6.25 gm. of protein which is utilized in the body is represented by 1 gm. of nitrogen excretion. Practically all nitrogen is eliminated through the kidneys. Since fats are not converted to sugar, and since there are no glycogen deposits in the tissues, it is readily apparent that any sugar which is excreted in the urine of a starving diabetic must come from the protein. If the total nitrogen output and the total sugar output are determined for twenty-four hours and the former divided into the latter, it will give the ratio of dextrose to nitrogen excretion or the amount of sugar which is derived from the utilization of 6.25 gm. of protein. We know experimentally that each 6.25 gm. of protein taken into the body will yield 3.65 gm. of sugar; therefore a patient who is excreting 3.65 gm. of sugar for each gram of nitrogen in the urine is an absolute diabetic, or cannot utilize the sugar which is derived from the body protein.

A dextrose to nitrogen ratio of 3.65 : 1 occurring in diabetics was termed the "fatal ratio" by Lusk.[1] Certainly a better terminology could not have been given the condition. Practically all of the patients who have been reported who have shown this "fatal ratio," have died. Greenwald,[2] Foster,[3] Geyelin and Du Bois[4] have reported cases in which there has been subsequent return of sugar tolerance. In none of the three cases just cited was starvation employed during the entire course of the high dextrose to nitrogen excretion. In the case I am describing, starvation was practically continuously adhered to from the time it was started, until the patient became sugar free. I feel confident starvation was the factor which shortened the course of the "fatal ratio" period in this case, and without its aid our patient would doubtless have succumbed to his severe diabetes combined with the infection which he had with acidosis. After a brief critical period of four days, the patient was free from all severe diabetic symptoms. The starvation was not a hardship for him. Besides, from fear of the danger of starvation, he never complained after the second day of the prolonged fasting.

REPORT OF CASE

History.—D. M., man, aged 26, white, carpenter, was first admitted to Lakeside Hospital, April 8, 1915, and was discharged three weeks later. His complaint at that time was extreme weakness and dull aching pain across the lower portion of his back. There was no history of any other member of his family having been afflicted with diabetes. The past history was negative aside from measles when a child. The present trouble dates back to April, 1913. While engaged in some light work the patient suddenly became very weak and was unable to continue. He immediately went to see a doctor who told him he had sugar in the urine. He remained away from his work for a short time and was cautious with the food he ate; he immediately felt much improved and resumed his regular duties. For six months he remained comfortable. He then commenced to have excessive thirst, increased urine output, persisting weakness and gradual loss in weight. Since that time his condition had been variable; some days he felt good and other days he was totally incapacitated, depending on how closely he adhered to his diet. During the last three months, the patient had been having numerous boils and pains in his back and legs.

Physical Examination.—The patient impresses one as not possessing average mentality; he talks at random and asks countless questions during the day. He is a well developed man but extremely poorly nourished. His weight prior to the onset of this trouble was 156 pounds; he now weighs 125 pounds. He is extremely weak and prefers to lie on the bed. His actions and movements are those of a senile man. There is a very marked sweetish odor to the patient. Skin and mucous membranes are dry and parched. There is a bright scarlet hue to the skin about the face and neck; he looks as if he were sunburned, but has not been exposed to the sun. Nothing abnormal was observed from an examination of the eyes and eye grounds or the nose and ears. The teeth are in moderately good condition, but there is a marked pyorrhea alveolaris. The tonsils are small and show no signs of infection. Heart, lungs and abdomen are normal. Reflexes are slow and sluggish in response, but there are no other abnormal findings from the neurologic examination.

The Wassermann reaction is negative on blood and spinal fluid.

Urine examination shows 97 gm. of sugar in the twenty-four hours. The acetone and diacetic reactions are very distinct.

During the patient's stay of three weeks in the hospital it was not possible to get his sugar output below 45 gm. in the twenty-four hours by strict dieting. He was feeling much better, however, and insisted on going home, so he was discharged.

During the time from his first admission to the last one with which we are interested, nothing more was heard of the patient until he presented himself to our dispensary, Jan. 14, 1916. He was promptly admitted to the hospital.

Record of Last Admission.—D. M. was admitted to the medical service for the second time, Jan. 14, 1916. His complaint at this time was a severe cold and a boil on the back of his neck, both of which developed about one week before. Since his discharge from the hospital, April 21, 1915, his condition had been variable; a part of the time he was able to work. He volunteered the information that his diabetes was better and his only trouble was the cold and boil.

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* From the Department of Medicine and the Laboratory for Medical Research of Lakeside Hospital and Western Reserve University School of Medicine.

1. Mandel, A. R., and Lusk, Graham: Diabetes Mellitus, The Journal A. M. A., July 23, 1904, p. 241.
2. Greenwald: Jour. Biol. Chem., 1913, **16**, 393.
3. Foster: Deutsch. Arch. f. klin. Med., 1913, **110**, 501.
4. Geyelin, H. R., and Du Bois, F.: A Case of Diabetes of Maximum Severity with Marked Improvement, The Journal A. M. A., May 13, 1916, p. 1532.

The most striking things about the patient which had not been so noticeable at the previous examination were a greater degree of emaciation, and an appearance of being extremely sick. In addition to the findings of the former examination there was a carbuncle about 4 cm. in diameter on the left side of the patient's neck. It had the usual multiple openings, and there was a slight amount of purulent discharge. It was extremely red and swollen, with pronounced induration; there was only a moderate amount of pain in connection with it. The patient had a slight elevation in the pitch of the percussion note, with higher pitched breath sounds over the upper right posterior portion of the lung. No râles. Aside from these noted facts there was nothing made out in addition to that described in the previous physical examination.

Jan. 15, 1916, the patient was started on a test diet in the morning. This diet consisted of 16 gm. of nitrogen and 50 gm. of carbohydrate. Twenty-four hour urine started at 7 a. m. There was a distinct "acetone odor" to the patient's breath. His respiratory rate was 25 to the minute, but he was wide awake and did not appear to be in any immediate danger of coma.

January 16, the patient was still on the test diet, and was eating every particle of food served him. There was a daily elevation of temperature to 101 F. His condition was apparently worse than the day before, but there was nothing evident to explain why it should be.

January 17 the patient was started on starvation. He was being given 180 c.c. of whisky daily, black coffee as desired, and 30 grains of sodium bicarbonate every four hours by mouth. The general condition was much the same as the day before.

January 18, starvation was continued. The patient was considerably worse. The tension of carbon dioxid in the alveolar air had dropped to an alarming figure. The respiratory rate was averaging around 25. He was more drowsy than he had previously been, and he was taking very little interest in things about him. We considered the advisability of terminating the fast and giving sodium bicarbonate intravenously.

January 19, starvation was continued. The patient seemed better; there was a slight increase of the carbon dioxid tension.

January 20, on account of the demands of his friends, he was given a small amount of food. He was much better; he seemed much wider awake and said he felt better. The whole carbuncle area had sloughed out, leaving the muscles of the neck exposed. The area now measured about 6 cm. in diameter. Nothing was being done for it except hot dressings at frequent intervals and keeping the area clean.

January 21, the same amount of food was given the patient as the day before. He was much better, but the sugar in the urine had apparently struck a constant level and would not diminish. The small amount of carbohydrate had apparently lowered the dextrose to nitrogen ration. However, it is a question in my own mind whether the 10 gm. of carbohydrate which the patient received was absorbed in his blood stream as dextrose. It was given in the form of greens, and they appeared in the stool unchanged. Had they not been utilized, the dextrose to nitrogen ratio would have been 2.6:1 on these two days instead of the figure given in the table.

January 22 the patient was again started on starvation. He was improving rapidly so far as his general appearance was concerned. The tension of carbon dioxid was gradually coming up.

January 24 starvation was continued, as it had been the day before. General condition was much better. The patient complained very little because food was not given him.

January 25 starvation was continued. It will be noted that there was a sudden drop in the protein metabolism the day before as indicated by the nitrogen output. Although the dextrose to nitrogen ratio continued nearly the same, the diminution of protein metabolism was looked on as a good omen.

January 26 the patient was much improved. The sugar output and dextrose to nitrogen ratio had dropped very decidedly. Starvation was continued. There was a sudden rise in the dextrose to nitrogen ratio of the preceding day. This perhaps was due to the fact that the patient ate a small amount of oatmeal which he took from another patient's tray. It was dry oatmeal without cream or sugar, and attendants on the ward thought he obtained a very small amount.

January 27 starvation was continued. The sugar output and dextrose to nitrogen ratio had both come down very decidedly.

January 28 the patient had but a trace of sugar in the urine in the morning, and it was decided to start food immediately. He was given 10 gm. of carbohydrate in the form of 5 per cent. vegetables and 25 gm. of fat. This amount was divided into six feedings for the day. The patient was decidedly improved. The alveolar carbon dioxid tension was back to approximately a normal figure. The area on the patient's neck was much improved; granulation tissue was beginning to form with great rapidity, and there was very little discharge.

January 29, the patient's urine became sugar free. His food was increased to 20 gm. of carbohydrate and 50 gm. of fat.

February 1 the urine remained sugar free; the patient was taking 30 gm. of carbohydrate. Total food intake was 1,440 calories; of that amount about 500 calories were derived from whisky.

February 8, the urine remained sugar free. The patient was taking about 1,950 calories daily.

February 16, the patient's condition continued to improve. There had been only a trace of sugar in the urine on two occasions. There was an acetone reaction still persisting in the urine. The patient was now taking 45 gm. of carbohydrate daily, or a total intake of 2,390 calories. There was some slight discharge from the neck, but granulations had largely closed in the area.

February 25 there was sugar in the urine on two successive days; his tolerance was exceeded. He was given a starvation day, which promptly eliminated the sugar from the urine. He was now taking 2,500 calories daily.

February 28 he had remained sugar free since the instance just recorded. He had been having a daily rise of fever since the day of admission. It had varied, usually never exceeding 101 F. Today was the first day he was free of fever. The physical signs had not varied in the lungs. We were fearful of a tuberculosis and that the prolonged starvation and undernourishment might revive it. If that were the case, however, we were not able to demonstrate any alteration in the lung condition.

March 5, 1916: The patient had been free of fever since February 27. There had been a trace of sugar in the urine on a couple of days since February 25. The area on the neck was covered by a small scab; there was no discharge. The physical signs in the chest were just the same as they were on admission. He was now taking: carbohydrate, 60 gm.; protein, 55 gm., and fat, 225 gm., or a total intake of 2,500 calories. The patient was quite comfortable and wanted to go home; consequently he was discharged and referred back to our dispensary.

Methods of Study.—For the total nitrogen determinations the Kjeldahl method was employed. Ammonia estimations were made by the simple titration method, potassium oxalate, formaldehyd and tenth normal sodium hydroxid being used. These results were occasionally checked by the Folin aeration method. Sugar was determined in the blood and urine by the methods of Benedict. The carbon dioxid tension in the alveolar air were practically all made with the Fridericia instrument, but an occasional determination was made with the Haldane apparatus. Acetone and aceto-acetic acid were estimated together by the method of Folin and Hart.

COMMENT

1. The condition of absolute diabetes has been one of considerable interest since the pioneer work on the subject was recorded by Minkowski.[5] This observer discovered that when the pancreas was completely removed from a dog, whether the animal was fasted, fed with a diet of protein or on protein and fat that it would excrete 2.8 gm. of sugar in the urine for each gram of nitrogen. As the animal was glycogen free,

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[5] Minkowski: Arch. f. Exper. Path. u. Pharmakol., 1893, **31**, 85.

and fat in no way affected the ratio, Minkowski concluded the sugar could come only from the protein. Other experimenters did not agree with the results of Minkowski at that time, as they claimed their results showed a variable D: N ratio. More recent observations, however, have largely confirmed the truth of Minkowski's work, showing that the maximum diabetes which can be produced from a complete pancreatectomy produces a dextrose to nitrogen ratio of 2.8: 1.

More recently Lusk and Stiles[6] (working with diabetes produced in animals by the subcutaneous injection of phlorizin) found that the ratio as established by Minkowski did not represent the maximum dextrose to nitrogen excretion which is obtainable. Phlorizin acts by mobilizing all sugar which is deposited as glycogen in the animal body, and causes it to be excreted through the kidney. Subsequently phlorizin is able to prevent any more sugar from being deposited in the tissues as glycogen. When an animal is being so treated, it rapidly becomes free from all deposited glycogen, and the sugar excretion strikes a constant ratio to the nitrogen output. This ratio was found to be 3.65 gm. of sugar to 1 gm. of nitrogen. As 6.25 gm. of protein (when completely utilized by the body) leaves a residue of 1 gm. of nitrogen to be excreted, it is apparent that there is available from 6.25 gm. of protein 3.65 gm. of sugar, or about 59 per cent. of the protein molecule is converted to sugar in the animal body.

These results were later confirmed by Mandel and Lusk,[7] working with severe human diabetes. Their patient was kept on a diet of fat and protein, and soon the urine showed 3.65 gm. of sugar to each gram of nitrogen. This condition existing in the diabetic was termed the "fatal ratio" by Lusk, as he believed no patient showing such a proportion of sugar output to nitrogen excretion could recover.

The Lusk dictum has generally held true until the establishment of the starvation treatment for diabetics. There were just two instances of absolute diabetics to my knowledge who were treated prior to the institution of starvation treatment and were apparently relieved by our previous methods. These two cases were reported by Foster[3] and Greenwald.[2] The subsequent course of their patients was not recorded. Up to two years ago the fact that only two cases of survival from complete diabetes were reported confirmed the truth of Lusk's dictum, under former methods of treatment.

Since the adoption of starvation treatment, however, Geyelin and Du Bois[4] reported one case of recovery from the "fatal ratio" with subsequent return to a fair degree of sugar tolerance. This case in many respects was very similar to that of the patient under discussion. In both instances the sugar tolerance was reduced in potential diabetics to approximately the least level by acute infections. The two showed return of sugar tolerance to approximately the same degree.

As indicated in the table, the patient whose case I have reported showed a dextrose to nitrogen ratio of 3.93: 1 on one instance and as low as 1.27: 1 on another instance. However, the average of dextrose to nitrogen excretion for the entire thirteen day period was 2.5: 1. On the two days on which he received 10 gm. of carbohydrate in the form of greens, it will be observed that the ratio dropped below 2: 1. I do not believe that the carbohydrate was converted to sugar in the patient because the greens appeared in the stool unchanged in a very brief period. If they were not utilized as sugar, the patient's ratio was 2.6: 1 on these two days, which would be quite consistent with the ratio on other days.

The results on these two days also give very good presumptive evidence that fat is not converted to sugar in the diabetic; for on both days the patient was supplied with 25 gm. of fat, and if it had been converted to sugar, the dextrose to nitrogen ratio should have been greater, whereas it was lower.

2. This patient showed a very great increase in nitrogen metabolism which persisted for the first nine days of his stay in the hospital. It will be noticed that on the tenth day the nitrogen excretion fell off very markedly and never at any later period showed an increase. On the second day of the test diet, however, when the patient was getting a very liberal supply of nitrogen in his food (16 gm. daily), he excreted 8 gm. in excess of his intake. This shows that he was using 50 gm. of his own body protein besides the amount which was taken in the diet. On the second day of starvation the nitrogen excretion was the greatest of any day while the patient was fasting. It was on this day that the patient's condition was at its worst, the tension of carbon dioxid reached its lowest point, and the acetone and diacetic acid excretions were the greatest for the starving period.

Excess nitrogen excretion has been observed many times in severe diabetes. Numerous authors have described cases which showed many times greater excretion than this patient. The most interesting thing, however, was the subsidence of the excess elimination of nitrogen in this patient when he was in the period of "fatal ratio." The causative factors of excess nitrogen excretion in the diabetic are not clear. It cannot be explained by the fact that the patient had an infection with fever. Both of the latter factors persisted long after the excess nitrogen excretion subsided. Neither can it be explained from the failure of this patient's body to utilize carbohydrate or from excess fat metabolism, for both of these conditions were constant during the period of excess nitrogen excretion and afterward.

Von Noorden[8] attributes excess protein metabolism in diabetes to some toxic substance which is retained in the body. It appears that such a possibility could have existed in this case. The few days of starvation which preceded the subsidence of excess nitrogen elimination might have been sufficient to allow the patient by some mechanism to eliminate a supposed toxic material.

3. The carbon dioxid tension of this patient was very low on admission, and it went down decidedly during the first two days of starvation. After the second day of starvation the tension gradually mounted, and reached a perfectly normal figure by the time the "fatal ratio" had disappeared. It is also interesting to note that on the day the carbon dioxid tension reached the lowest level, the nitrogen, acetone and diacetic acid excretions were the greatest. These factors are doubtless related to each other. On the same day the patient's general condition was distinctly worse, he appeared toxic, his respiratory rate was 25 to the minute, and he was decidedly stuporous. There was grave fear that if starvation was continued the patient would go into coma. We considered terminating the fast and giving the patient more alkali. It was not

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[6] Lusk and Stiles: Am. Jour. Physiol., 1913, **10**, 67.

[7] Mandel and Lusk: Deutsch. Arch. f. klin. Med., 1904, **81**, 479.

[8] Von Noorden: Diabetes, 1905, p. 114.

done, however, and on the following day the patient was in much better condition, and as the alveolar carbon dioxid tension had come up slightly, there was more encouragement to continue the fast. From this time on the carbon dioxid tension gradually rose, and the patient's general condition was quite commensurate with it.

4. The excretion of acetone bodies fell off markedly on the first day of starvation, and continued at a low level until the fast was terminated, and finally disappeared from the urine after the sugar tolerance was established. Unfortunately, beta-oxybutyric acid determinations were not made in this case, but doubtless it follows the same course as its companions, by disappearing from the urine as the carbohydrate tolerance is gradually raised. The reduction of these acid bodies in the urine promptly with the institution of starvation, has been one of the particularly illuminating points which has been brought out by our recent methods for the treatment of diabetics. It will usually be found that there is a prompt reduction of the daily excretion of acetone, diacetic acid and beta-oxybutyric acid when the diabetic is cut off from the external supply of the precursors of these acid bodies, namely, fat and protein. However, they will persist in the urines of these patients as long as they are living on a diet of fat and protein to the exclusion of carbohydrate food. During starvation, of course, the only food the diabetic receives is that which is obtained from the body tissues; and since they are all largely glycogen free, it is apparent that they are living chiefly on a diet of fat and protein. They will, then, of necessity excrete varying quantities of acid bodies. This excretion of acetone, and diacetic and beta-oxybutyric acids will continue until such time when the patient is eating and assimiliating enough carbohydrate food to prevent their formation. The amount of carbohydrate necessary to prevent the formation of acid bodies varies with different patients. In most patients 75 gm. of carbohydrate are required to insure the complete combustion of fat and protein, but some diabetics have been observed whose urine remained free of these acid bodies to crude tests on 30 gm. of carbohydrate daily.

LABORATORY DATA

Date	Urine Volume C.c.	Reaction	Acetone Diacetic Gm.	Total Nitrogen Gm.	Ammonia Nitrogen Gm.	Ammonia Percentage Total Nitrogen	Total Urine Sugar Gm.	Blood Sugar per 100 C.c. Gm.	D-N	CO_2 Tension, mm. Hg	Weight Kg.	Diet Carbohydrate Gm.	 Protein Gm.	 Fat Gm.	 Whisky C.c.
1/15/16	3,400	Acid	3.33	18.5	5.8	31	108.8	.363	3.18:1	24.5	50.9	50	100	..	...
1/16/16	1,450	Acid	2.90	24.2	7.3	30	108.3	.400	2.4 :1	26.1	50	50	100	..	...
1/17/16	1,700	Acid	....	13.4	3.8	28	52.7	.400	3.93:1	23.2	50	Starvation		..	180
1/18/16	2,100	Acid	1.80	15.9	4.5	28	39.9	.342	2.51:1	20.7	50	Starvation		..	180
1/19/16	2,120	Acid	.91	10.5	3.9	37	34.3	.303	3.27:1	22.6	49.8	Starvation		..	180
1/20/16	1,890	Acid	1.30	12.2	4.3	35	34.	.337	1.97:1	26.6	49	10	...	25	180
1/21/16	2,550	Acid	....	14.1	5.1	36	33.1	.308	1.6 :1	24.1	49.1	10	...	25	180
1/22/16	3,430	Acid	....	12.6	3.7	30	33.6	....	2.77:1	30.6	48.8	Starvation		..	180
1/23/16	2,650	Acid	....	11.3	3.4	30	29.9	.400	2.64:1	31.1	48.4	Starvation		..	180
1/24/16	1,800	Acid	.80	6.8	2.1	31	18.9	....	2.77:1	35.2	48	Starvation		..	180
1/25/16	1,900	Acid	....	8.	2.7	33	26.6	....	3.32:1	....	48.2	Starvation		..	180*
1/26/16	1,155	Acid	.60	5.3	...	..	9.3	.237	1.75:1	37	49.1	Starvation		..	180
1/27/16	1,050	Acid	....	4.1	1.5	36	5.2	.285	1.27:1	....	49.8	Starvation		..	180
1/28/16	1,900	Acid	....	7.5	2.6	34	Tr.	....	......	36.8	50.9	10	...	25	180
1/29/16	1,600	Acid	1.03	5.1	1.4	27	....	.190	......	....	51.4	15	...	50	180
2/ 1/16	2,000	Acid	.89	4.9	1.0	21	....	....	......	....	50.4	30	...	100	180
2/ 8/16	1,880	Neut.	Tr.	...	...	..	....	....	......	....	50.8	40	55	175	...
2/16/16	600	Neut.	Tr.	...	...	..	....	....	......	....	48.2	45	55	200	...
2/25/16	1,720	Neut.	Tr.	9.44	1.36	15	12.5	....	......	....	49.3	50	55	225	...
3/ 5/16	1,800	Neut.	....	...	...	..	....	....	......	....	50.8	60	55	225	...

* Patient ate small amount of oatmeal that he took from another patient's tray.

5. Another method which we formerly employed to determine the degree of acidosis was the ratio of ammonia excreted in the twenty-four hour urine to the total nitrogen output. This case showed what in former times would have been considered an alarming figure, but it will be noticed that the same percentage was eliminated day after day, some time after the patient recovered from the acidosis, so far as the carbon dioxid tension was concerned. Our former view in regard to the excretion of ammonia in acidosis as a protective mechanism is not tenable in the light of our present knowledge. It will have to be explained on some other basis. It certainly is of little service as an index to acidosis.

6. This patient was starved eleven full days. The only food taken during that time is enumerated in the table. He had 180 c.c. of whisky daily, black coffee as desired, and on two days 10 gm. of carbohydrate and 25 gm. of fat. This, I believe, is the longest period any patient has been starved to render the urine sugar free. It might have been possible to make this patient's urine sugar free by alternate starvation days, but after all I think in this instance that fasting as employed was the safest and quickest method. Had we delayed, doubtless the patient's infection would have advanced very rapidly, and perhaps the acidosis would have increased just enough to throw him into coma. As it was, the sudden withdrawal of substances which were producing acid bodies in his system (namely, fat and protein) was sufficient to avert coma, and quite sufficient to allow him to recover from his acidosis before the fast was terminated.

Diabetics of an extreme degree should never be starved without constant watch being kept on the tension of carbon dioxid in the alveolar air. There is no satisfactory method for the measurement of acidosis aside from carbon dioxid determinations. Methods requiring body excretions are inaccurate, and are usually not available when needed. Carbon dioxid determinations can be quickly made, and will give instantly the condition of the patient. These patients may go extremely acid with great suddenness.

Irreparable harm may be done by such long starvation periods in the diabetic. It may be the cause of lighting up an old tuberculous process, or so reduce the patient's nutrition that the body would be an easy prey to any infection. But this question must be settled by the exigencies of the case at hand. Certainly this patient was not harmed.

7. Another curious thing about this case was the fact that the scales did not show that he lost any weight during the entire starvation period. There are great variations in these daily weights. I have no means of proof as to their accuracy, as they were taken as a matter of routine in the ward; but I believe they are correct. I think the fact that he did not lose weight can be accounted for on the basis of water retention. It was on the day of January 28 that the patient gained 2½ pounds. This was also the day the patient became sugar free. We all noticed on the following day that the patient looked edematous. He did not have an edema, but there certainly was an increase to the volume of his body. Previously his face had been drawn and shrunken, but on this day his face was full and gave the impression of a decided gain in weight.

Since the patient's discharge from the hospital he has been seen only occasionally. His condition had been variable. Certainly he is not any worse than he has been for the last year or two. He is a very unsatisfactory individual to manage, never being willing to cooperate except in one's presence.

SUMMARY

1. In the case reported, the sugar tolerance of a patient with a potential diabetes was reduced to approximately the least level for thirteen days by an acute infection. Later the patient had return of a moderate degree of ability to utilize carbohydrate.
2. There was a great increase in nitrogen excretion for the first nine days; on the tenth day it fell off decidedly, and never was again excreted in excess.
3. The patient was distinctly acid on admission, but became decidedly more acid during the first two days of starvation, as shown by determinations of the tension of carbon dioxid in the alveolar air. Although the patient was starved for eleven days, the acidosis gradually became less and less each day, until by the end of the fast the tension of carbon dioxid was back to practically a normal figure.
4. Acetone and diacetic acid excretion dropped very decidedly during the first day of starvation, and completely disappeared from the urine when the patient was utilizing 60 gm. of carbohydrate daily.
5. The patient was excreting approximately 30 per cent of nitrogen in the form of ammonia during the period when he was most acid; as the acidosis improved, the percentage of ammonia to the total nitrogen output remained the same.
6. The body weight of the patient was practically the same at the termination of the starvation period as it was in the beginning.

Moving Picture Health Car.—In North Carolina the state board of health has an automobile fully equipped with a light and moving-picture outfit, with which moving-picture health shows are given throughout the state in cities and towns, at county fairs and other gatherings, in churches, halls, tents or out of doors. Any series of twelve towns may have the benefit of the outfit, which is provided with a mechanician and a lecturer, for a period of three weeks, the show being given in each town one afternoon or evening of each week, and the program being changed each week. The towns are required to provide at least $90 for the expenses of the first week, and the remainder is furnished by the state board. The subjects are not all health topics, but comic or other pictures are interspersed. The entertainments are popular and their educational value is said to be high.

ANKYLOSIS OF THE JAWS *

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In his work on orthroplastics of the temperomandibular articulation, Murphy classified the ankylosis which occurs in and about the temporomandibular articulation under four heads: (1) intra-articular bony ankylosis; (2) intra-articular fibrous ankylosis; (3) subzygomatic cicatricial fixations, and (4) intra-alveolar buccal fixations.

The only part of this subject which I shall consider at this time is the first division of Murphy's classification, intra-articular bony ankylosis, or true ankylosis. While this affection is not rare, there have been comparatively few actual cases with results reported, and the work done along this line, and reported in medical or dental literature, is by no means extensive.

For the purpose of clearer statement, let us review briefly the temporomandibular joint. Owing to the character and location of this joint, it is particularly susceptible to traumatism and infection. When the complex mechanism and environment of this joint is considered, it can readily be seen that an injury, or an infection in it, or a combination of the two, is far from being amenable to normal repair.[1] In the temporomandibular articulation, the socket is formed partly by the mandibular fossa and partly by the articular eminence, and over the latter, an approximately congruent surface for the head of the condyle is formed by the articular disk. The two temporomandibular articulations act simultaneously. When the mouth is opened, the head of the condyle with the interarticular disk glides forward on the articular eminence, and when the mouth is closed, it slips back into the mandibular fossa. The opening and closing of the mouth are consequently attended by a sliding of the mandible (a gliding joint). In addition to this modified form of hinge movement, the articulation possesses a second kind of motion, viz., the lateral displacement of the mandible in reference to the skull. In this movement, one condyloid head remains in the mandibular fossa, and rotates or pivots on a center, while the other advances on the articular eminence, a movement which is impossible when the mouth is opened to its greatest extent. Both the hinge and lateral movements are combined in the act of mastication. Thus an inquiry or an infection involving this joint is much more complex than the same lesion would be involving a joint less intricate, and the process of repair is consequently much more complicated.

ETIOLOGY

What causes intra-articular bony ankylosis of the jaw? The two sexes are about equally affected, and this seems to be an affection into which sex selection has no controlling influence.

It has been my own observation, as well as that of others, that the predisposing age is from 1 to 10 years, that is, that the largest percentage of patients who come under our observation present a history of injury or infection in the early ages. Orlow found that ankylosis was established in 80 per cent. of his patients between the ages of 1 and 10 years. Blair states that "the age at which ankylosis became established varied considerably, but in the great majority of cases, when the age was given, it was under 10 years." The primary causes for ostearthritis, or bony ankylosis, seem to be traumatism and infection. There seems to be some diversity of opinion as to which of these etiologic factors should be assigned first place. Orlow states that in about 30 per cent. of his cases, injury to the joint was the cause of bony ankylosis. Blair asserts that "by far the most common single cause was trauma, this accounting for nearly 50 per cent. of all cases. The great majority of these injuries were not open wounds, and by far the most common form of injury was a blow, or a fall on the chin." Others believe that infection is the greatest etiologic factor in the affection, and some believe that in every case of trauma which seems to cause ankylosis, infection is a secondary factor of no mean importance.

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* Read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Sobotta and McMurrich: Human Anatomy, W. B. Saunders Company.

My own observation has been that trauma has been at least the primary cause in by far the largest number of cases presented in our clinic. Authentic statistics in this regard cannot be procured readily, owing to the fact that the large majority of these patients are not seen until long after the condition is established. Sometimes several years elapse before surgical interference is resorted to, so that a complete history in such cases is not wholly reliable. The diseases which play a part in causing ankylosis of the jaws are scarlet fever, otitis media, dento-alveolar abscesses, diphtheria and gonorrhea. It may also result from a metastasis, from foci of infection within the mouth, or elsewhere in the body. The presence of the beginning of ankylosis of the mandible during childhood appears logical when we consider that accidents and many of the infectious diseases to which it is due are more prevalent during the early period of life. The onset and development of ankylosis of the jaws is very insidious and slow, several years often being occupied in the production of lesions of any considerable extent. Usually the patients complain more of the disability which is caused by the affection than of any actual physical discomfort which it occasions. The general health of patients who are afflicted is usually little impaired. Digestive troubles seem to be the principal factors outside of the joint lesion, owing, undoubtedly, to the impaired function of mastication.

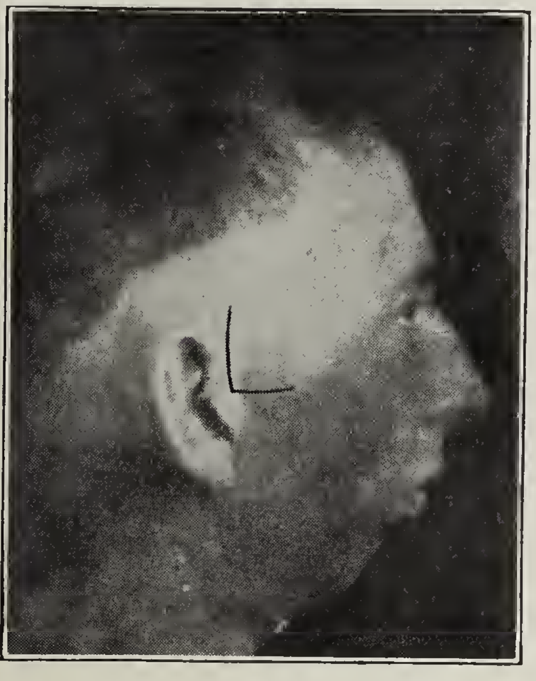
Fig. 1.—Course of the incision.

PATHOLOGY

In case of violent injury to the joint, ankylosis is usually brought about by the proliferation of fibrous tissue into or around the region of injury.

Should the articular cartilages be preserved in whole or in part, they sometimes undergo direct metaplasia into fibrous tissue or fibrocartilage, or into mucinous tissue, which gradually becomes fibrous. In many of these cases the fibrous tissue is trifling in amount, and the ankylosis is produced mainly by cartilage and bone. In some cases the ankylosis is due to cartilage and bone intermingled. Immediately following a dislocation or intracapsular fracture, or a contused wound to the joint, there is more or less abundant hemorrhage into the joint. Later, inflammation sets in. The capsule and surrounding parts become swollen and edematous, infiltrated with inflammatory products. There is an effusion into the synovial cavity. Portions of the coagulum may persist and become organized, forming osseous tissue in the joint. When an infection is the predominating etiologic factor, there is produced a synovitis with effusions into the joint cavity. These infections may be purulent, and chronic synovitis results. The joint synovium becomes thickened in the early stages, while the surface of the cartilage is rough and fibrillated. Marked inflammatory changes are induced in the subcartilaginous marrow spaces and the cartilage is destroyed. Milen believes that the degeneration of the cartilage is due to some interference with nutrition, or is produced by the extension of the exudate which destroys the cartilage. Adami[2] states that the resorption of the cartilage is brought about by the subchondral medullary substance. In the early stages not all of the cartilage may be destroyed, but there may remain islets of cartilage throughout the articulating surfaces. These islets may in time be converted into bone.

Thus the cartilages are gradually transformed into a vascular fibrous or fibro-osseous tissue. The joint cavity is traversed by dense fibrous bands, and is converted into a number of small spaces, bounded by dense fibrous tissue, and containing synovial fluid. In the advanced stages, the whole of the articular cartilages may disappear and be replaced by fibrous tissue, so that the original structure of the joint becomes well nigh unrecognizable. Secondarily, changes take place in the newly formed fibrous tissue, and in time it is converted into a mass of spongy bone, and complete osseous ankylosis results. It seems to be a characteristic phenomenon of cartilage that it is more or less interchangeable with fibrous tissue in the joints. It has been observed that when a joint cartilage is becoming atrophied, it becomes calcified, or transformed into a fibrillated structure, closely resembling fibrous tissue, while perichondrial fibrous tissue commonly becomes changed into typical hyaline cartilage. The deeper layers of the cartilage may also proliferate, forming nodules of hyaline cartilage or bone.

The greatest metaplasia, however, is found in subcartilaginous inflammatory process, where, as a rule, there is a great tendency to the formation of cartilage and bone. Thus, in an inflammatory condition of the temporomandibular articulation, either by traumatism or by infection, there is a marked susceptibility to metaplasia, with the result that the normal structure finally may become obliterated and a new structure results.

Characteristics of the Disease.—On account of this disease occurring in the joint, and having its incipiency in early childhood during the period of growth, the normal development of the mandible is considerably interfered with, so much so that it is marked by a conspicuous facial deformity. This deformity is characterized by perceptible recession of the chin. This may be due to the action of the geniohyoglossus muscles in their constant efforts to open the jaws. There is also a general atrophy from disuse of all the tissues of the lower jaw, including the mentalis and quadratus labii inferioris muscles. The deformity may be so exaggerated as almost entirely to obliterate the chin. Usually when the ankylosis has been established on one side in early childhood by trauma, and the disease has slowly progressed until the normal structure of the joint has become obliterated and the jaws closed, the opposite side also will be more or less affected on account of the disuse of the joint.

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[2] Adami: General Pathology, Philadelphia, Lea & Febiger.

DIAGNOSIS AND TREATMENT

The differential diagnosis in the character of the ankylosis is not a complex problem. In fibrous ankylosis, even though the adhesion is quite firm, there will be some movement, especially lateral movement in the jaws. In bony ankylosis, the only movement which can be observed is the very limited movement of the elasticity of the structures involved. There can be no lateral movement in the lower jaw in intra-articular bony ankylosis.

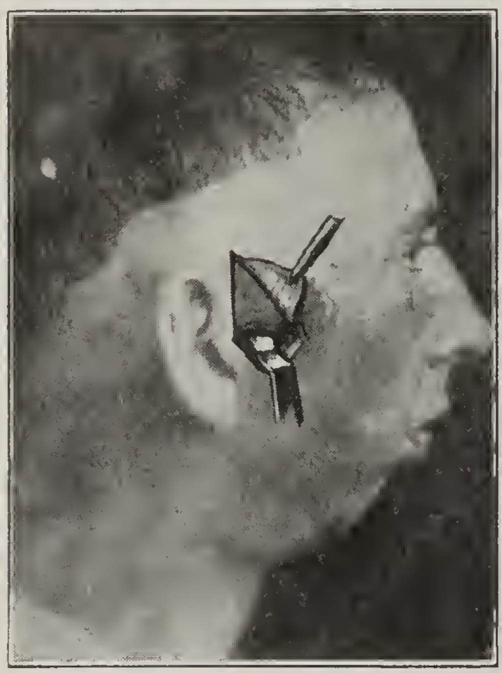

Fig. 2.—Exposure of the joint.

The treatment of intra-articular bony ankylosis consists in surgical measures. Forced separation of the jaws will avail nothing. The surgical procedure consists in establishing pseudarthrosis, either in the site of the true joint or below it. Esmarch, in 1855, suggested an operation for intra-articular bony ankylosis by the removal of a wedge shaped section of bone, with base downward, three-quarters inch long, from the horizontal portion of the mandible. This did not prove satisfactory on account of the disturbance of the normal action of the masticatory muscles which followed. König, in 1878, introduced the operation of resection of the mandibular head. The results were unsatisfactory on account of the possibility of a recurrence.

Brophy[3] states that he has obtained very satisfactory results by removing a crescent shaped section of bone from the region of the angle of the jaw. He places gutta percha between the ends of the bones which prevents the freshened ends of the bones from uniting. The gutta percha is allowed to remain for a period of six weeks, after which the wound is reopened and it is removed. During this time, it is asserted that a well organized membrane is formed which seems to form the intra-articular tissue.

The operation which has been very satisfactory in my experience is the operation similar to the one reported by Lilienthal,[4] in which a section of bone is removed from the condyle.

Technic of the Operation.—Beginning about 5 mm. in front of the tragus of the ear, a horizontal incision is made through the epidermis and superficial fascia along the lower border of the zygoma, extending anteriorly for a distance of about 3 cm. A vertical incision is then made through the epidermis and superficial fascia, extending upward from the point of beginning about 4 cm., running just in front of, and parallel to the ear (Fig. 1). The epidermis and superficial fascia are now dissected up to form a flap. The underlying tissues containing the branches of the seventh nerve and also the superficial vessels are pushed aside by the use of retractors and blunt dissectors until the joint and a portion of the condyle is laid bare (Fig. 2). Great care must here be exercised that the zygomatic and temporal rami of the facial nerve are not torn in the effort to expose the bone.

After the neck of the condyle has been cleared of the tissues by blunt dissection, a full curved aneurysm needle is used for the purpose of guiding a steel ribbon $^{3}/_{1000}$ inch in thickness and 1 cm. in width, back under the condyloid neck (Fig. 3). This is for the protection of the internal maxillary artery in removing the section of the condyle. The section is removed by the use of the mastoid chisel, taking out about 1 cm. of the bone, including the periosteum. Then a flap of superficial fascia is elevated from the temporal muscle and interposed between the ends of the condyle, and sutured with catgut sutures. The wound is then closed with horsehair.

After the excision of a portion of the condyle, as indicated, has been accomplished, on one side, an attempt should be made to open the mouth. If the jaws cannot be opened, the same operation should be resorted to on the opposite side, when of course the jaws will be free. No attempts should be made to stretch the jaws or hold the mouth open until partial repair of the soft tissues has been obtained. After about the fifth day, my treatment has been to begin opening the mouth by the use of a graduated mouth gag. The patient will experience considerable pain at first, but the mouth should be opened until there is at least a space of 2 cm. between the opposing cuspid teeth. When this space is obtained, the graduations on the gag are noted and the gag placed in the same position in the mouth and opened to the same degree, four or five times each day. Each time the gag is inserted, it is left in position for a period of five minutes. This treatment of stretching the jaws should be maintained for several weeks, the patient doing this himself, after being properly instructed.

Dangers, Disadvantages and Complications of the Operation.—One of the greatest dangers involved in the operation is that of infection. Owing to the close proximity to the hair line, there is a greater possibility of infection either in the wound at the time of operation, or subsequently, than in wounds of like nature elsewhere on the skin surfaces. Therefore the greatest precautions must be exercised that everything connected with the operation should be absolutely sterile and that extra precautions be taken in the subsequent dressings of the wound, that infection be warded off. An infection in the wound may ruin what would otherwise be a successful operation.

Necessarily after repair has taken place, there is more or less cicatricial tissue at the point of operation, which leaves a scar and sometimes more or less of a depression at the point of the false joint; but this, in my opinion, is of secondary importance. The dangers

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[3] Brophy: Oral Surgery, the Diseases, Injuries and Malformations of the Mouth and Associated Parts, Philadelphia, P. Blakiston's Son & Co.

[4] Lilienthal: Ann. Surg., August, 1911.

to be encountered in the operation are, first, the inability of the anesthetist to control the tongue during the administration of the anesthetic. Some cases are on record in which tracheotomy had to be resorted to during the operation. Second, danger of injury to the temporal rami of the seventh nerve, whereby paralysis of the orbicularis oculi muscles may follow. Another danger to be encountered is injury to the internal maxillary artery. This vessel lies directly in the field of operation, and must be protected in some manner in removing the segment of bone in the process of forming the new or false joint. This may be accomplished by retractors, Murphy's periosteotomes, or any other instruments which may be easily inserted between the artery and the neck of the condyle. I believe that the steel ribbon which I have described is superior in the simplicity of its application, and effectiveness, to anything which has been called to my attention.

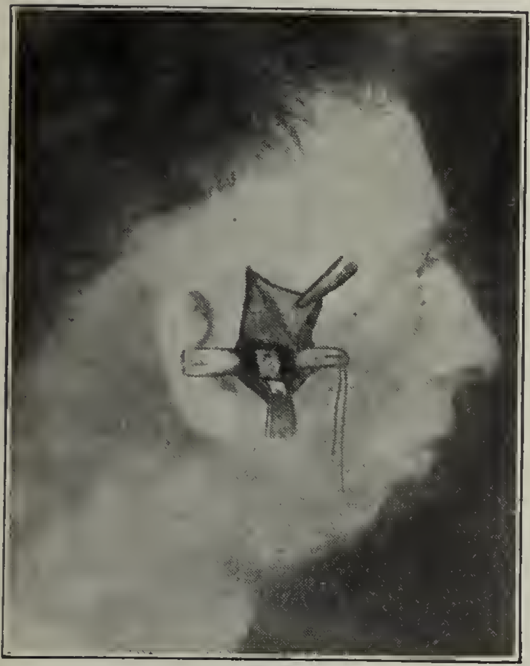
Fig. 3.—Insertion of steel ribbon.

CONCLUSION

It might be stated that, outside of the dangers enumerated, this operation is comparatively free from serious complications or sequelae. The patient begins the mastication of his food in about ten days to two weeks following this operation. The movement of the jaws prevents the formation of too much fibrous tissue between the two ends of the bone, and after repair is completed, it will be found that the tissue which had become atrophied begins to take on a more nearly normal condition. The patient takes on weight, the general health and appearance improve, and he again resumes confidence in himself. The correction of ankylosis of the temporomandibular articulation is an operation which not only gives great satisfaction to the patient, but also is one which is very gratifying to the operator.

ABSTRACT OF DISCUSSION

Dr. H. A. Potts, Chicago: These results of injuries and infections are really more common than the general practitioner seems to think. Quite frequently we see, in large clinics, patients who present the same appearance as this one. The diagnosis as to the form of ankylosis is very important, and judging from the experience of previous operators and the conditions found at operation, the operation here described is certainly of the type which is best suited to the bony ankylosis. The dissection of fibrous bands and the treatment of the various classifications, as given, would permit of other treatment, but the bony ankylosis is best treated. Dr. Lyons is to be congratulated on the result in this case, which, if the patient does his part, will avoid a further complication, or even lessening of the space already gained.

Dr. Chalmers J. Lyons, Ann Arbor, Mich.: Of course, in these cases the patients must do their part. They are instructed to keep constantly stretching the jaws. These instructions are very important. More can be accomplished by this stretching than by anything else, doing it several times a day, to keep the space already gained. This man has gained a little more space by this exercise.

Dr. Potts: If you put the index finger on the upper teeth and the thumb on the lower teeth, you can get a good deal of force in stretching.

Dr. Lyons: That is a good suggestion. These exercises must be kept up continuously. In these cases, if nothing is done, there is a great tendency for the ankylosis to recur.

CALCIFIED HEMATOMA*

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DETROIT

Interest in the occasional development of bone masses in and beneath muscle following trauma has been great, especially since the Roentgen ray has made possible their clear demonstration. The condition has commonly gone under the name of myositis ossificans traumatica, because it has been believed that damaged muscle is actually changed into bone. Other names have been suggested depending on various theories of origin; for example, calcified hematoma, based on the theory that the blood clot following an injury becomes calcified, and periosteal callus, on the theory that the growth is merely misdirected callus formation. The best known theories so far put forward are, first, the hemic theory (Sadeler). This theory supposes that the hemorrhage following an injury to muscle is first transformed into cartilage which later ossifies. Second, that the tumors are aberrant sesamoid bones (Bard). Third, the theory that the growths result from bits of periosteum detached and included in the muscle. Fourth, that the fibrous tissue of the muscle undergoes a true metaplasia into bone. Fifth, that the bone develops from cells disseminated from the periosteum through the hemorrhage. All these theories have warm supporters and antagonists.

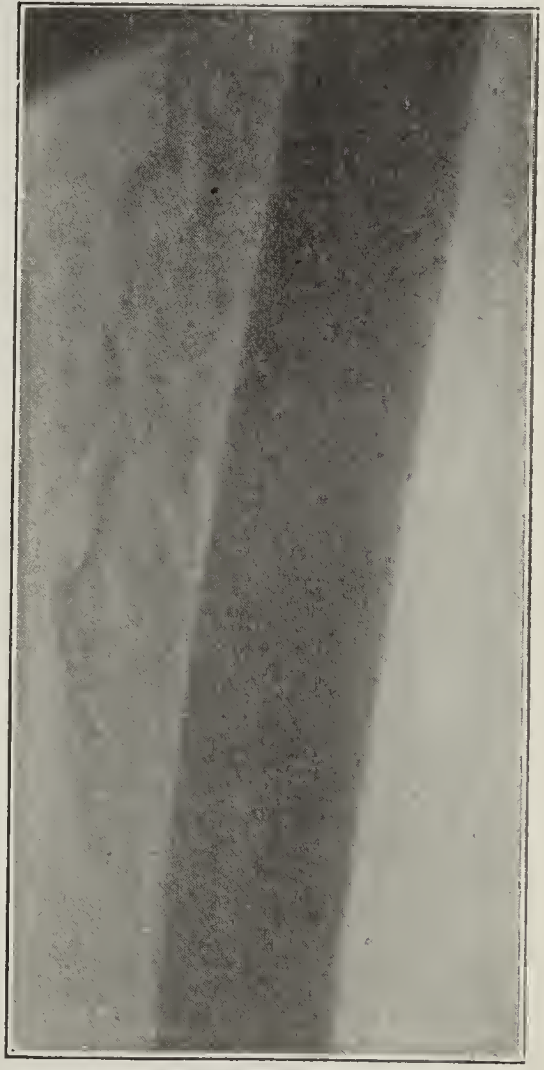
Fig. 1.—Before operation.

The best discussion which has come to my attention of the surgical and pathologic aspects of this condition is that published by Fay.[1] He favors the combination theory in which both the periosteum and the fibrous tissue of the muscles take part.

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Much of the confusion as to the origin of these growths is due to the fact that sometimes the bone mass is attached to the periosteum, and that sometimes it lies within the muscles without periosteal connection, most commonly in the brachialis anticus or the quadriceps. This difficulty is easily overcome by the assumption, which I believe to be a reasonable one, that there is always, at some time, a direct connection with periosteum which may or may not be absorbed or broken off by muscular action. In support of this assumption is Coley's[2] statement that recurrence can best be avoided by covering the periosteum with a fascial graft.

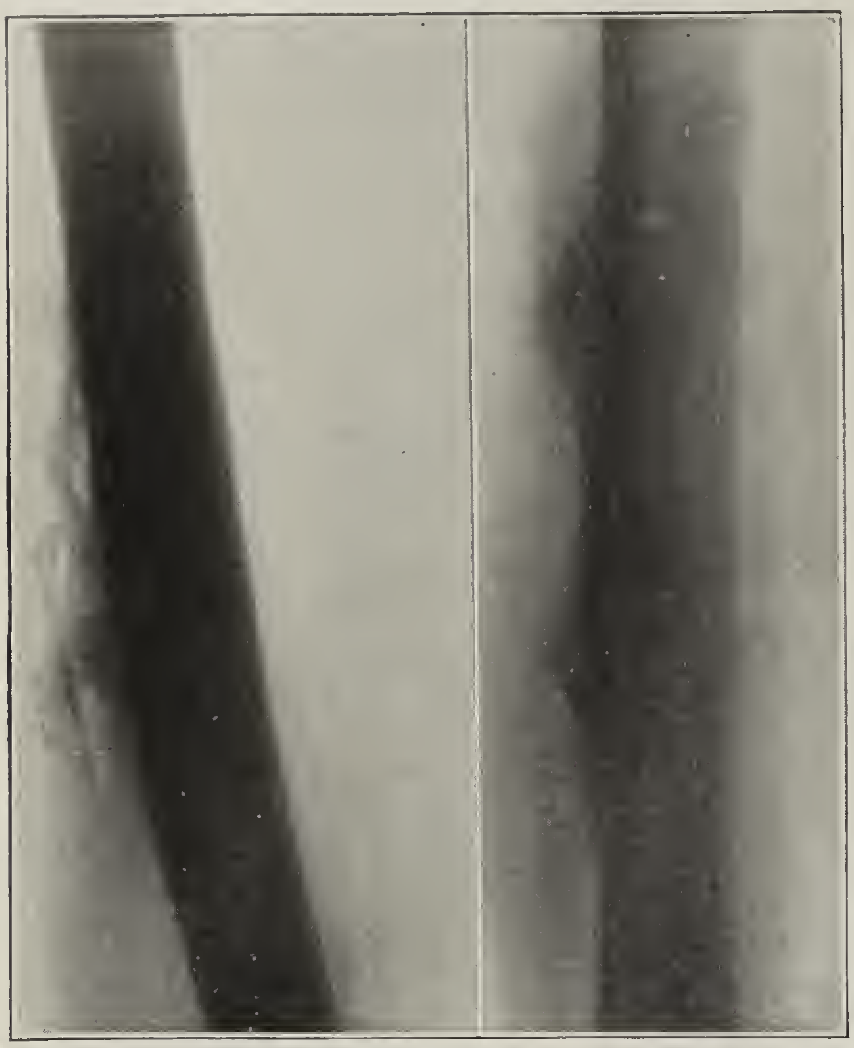

Fig. 2.—Present time.

The following case aroused my interest in the subject, and is, I believe, worth reporting in the hope of shedding a little more light on the causation of the condition:

W. B., vigorous schoolboy, aged 16, was without disease or family taint. Five weeks before he was seen, March 21, 1916, he was kicked on the front of the thigh during a basketball game. There was immediate pain and stiffness, but he continued the game. Next day pain was rather severe and he was forced to limp. Pain gradually passed off but the stiffness did not decrease, and for the past two weeks had been increasing. Examination showed a slightly tender, hard mass involving the middle third of the front of the thigh. The muscles moved over it to a certain extent, but flexion of the knee was possible to only about 15 degrees, a severe pulling sensation preventing further motion. Probable diagnosis of calcified hematoma was made. Roentgenograms taken at the time showed a long mass, with the character of bone, lying close to the front of the femur, to which it was attached at one point.

The possibility that the mass was sarcomatous made exploratory operation advisable. This was done, March 22. An incision, just in front of the iliotibial band, at the outer side of the growth, was carried through the fascia lata, and the muscles separated by blunt dissection. A mass of vascular new bone was found, surrounding the anterior half of the middle third of the femur. Anteriorly it was firmly adherent to the vastus medius by many torn and partially destroyed muscle fibers which issued from the bone substance. These anterior attachments were easily separated and the bone found to be firmly adherent, at about its middle, to the surface of the femur. With considerable difficulty the mass was pried loose and removed. At the point of adhesion to the femur was found an area one-half inch in diameter, where the bone was denuded of periosteum. The perimeter of this denuded area was made up of much thickened and edematous vascular periosteum with ragged edges. The thickening gradually decreased in all directions for a distance of three-quarters inch, at which point the periosteum became normal.

Feeling convinced that the mass originated from the periosteum at this point, the denuded area and the edges of the thickened periosteum were carefully covered with bone wax in the hope of preventing further overgrowth. The specimen was sent to Dr. C. R. Meloy of Grace Hospital, to whom I am indebted for the microscopic slides. The patient made an uneventful operative recovery and was about in ten days. Two weeks later he had about 45 degrees of motion in the knee, and was rapidly gaining more motion. At that time, he sustained a severe wrench, whereupon the stiffness promptly reappeared, and there was very marked induration of the deep tissues of the front of the thigh, which closely resembled the original growth. Since, this has gradually disappeared and motion is constantly increasing. The roentgenograms taken at present show that the growth has been stopped and that the remains of it are absorbing. The microscopic sections taken from various parts of the new bone are of

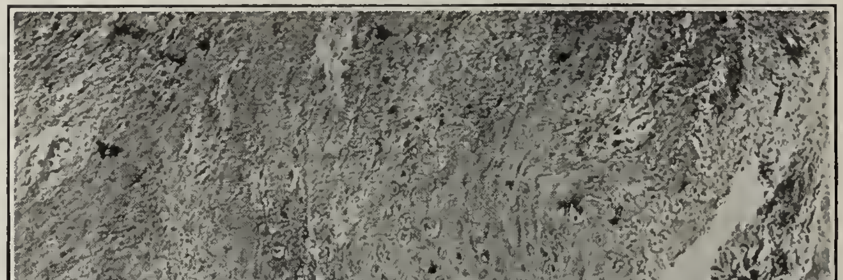

Fig. 3.—Cartilage formation.

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[1] Fay, O. J.: Parosteal Callus, the So-Called Myositis Ossificans Traumatica, Tr. West. Surg. Assn., 1913, p. 174.

[2] Coley, W. B.: Myositis Ossificans Traumatica, Ann. Surg., 57, 305.

extreme interest, in that they show all stages of bone formation. The whole mass is surrounded by a fibrous tissue capsule, in the meshes of which can be seen partially destroyed muscle fibers. These are scattered all through the growth. From this capsule, cartilage is growing, as is bone. There are areas of transformation of cartilage into bone, and areas of fibrous tissue undergoing myxomatous change with a substitution of cartilage cells, evidently a direct change in cell character. The picture, therefore, is that of callus formation originating in the periosteum. Everywhere the picture is that of muscle destroyed by an invading growth, rather than muscle changing into bone. The muscle bundles are evidently infiltrated and destroyed, not actually forming new tissue.

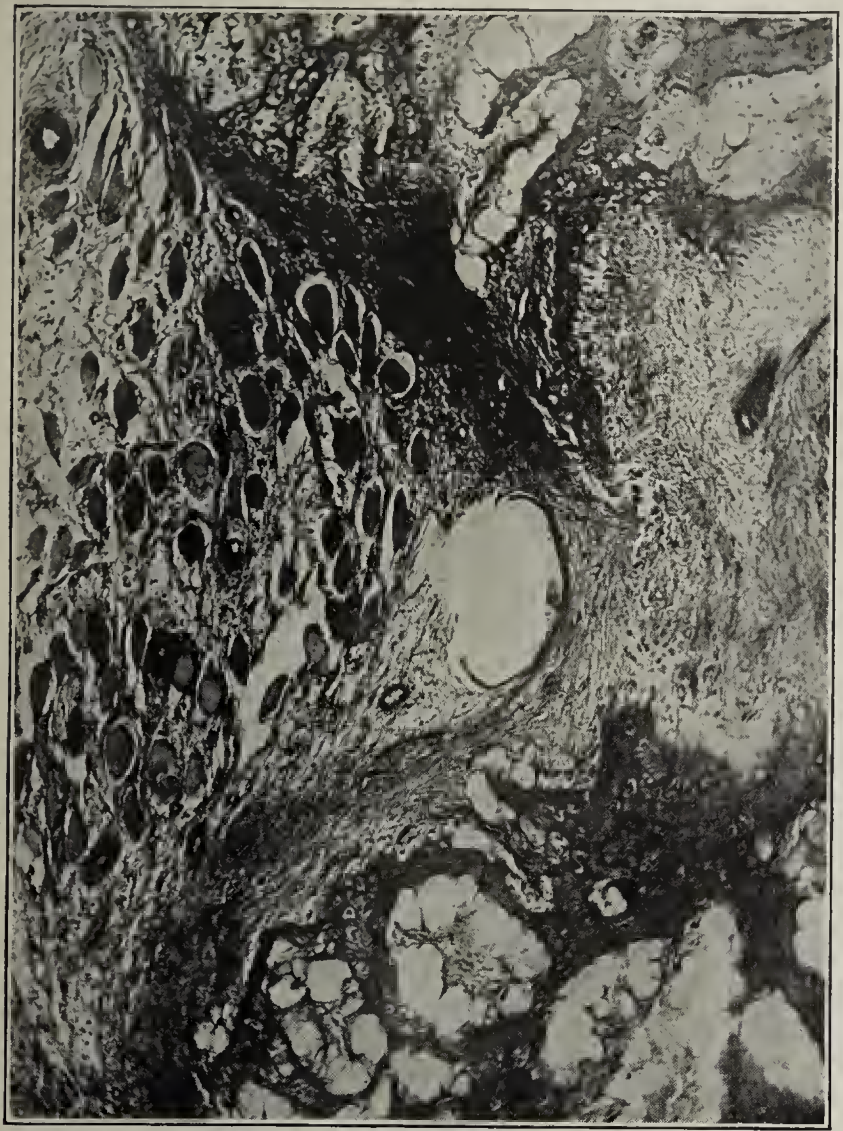

Fig. 4.—Muscle surrounded by bone and fibrous tissue growth.

Clinically this case is an example of successful operation for the removal of a large and necessarily disabling bone growth. The failure to recur I believe to be largely dependent on the use of the protective film of bone wax at the point of periosteal injury. Pathologically I believe the course of events to have been something as follows: The original traumatism tore deep muscle fibers, and at the same time caused a break in the periosteum. From both sources blood was poured out, and immediately deeper layers of periosteum responded to the stimulus of trauma by pouring forth osteoblasts. These were free to wander through the mass of hemorrhage, which, in this case, occupied only the deepest layers of muscle tissue. A delimiting fibrous tissue membrane was formed by the intramuscular fibrous tissue as a preparatory step to the absorption of the blood clot. On this membrane and its meshes were deposited the free bone-forming cells, and from all directions bone growths began. Had the hemorrhage lain deeper in the body of the muscle or had the tear in the periosteum been smaller, it is easy to see how the connection between the two might have been obliterated within a very short time, and the bone growth have become entirely enclosed within the muscle body. Had this occurred, Roentgen rays would have at no time shown connection between the growth and the periosteum, because the connection would have been severed before sufficient calcium was deposited to throw a shadow.

Although I realize that the evidence of this case is far from conclusive, its presentation is justified on two grounds, first, because the apparent course of events is so plain and easy to understand, and second, because the theory which it seems to substantiate is a simple one. Metaplasia of one tissue into another, even under extraordinary stimuli, is a difficult conception. Overproduction of the tissue from its usual source is a simple one.

David Whitney Building.

ABSTRACT OF DISCUSSION

Dr. W. C. Campbell, Memphis: I have had two similar cases, both of which were infected. The first case occurred in a young boy, 9 years of age, who was referred to me for tuberculosis of the hip. The roentgenograms showed a ring of bone in the region of the lesser trochanter. Stereoscopic roentgenograms showed this ring of dense bone, about the size of half a dollar, to be posterior and slightly external to the lesser trochanter, and not connected with it in any way. There was a sinus running from just below the greater trochanter tortuously through the thigh at the level of the lesser trochanter, opening internally in the perineum. Bismuth injection of the sinus brought it out quite clearly. I found at operation that there was no connection whatever with the bone. There was no erosion, and the periosteum was intact; but the condition was of two years' duration, and had followed an injury. The result was complete cure, with no recurrence

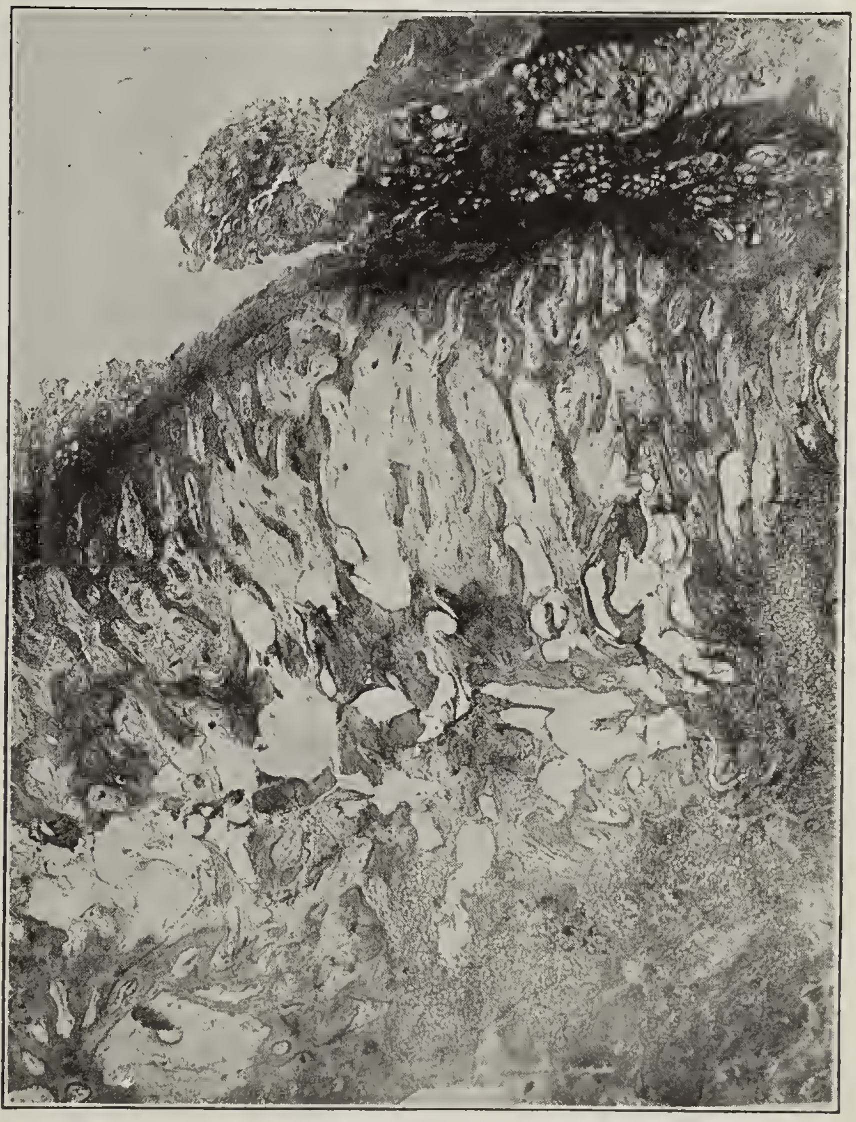

Fig. 5.—Bone growing from capsule.

after two years. The second case was that of a man, aged 30, who gave no history of injury. This case was also referred with an erroneous diagnosis of tuberculous knee. The knee was red and fluctuating. Operation showed an irregular mass anterior to the femur, just above the knee joint. The mass was easily removed, and the patient made an uneventful recovery, except that the knee was involved and required further work. Microscopically the mass removed was bone and not calcium deposits, as frequently occur in suppurating areas. These cases were interesting, because both were infected, one with a sinus, and the other having no sinus.

Dr. James T. Watkins, San Francisco: I operated on a youth, aged 16, who, while playing football, had received a kick on the external aspect of the lower end of the thigh. He was not more than temporarily discommoded, but later noticed at the site of injury a lump which was painless, but gradually increasing in size. He wanted to enter the Naval Academy, but had been told that this deformation would exclude him. For this reason he wished it removed. So I cut down on the femur and chipped the mass off. The muscle was not particularly adherent to it. It did not occur to me to cover the cut surfaces as Dr. Kidner did so as to prevent a recurrence. However, there was no recurrence. Macroscopically it looked more like cartilage than bone. The pathologist reported it to be a mixed cartilage and bone tumor and of a benign nature.

Dr. J. D. Griffith, Kansas City, Mo.: These growths occur not only connected with those parts of the body where bones or periosteum are, but also elsewhere. On two different occasions I have taken such a growth out of the abdominal muscles. These specimens gave the evidence of bone structure. My cases seem to show that in all instances the growth is not periosteal.

Dr. Frederick C. Kidner, Detroit: In regard to the question of origin of the bone in these unusual growths, I would say that I limited my paper to the purely traumatic cases following on severe injuries. Such cases as Dr. Campbell mentioned are very often the result of an infection, and the masses consist of calcium deposits, rather than bone. I should like to know whether the masses were examined in Dr. Campbell's cases.

Dr. Campbell: Yes. They were both necrotic bone, and the condition followed injury in one instance.

Dr. Kidner: The element of chronic infection and of irritation enters here, and it is easy to conceive that the periosteum might be healed after the bone mass was formed. In regard to the masses in other places, where there is no bone near, I do not think that we know much about them. I am not willing to advance any theory on that subject.

Influence of Caffein on Toxicity of Morphin Sulphate.—From results recently obtained in experiments on cats and guinea-pigs by C. C. Haskell and A. B. Siewers (*Virginia Medical Semi-Monthly*, Dec. 8, 1916), it would appear that the employment of large doses of caffein is not devoid of actual danger, and instead of lessening the toxicity of morphin sulphate, really renders the chance of the animal's recovery less probable. They do not urge these results as evidence that caffein should not be used in the treatment of poisoning by morphin sulphate or other opium preparations, but that some limit should be placed on the amount of caffein used in the treatment of opium poisoning and that more attention should be paid to removing the unabsorbed morphin and hastening the elimination of that present in the circulation.

A CLINICOPATHOLOGIC STUDY OF EARLY MALIGNANT CONDITIONS OF THE FACE AND MOUTH *

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AND
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The great latitude accorded the term "precancerous" has led to its application to a variety of lesions both cancerous and noncancerous. For the sake of clearness in thinking it would be well to keep separate those lesions which may ultimately terminate in cancer from those cases which have recently assumed definite malignancy. It is of the greatest importance to the patient, however, that a malignant condition be eradicated completely while it is still a local process.

The majority of so-called precancerous lesions represent an incomplete or perverted reaction to some form of chronic irritation. When the cells of any tissue are injured or destroyed, there is an attempt at repair, and the neighboring cells are stimulated to reproduction. Normally the development of these cells goes on at a rate equal to or greater than that of the most malignant of tumors, and they soon reach maturity. In some cases, however, because of an influence of which as yet we know but little, these cells do not reach maturity but persist in a partially developed state and continue the process of reproduction far beyond the normal limits. Thus a group of cells are formed which are not coordinated and correlated with the normal growth processes but are more or less independent of them. To these the term "cancer" is applied.

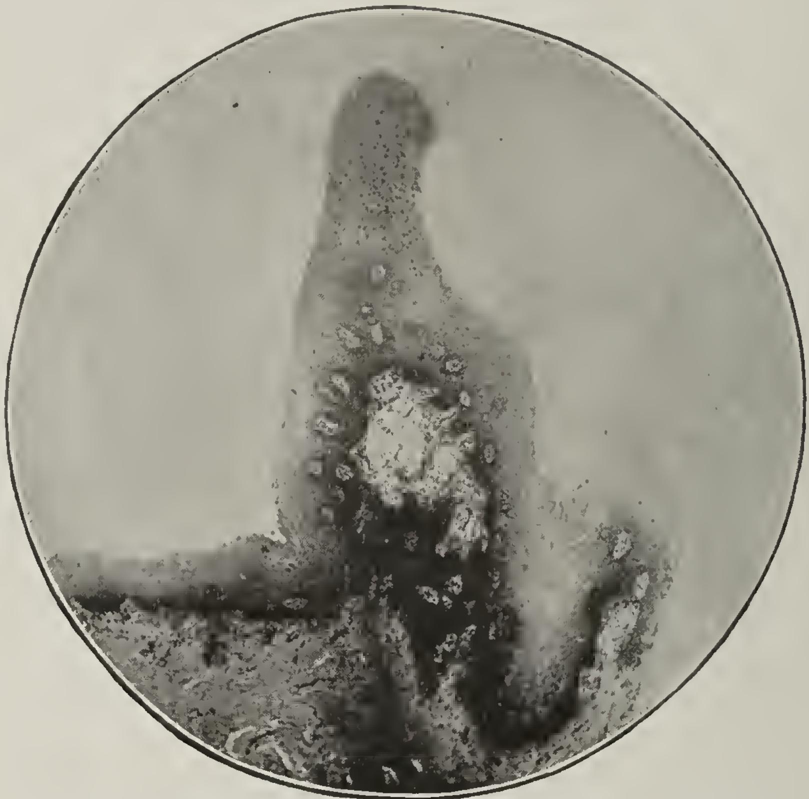

Fig. 1.—A small papillomatous growth occurring in the mucous membrane of the cheek opposite a jagged tooth in a man, aged 50.

About the face and mouth, carcinoma arises from one of three types of cell:

1. The squamous epithelium of the skin and mucous membrane, giving rise to the epidermoid carcinoma or epithelioma.
2. The cell of the hair follicle, giving rise to the hair matrix carcinoma or the often erroneously called basal cell carcinoma.
3. The epithelium of the glands associated with the skin and mucous membrane, giving rise to the various types of glandular carcinoma.

The most frequent tumor of this region is the epidermoid or squamous cell carcinoma. The patients bearing this type of tumor give a history of having some form of lesion preceding the development of the cancer. The smoker's burn is one of the frequent initial lesions described by these patients. A small blister occurs which may disappear and reform again. The histopathology of such burns has been so accurately and completely described by Bloodgood[1] that it will not be discussed at this time.

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* Read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

In the order of frequency, the next "precancerous" lesion occurs as the result of mild traumatism repeated frequently over long periods of time. The irritation of a jagged tooth, or in many patients the habit of holding nails, screws, etc., in the mouth can be discovered in taking the history. Other lesions in which carcinoma develops are fever blisters, cracks, fissures, cuts which have refused to heal under ordinary care, papillomas and areas of leukoplakia. The last lesion would appear to be a very important one when cancer of the tongue is under consideration, as each of the patients in the seven cases in this series gave a description of the initial lesion as a thickened, hard area on the tongue.

While the history of traumatism can be elicited in the majority of cancer cases of this region, and especially those of the lip, there are many lips which have been injured in a similar way and which do not develop cancer. In the last eighteen months we have seen two smokers' burns which, after persisting for a couple of months, disappeared and have not returned, and a sore developing in a fever blister which existed for nearly three months and then went away. Whether these will return and malignancy develop in them, of course, cannot be said. It would appear, however, that there is at work in the development of cancer some factor or factors other than simple injury.

Injuries of the types described do apparently determine the location of the cancer in those individuals in which these other factors are operative. Of interest in this connection is the work of Miss Slye.[2] She reports that cancer of the oral region is not frequent in mice, even in those strains in which the majority die with cancer. Injury to these parts is also infrequent in these animals, whereas it is common in man.

These conditions may persist without visible change for some time, but more often they gradually spread and break down, forming an ulcer. This is usually of an irregular shape, having rather indurated edges which are not undermined. The base is smooth and grayish. There is often a thin, irritating discharge. Around the edges is a zone of bluish discoloration containing blood vessels. This is a picture of a fully established cancer. Its persistency is a significant warning, and when such a lesion is found about the face or mouth in a patient over 35 years of age, it should be removed quickly. Too much emphasis should not be placed on the age, for each case is more or less a law unto itself. For instance, we recently studied a case of carcinoma of the tongue which began in the twenty-seventh year of the woman's life.

In the twenty-two carcinomas of the face occurring above the line of the lower lip in the series which forms the basis of this study, twelve were of the hair matrix variety. In larger series the proportion of this type is usually greater. These tumors take their origin from the cells comprising the hair follicle. They usually begin as a subcutaneous nodule. After persisting for a variable period they break down and ulcerate. They present a tendency to infiltrate widely but not deeply, and seldom produce metastasis. A free excision results in complete cure in the vast majority of cases. It is in this type of cases, especially those situated about the nose and eyes, that the use of caustics, while often successful, will occasionally render the growth inoperable. The location must therefore be taken into consideration in selection of the method of treatment.

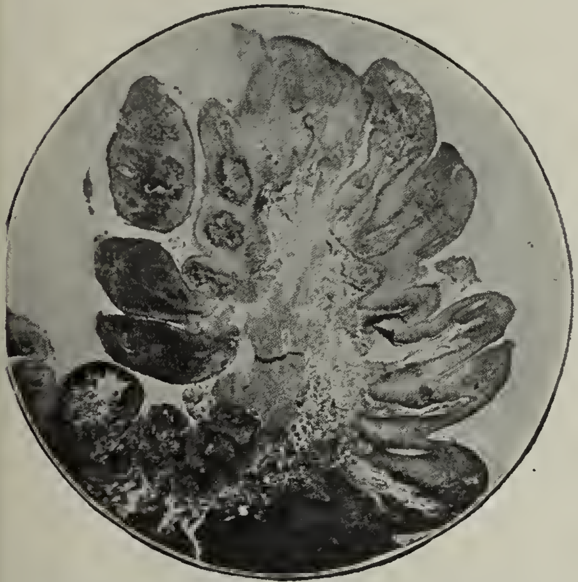
Fig. 2.—A papilloma on the tongue in a woman, aged 27. There was recurrence because of incomplete removal. Second excision successful.

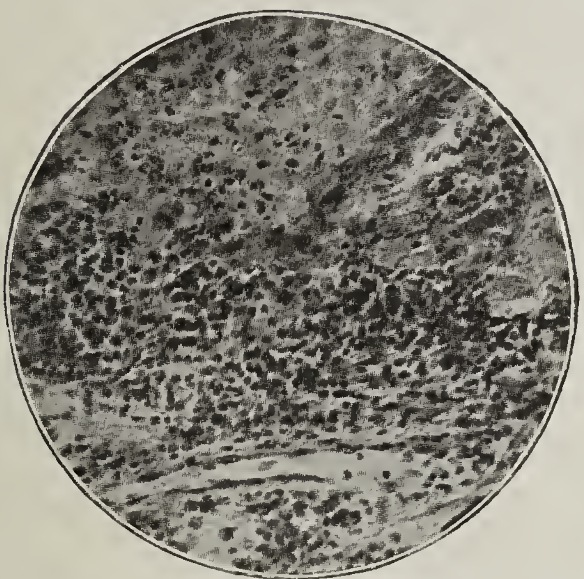
Fig. 3.—Both an exudative (lymphoid in character) and a proliferative reaction are shown about the invading tumor cells. From a specimen of early epidermoid carcinoma of the lower lip.

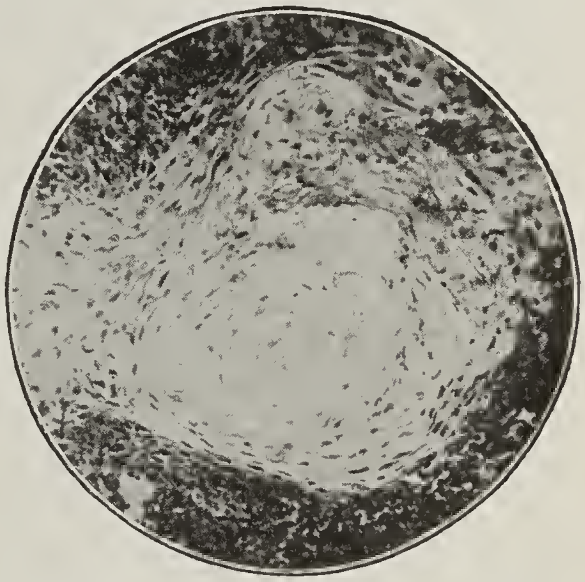
Fig. 4.—A group of metastatic cells in a lymph node of the neck associated with an epidermoid carcinoma of the lower lip which began in a razor cut. Radical operation with no recurrence at the end of the third year. Note the cornified mass to which the tumor cells are being reduced.

The tumor cells may be cuboidal, cylindrical or spindle shaped. They are characterized by a small amount of cytoplasm and by the fibrils which they produce. At times they occur in a densely packed arrangement and, when of spindle shape, resemble a sarcoma quite closely.

Occasionally a glandular carcinoma is seen about the face. Only one of the type occurred in this series — a mucous gland, adenocarcinoma — arising in the floor of the mouth and extending over to the tongue and involving it.

The connective tissue lesions occurring on the alveolar border form an interesting group of tumors usually referred to as epulides. The soft or giant cell variety is the one type about which wages the controversy as to malignancy.

The misunderstanding which has existed in the past concerning the exact nature of the giant cells found in neoplasms has contributed to this confusion. The separation by Mallory[3] of true tumor giant cells from those of the foreign body type found in tumors has cleared the field in regard to the giant cell epulis. In the majority of instances, the giant cells are all of the foreign body variety. Again, these tumors may be confused with a malignant type of tumor of endothelial origin which exhibits intravascular giant cells and has been reported by Whitman[4] and Ivy.[5]

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[1] Bloodgood: Carcinoma of the Lower Lip, Surg., Gynec. and Obst., 1914, **18**, 404.

[2] Slye: Inheritability of Cancer in Mice, Jour. Med. Research, March, 1915, p. 193.

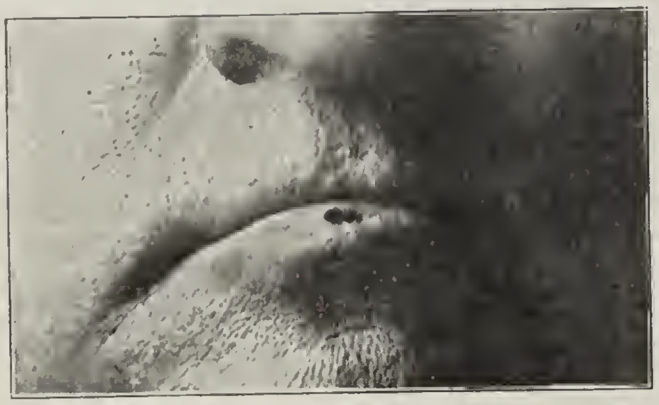

Fig. 5.—An early epidermoid carcinoma of the lower lip. Patient is a plumber who has the habit of holding nails, etc., in the mouth.

Since these tumors represent forms of lawless growth of connective tissue cells, the important thing is to find out just what these cells are doing. The rate of the growth should be ascertained by a histologic study of them, searching for mitotic figures, and determining the degree of differentiation to which they are attaining. It should be noted whether these cells are arranging themselves in a position normal to connective tissue, or whether they are atypical in form and arrangement. In a word, they should receive the same study as do connective tissue tumors elsewhere, and the diagnosis and prognosis be made accordingly.

The prognosis of giant cell epulis, in general, is good, provided careful excision has been made. The treatment should consist in a complete removal of the tumor and its point of origin.

Several other varieties of the nonepithelial malignant neoplasms occur in connection with the face and mouth. Sarcoma is a common tumor of the jaw. This tumor may arise from the bone or connective tissue of the region. The symptomatology is largely determined by the location and the rate of growth. Although they are rapidly growing tumors there is but little pain until they become ulcerated or involve nerve trunks. These growths should be excised well beyond the line of visible infiltration. If metastasis has already occurred, since it usually takes place by way of the blood stream, the case is hopeless. If in the frankly malignant case the growth is still a local process, complete excision will result in a cure.

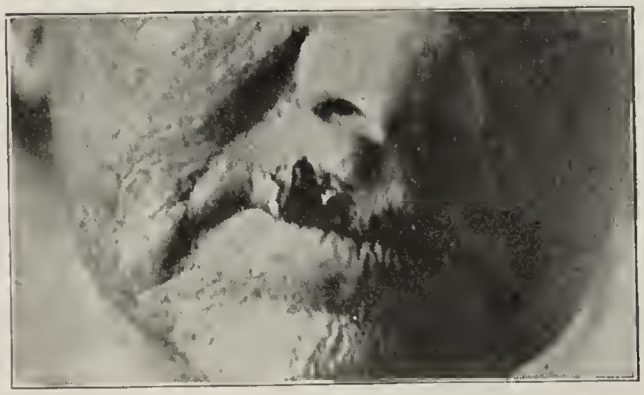

Fig. 6.—A hair matrix carcinoma of the lip.

As the majority of cancers about the face and mouth are malignant epithelial tumors, metastasis to the lymph nodes of the neck occurs rather readily. These metastatic groups of cells, however, may remain inactive for a long time and then take on an increased growth rate. Only a small percentage of the late cases of cancer give rise to metastasis in distant parts. Radical operation, therefore, even in cases which present extensive involvement, gives a surprisingly high percentage of cure.

Cancer of the face and mouth is comparatively easy of diagnosis and accessible for surgical treatment. With this in mind, 3,007 deaths from cancer of the buccal cavity in the United States in 1913 is appalling.

It is our desire to emphasize the need for close cooperation between surgeon and pathologist, and that here as elsewhere in dealing with new growths, the important thing, both in treatment and in diagnosis, is a thorough knowledge of the behavior of the tumor cells in the particular case under consideration.

The end-results of surgical treatment of malignant tumors of the face and mouth compare favorably with those effected by medical science in the treatment of other disease (not considering, of course, the specific treatment such as antitoxin for diphtheria, etc.), somewhere between 60 and 80 per cent. of cures. The earlier the cases are seen the higher the percentage of cures.

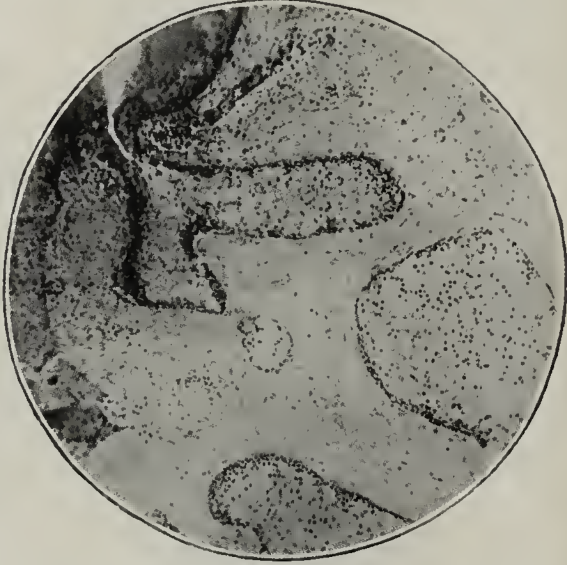

Fig. 7.—An adenocarcinoma of the floor of the mouth which promptly invaded the tongue.

The operative technic in this region has reached a high state of perfection. If further headway is to be gained against cancer of the face and mouth, it must be by the education of the public. It is the duty of those who see so many cases after it is too late to educate the dentist, physician and the general public concerning these conditions which so often terminate in cancer, and urge the prompt radical treatment of cancer while it is still a local process. The responsibility, therefore, rests with the stomatologist, the oral surgeon and the pathologist.[6]

ABSTRACT OF DISCUSSION

Dr. Frederick B. Noyes, Chicago: There was one remark made in regard to the origin of the giant cells, about which I know we have had some rather interesting evidence in the last year in the Research Laboratory of the University of

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[3] Mallory: Giant Cell Sarcoma, Jour. Med. Research, April, 1911, p. 463.

[4] Whitman: Giant Cell Endothelioma of the Gums, Jour. Med. Research, January, 1914, p. 465.

[5] Ivy, R. H.: Mesothelial Tumors of the Jaws, The Journal A. M. A., Jan. 2, 1915, p. 40.

[6] In addition to the references already given, the following will be found of interest:
Blair: Tumors of the Mouth—a Collective Review, Internat. Abstr. Surg., January, 1916, p. 117. (This gives an extensive bibliography.)
Forman: Some Phases of the Cancer Problem, Ohio Pub. Health Jour., **7**, 21.
Hoffman: Some Essential Statistics of Cancer Mortality Throughout the World, Panama Commemoration Volume, Chicago, 1915.
Means, J. W., and Forman, Jonathan: Precancerous Conditions of the Face and Mouth, Dental Summary, **35**, 945; Epulis, ibid., **36**, 494.
Tyzzer: Tumor Immunity, Jour. Cancer Research, April, 1916, p. 125.

Illinois. The character of the giant cells in the tumors about the mouth is characteristic of origin by fusion of other cells in the region.

Dr. H. A. Potts, Chicago: The most important thing to be learned from the paper is the great importance of recognizing the possibility of these precancerous lesions. The chief thing is to avoid irritation. Any wound or abrasion on the mucous membrane of the mouth, lips or face, which does not heal or show a tendency to heal within ten days or two weeks, should be looked on as very suspicious, and should not be treated expectantly. We have all seen these cases. The secret of success in their removal is early and extensive operation to take in all of the growth and metastases as well. The chief point is that we must impress on the general practitioner of medicine and dentistry that these very serious abrasions should be looked after immediately and not given any palliative treatment that extends over a period of two or three weeks.

Dr. F. B. Moorehead, Chicago: In the past there has been an error in the classification of tumors of the mouth, particularly of the mesothelial type. A clear distinction should be made between the various forms of benign fibroma, the various forms of sarcoma and the giant cell tumors found in the mouth, which must not be looked on as highly dangerous. We may have, on the one hand, a giant cell tumor, the result of cell fusion, and, on the other hand, a true giant cell sarcoma. The giant celled tumor produced by cell fusion is a distinct pathologic entity, and is peculiar to the mouth. It is not the same either clinically or histologically as the giant celled sarcoma. We have begun the study of these peculiar giant celled tumors in the University of Illinois and hope to have something to say about them at a later date. The term "epulis" should be discarded.

ANKYLOSING OPERATIONS ON THE SPINE

A STUDY OF TWO SPECIMENS IN THE LABORATORY *

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SAN FRANCISCO

The two specimens described here were removed at necropsy.

Case 1 (E 113).—The patient was a child of about 5 years, operated on for spinal tuberculosis by Dr. Watkins, with Dr. Ely assisting, five months before death. The cause of death was pulmonary embolism. The operation was a typical Hibbs.

The specimen includes six vertebrae, the two lowest thoracic and four lumbar, one of which (the first lumbar) is badly diseased. No motion can be detected in the operated portion between the spines, but the bodies move a little on each other.

Sagittal Section.—The diseased vertebra is crushed into a trapezoid, and its substance is decidedly harder and denser than is that of the other vertebrae, in spite of the fact that anteroposteriorly runs a band of necrotic tissue, so that the two halves (upper and lower) move on each other. This rift in the bone communicates posteriorly with a collection of cheesy material which has pushed the posterior common ligament backward into the spinal canal. The marrow of the affected vertebra appears yellower than that of the others.

The impression one gets in examining the specimen is that too much of the work in the operation has been done above the diseased vertebra, and too little below it. The laminae of the three lowest thoracic vertebrae and of the first two lumbar are united by bone, making of all five a firm bony mass. Of the spinous processes themselves there is no trace. The union is interlaminar, not interspinous.

Examination of the stained slide, which includes the diseased vertebra and those next above and below it, reveals that the diseased vertebra is in the form of a blunt wedge with the apex forward. Its middle portion is worst involved; the diseased area divides the vertebra into an upper and lower portion, and the products of inflammation bulge out posteriorly so as to narrow somewhat the lumen of the spinal canal. The structure of the diseased vertebra is different from that of the vertebrae above and below. It is more transparent, and the contrast between its trabeculae and its marrow is sharper.

Histology.—The upper and lower vertebrae are normal. The marrow in each is lymphoid.

The middle vertebra is badly diseased throughout most of its extent. A small strip of approximately normal lymphoid marrow runs along the lower margin of the vertebra close to the fibrocartilage. The rest of the marrow is badly diseased. Much of it is fibrous marrow, very vascular; much of it is tuberculous. Necrosis of the tuberculous areas is well advanced. Many of the trabeculae are dead, and areas of calcification form a prominent feature. The whole middle portion of the vertebra has broken down, and is represented by a transverse band of necrotic material in which are many areas of calcification. The trabeculae here show well marked rarefying osteitis and are practically all dead. The tuberculous granulations have burst through, have consumed the thin cortex of bone posteriorly, and have formed an abscess beneath the posterior ligament. The abscess contains cheesy granulations, with many areas of calcification, many dead bone trabeculae, and one small sequestrum just discernible by the naked eye. Communicating with the diseased mass, and anterior to the disk between the diseased vertebra and that above it, is another somewhat smaller abscess cavity containing tuberculous granulations, and much necrotic and calcified material. It looks as if it had been formed by the squeezing out of material by pressure on the diseased vertebra. The lamina of the diseased vertebra is united to that of the one above it by bone, and this is separated from the next one above it by a very narrow interval of fibrous tissue in which bone is forming. The lamina of the diseased vertebra is separated from that of the one below it by fibrous tissue, in which no bone formation is taking place. (Evidently at the line of section the band of bony union mentioned above has not been included.)

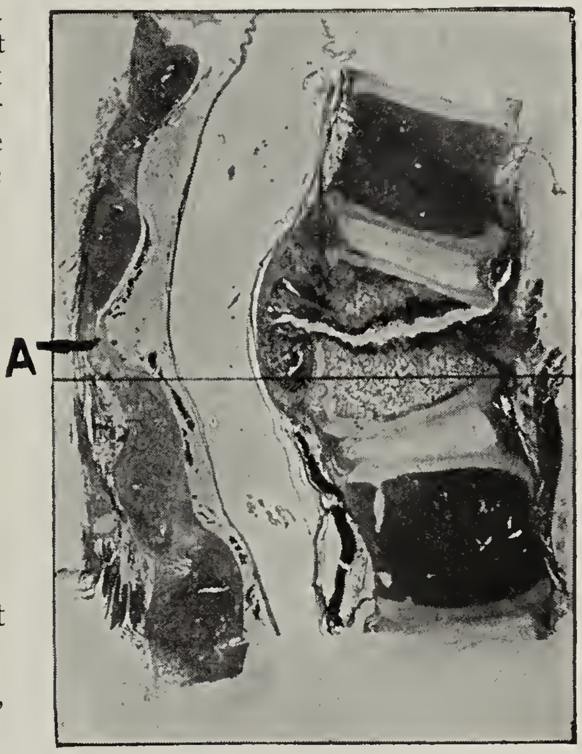

Fig. 1.—Hibbs operation. Photograph of stained slide, showing diseased vertebra between two sound ones. Bony union at *A*. Natural size.

We have, then, as the result of the operation, bony union in the operated area, and a tuberculous process still active in the body of the vertebra.

This specimen, besides its relation to an ankylosing operation, throws light on a point which has been up for discussion before this section for the past two years. You will remember that Mr. Fraser maintained that tuberculosis started in the synovial membrane, and that circulating toxins caused the marrow in the adjacent bone to change from lymphoid to fatty or myxomatous marrow; not until then could the disease gain a foothold in the bone. From which joint could the extensive involvement of this vertebra proceed? How is it possible that one vertebra could be so badly diseased, while the vertebra on the other side of the offending articulation escapes entirely? Mr. Fraser, I believe, has confused cause and effect. The fatty and "fibromyxomatous" marrow is not the precursor of marrow invasion, but the sequel. If not the only determining factor in the location of tuberculosis in the bone, at least by far the most important one is the presence of lymphoid marrow. No lymphoid marrow, no tuberculosis.

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* From the Laboratory of Surgical Pathology of Leland Stanford Junior School of Medicine.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

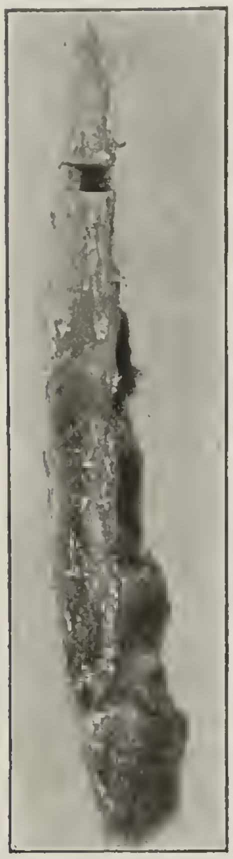
Fig. 2.—Albee operation. Posterior aspect of specimen showing graft in place.

Case 2 (E 127).—Lumbar spine on which an Albee operation had been performed two years previously by Dr. McChesney. Apparently firm union had taken place. A spondylolisthesis was present, accounting for the paralysis of the lower extremities. A large cheesy mass was present in the body of the fourth lumbar vertebra, well walled off.

Three and a half years previous to death, the left hip had been resected for tuberculosis, and about one and a half years later, an Albee operation had been done on the spine by Dr. McChesney. At about the same time the internal genitals had been removed. The patient had been admitted to the hospital in coma and died two days after admission. Paralysis of the lower extremities was said to have been present for some time.

Anatomic Diagnosis at Necropsy (Dr. Ophüls).—Tuberculosis of intestinal tract, primary tuberculosis of lymph glands, mesenteric, healed. Tuberculosis of spine, lumbar region. Operation, Albee. Tuberculosis of hip (healed). Bronchopneumonia. Cirrhosis of liver. Adiposity general. Liver, fatty. Heart, fatty. Gastritis, chronic.

The specimen consists of the spines of the lumbar vertebrae, the last four firmly joined by a thick bridge of bone, the graft. The graft is firmly united to each spine, so that its exact limits cannot be distinguished, only a ridge where it joins the spines — an irregularity. The soft tissues were firmly attached to the graft as well as to the spines, and their dissection was quite difficult. Dr. McChesney is strongly of the opinion that the graft has grown in thickness since the insertion. Anteroposterior section of graft, and the embedding portion of the spine of first lumbar vertebra were made for study.

Section of a piece of the body of the fourth lumbar vertebra, including the wall of the abscess, includes bone and intervertebral disk. The bone trabeculae stain very poorly. Their margins take the eosin stain well, but not the rest of them. The bone marrow is lymphoid and fatty. None of it is tuberculous. The wall of the abscess is evident—a small fringe of necrotic material, well encapsulated by fibrous tissue. The process is in the stage of healing.

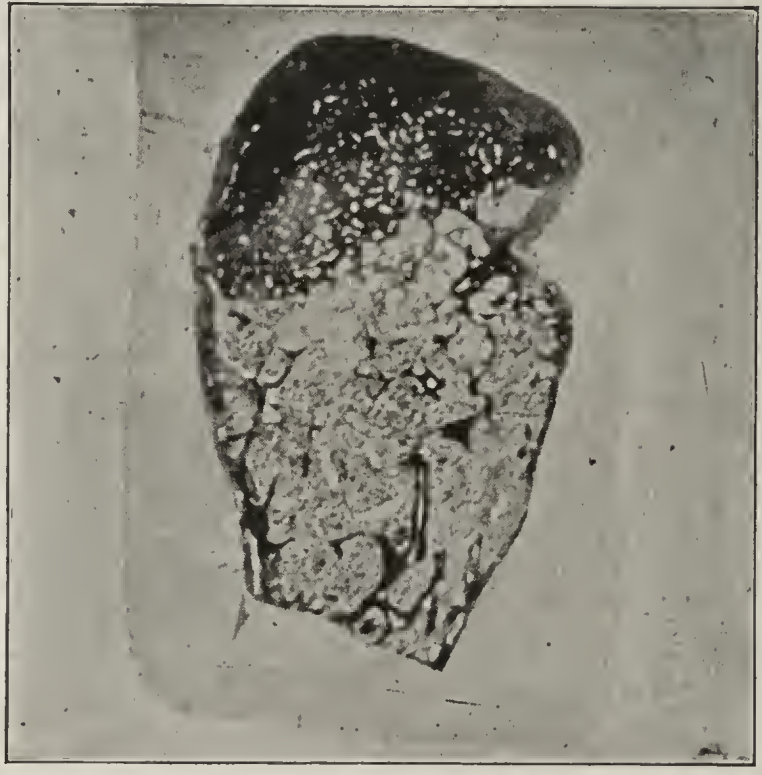
Fig. 4.—Albee operation. Bone graft in place. The graft appears as a cap of dense bone on the spongy bone of the spinous process. Photograph of the stained slide, enlarged four diameters.

Histology.—The graft appears as a cap of dense bone on the end of the spongy bone of the spinous process. The cortical bone of the latter, as well as its trabeculae, are directly continuous with the bony tissue of the former. The spinous process shows normal spongy bone with lymphoid marrow, and a rather thin cortex on the sides.

The graft at its surface, that is, directly under the periosteum, presents a layer of what is presumably new bone, staining deeply with hematoxylin. Its cells can be seen in their lacunae and stain well. Here and there blood vessels penetrate this superficial layer, and small blood vessels are present through the graft.

Immediately under the superficial layer is a stratum, some of which seems living and some dead. In a general way the live bone is immediately adjacent to the haversian canals, and the dead bone fills in the spaces among the haversian systems, but this rule is only a general one. The rest of the graft consists of dense bone, whose cells stain fairly well for the most part, though they do not fill the lacunae. The marrow is normal fatty. No rarefying osteitis is present.

We have here, then, a firmly united graft after two years, composed of fairly normal bone with fatty marrow, containing blood vessels. At the surface is apparently new bone. The disease in the body of the vertebra is in the stage of healing.

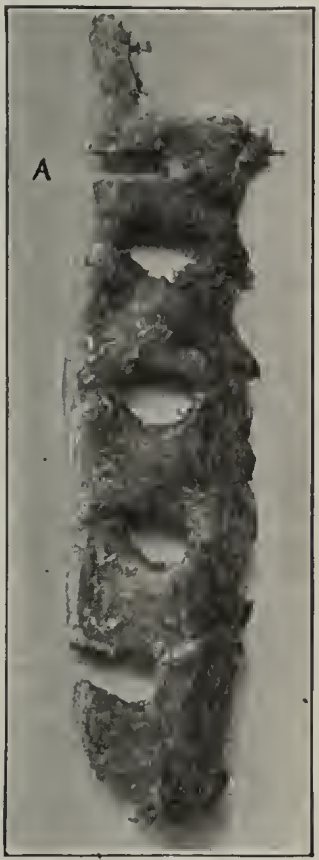

Fig. 3.—Albee operation. Lateral aspect of specimen, the graft on the left, with a specimen removed at *A* for study.

Apparently it is impossible to tell with certainty dead from living bone under the microscope. In certain of the slides most of the cells are missing from the lacunae, and the bone might be pronounced dead; but if it were dead it would hardly resist absorption for two years; blood vessels probably would not be seen in its meshes, nor would ordinary fatty marrow be seen in it.

Besides these two specimens, I have been fortunate in seeing one other secondary operation, and of doing one myself. The former was done on account of the persistence of pain and discomfort, and of increase of deformity, following a Hibbs operation. The laminae in the area of disease were found fused for the most part, but a joint still persisted in one or two places in the operated area. A graft was removed from the tibia and was sewn tightly against the denuded laminae. The result is described as satisfactory.

The second case was also one in which a Hibbs operation had been attempted, and in which pain persisted and deformity increased. The spines were absent, and no indication of union was present among the laminae. The vertebrae could be seen to move freely on one another during respiration. The treatment was by tibial grafts sewn tightly to the denuded laminae. The result ten months later was excellent. All symptoms of active disease had ceased, bony union apparently had taken place, and the marked kyphosis present previously seemed, by tracings, to have lessened.

One other fact needs mention. In a rather small experience in spinal ankylosing operations, I have lost two patients on the table. In neither was a necropsy done. A colleague has recently told me of another fatality.

Personally, I am strongly in favor of these operations in spinal tuberculosis, and regard them as curative in a formerly incurable disease; but their dangers should not be minimized. I regard my two fatalities as due to the anesthetic, and since the occurrence of the second one have never done the operation without a skilled anesthetist.

Lane Hospital.

ABSTRACT OF DISCUSSION

Dr. Russell A. Hibbs, New York: There is no question that we can get ankylosis of the spine by operative procedure, and I have no hesitation in saying that the earlier it is done, the better for the patient. Some have said that the patients to be operated on are those who are not doing well. Those who have had experience with Pott's disease know that it is very difficult to decide which patients are doing well over a long period, and which are not; and I do not believe that these operations are serious. I therefore think it is better to operate, and my associates have done 350 operations without any operative mortality. We have always had a good anesthetist; and, as Dr. Ely says, this is very important. Regarding the details of the operation: The success of the procedure depends primarily on the dissection. What we wish to accomplish is fusion of the bone, and not splinting of the vertebrae. We must eliminate motion. We must, therefore, eliminate the articulation, and, hence, we must fuse the bones that participate in the formation of the articulation. In the spine we have a large area of perfectly healthy bone to operate on. The posterior aspects of the vertebrae are, as a rule, healthy, and may be fused with certainty if a thorough dissection is made at operation.

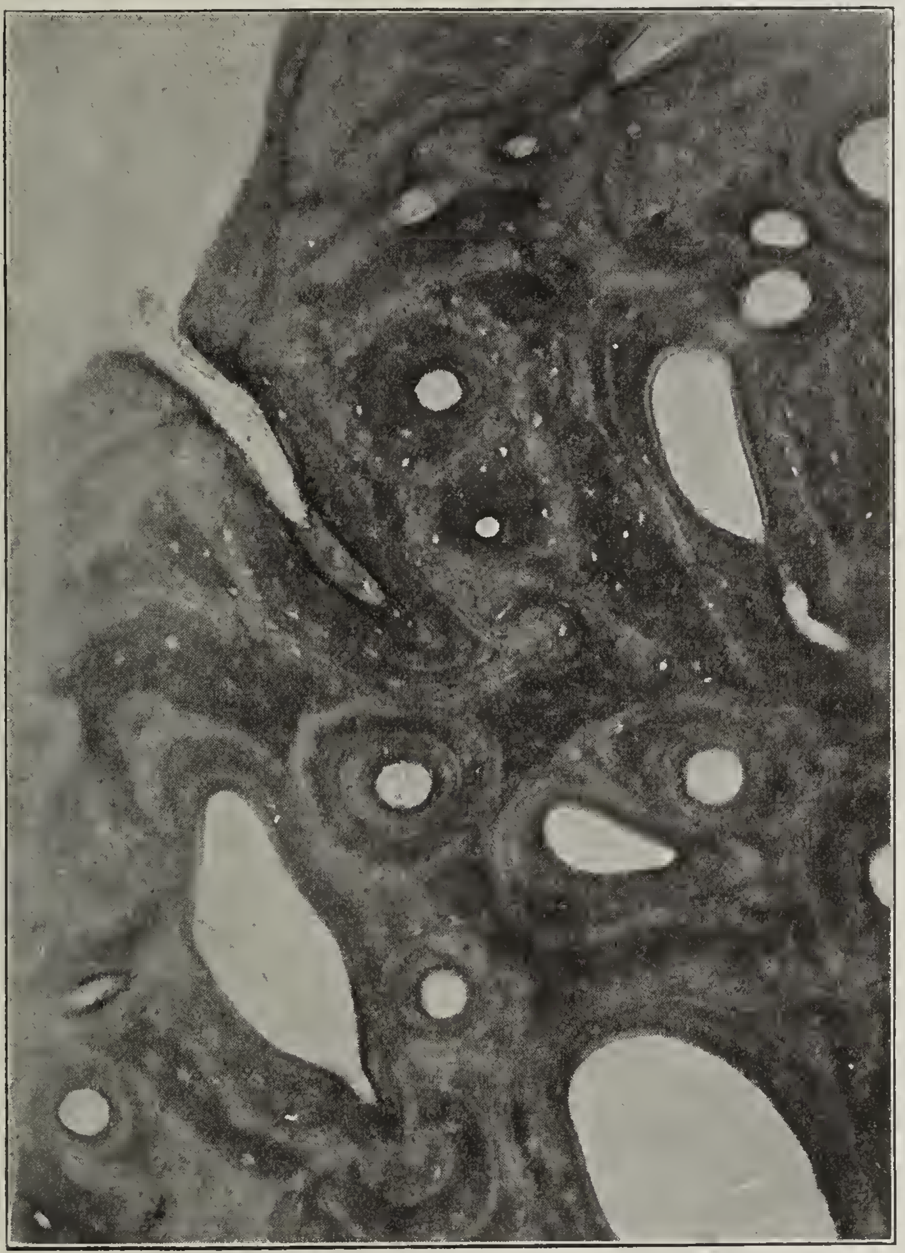

Fig. 5.—Albee operation. Photomicrograph of portion of graft, showing many empty lacunae, and a blood vessel entering the bone. Note difference in staining of bone.

Dr. Reginald H. Sayre, New York: I have some cases under observation at the present time that show that a bone splint does not under all conditions remain, but sometimes becomes absorbed. I have three patients, two adults and one child, in whom tibial splints were placed by others. In the small boy I have had roentgenograms made each month, and have been very much interested to note the gradual disappearance of this bone splint. At first the child was purposely left without protection; but later, after six months of watchful watching, he was placed on a board. After about a year or so, he got a perfectly good spine, but no sooner than would have been the case without operation. The two adults who had been operated on before coming under my observation were unable to walk, except by supporting themselves by placing their hands on their knees; and Roentgen ray examination showed no trace of a bone splint. I have no doubt that a bone splint had been put there at some time in the past, because the scars looked as if that had been done, and because the operations were done by gentlemen of experience. I have no doubt, also, that it was a well done operation in each case, but, for some reason, the bone did not form a bridge, as in the specimen passed around by Dr. Ely. The bone had disappeared, and there was recurrence of the symptoms for which, I presume, the operation was done.

Dr. James T. Watkins, San Francisco: We have done between fifty and sixty of these operations at the Children's Hospital, approximately an equal number of Hibbs and Albee operations. The patients seem to get well with about an equal degree of assurance following either operation. I think that on the whole I prefer the Hibbs operation. Certainly the Albee is quicker to do. Dr. Hibbs says that in the specimen being passed around I did not fuse my articular processes. However, that is easily explained. This refinement of the operation did not appear in Dr. Hibbs' earlier publications, and I had not heard of it at the time I did this operation. Still my earlier patients got well without it. This child, you know, died of lung condition six months after operation. In this specimen most exact fusion between the adjacent spinous processes and between the adjacent laminae has taken place. There is no evidence of bony absorption. I cannot explain this apparent discrepancy. I have had occasion once to operate again on a patient who had been operated on a year previously by the Hibbs method, and I have seen the specimen which Dr. Sherman removed in another Hibbs case in the course of a laminectomy. Macroscopically the spines had been transmuted into a broad, flat, thin plate of bone more nearly resembling a sternum than anything else.

Dr. Edwin W. Ryerson, Chicago: It is undoubtedly true that we can obtain bony fusion of the vertebrae by either of these methods. The choice of the operation is not on a very well defined basis. My own impression is that if I think the patient needs a rapid operation, I can do the Albee operation a good deal faster than I can properly do the Hibbs operation. The first few of the latter operations that I did were done before I saw Dr. Hibbs do this operation; and after I had seen his careful way of doing it I knew why my first two patients did not have as good a result as I thought they should have had. I find that in younger children we must protect the spine for a longer time than I at first believed necessary.

I have seen, now, a good many of the late results of both the Hibbs and the Albee operations that I have performed. A number of the younger children on whom I did either kind have not been protected long enough, with the result that an increase in kyphosis has taken place. We should protect such patients for a long time afterward. In regard to what Dr. Sayre says of the disappearance of the Albee grafts in some of the younger patients, it is not always easy to see in the roentgenogram the shadow of the graft. I have cut down in one case in which the roentgenogram did not show the bone, only to find that there was bony ankylosis. It was slightly flexible; and the reason the boy was reoperated on was that at the top of the splinted area 3 inches above the diseased area a new focus of tuberculosis had appeared. I put in a new graft, going many vertebrae higher. The splint in the Albee operation is flexible, in children, and the patient should have protection until it is no longer so. How long this may be, I do not know. The most striking case that I have had is that of a girl on whom I operated in 1912. A large psoas abscess which she had at the operation has disappeared, and there are no symptoms whatever. You can feel a massive bone formation in the spine, from the splint, and the deformity is thought to be less than it was a few months after the operation. She had careful conservative treatment by braces for a year before operation, but the condition grew worse. She is now completely cured, four years after the operation.

Dr. J. T. Rugh, Philadelphia: One thing about this operation that has impressed me the most strongly is the very low mortality. In a series of eighty cases, I have lost but one patient. In that case, when I was through, the anesthetist could tell me every step of the operation. The patient had died on account of the ether.

Dr. R. A. Hibbs, New York: We should give these children and adults very careful protective treatment after operation. It is a great mistake to assume that you are eliminating the disease so quickly. We treat the patients just as if they had not been operated on, so far as protection is concerned. Children are treated for a year or eighteen months and adults, six months to a year. There have been many children whose parents have been disappointed because they were operated on and let go, without proper after-care. I want to protest very strongly against that.

Dr. Leonard W. Ely, San Francisco: I must differ with Dr. Watkins' contention. The section is taken approximately directly through the middle, where the base of the spinous process would be; and here there is little, if any, bony union. At the side one sees in the gross specimen the union of the laminae. When you cut off the spinous process and turn it down, probably that spinous process is doomed. Without bringing up this subject of the ultimate fate of a bone that is grafted, I would say that that spinous process may be likened to a man who is dead from some accident, but who, with artificial means of respiration is brought back to life. That life cannot be supplied to the spinous process except by contact with another bone or connection with another bone by periosteum. What Dr. Watkins says about the difficulty of the Hibbs operation I should be inclined to stand by and accentuate. Whenever I get an opportunity, I go to see the originator of the operation operate. The beauty of the dissection and the carefulness with which Dr. Hibbs does the operation seem to be the determining factors in the results obtained.

BLASTOMYCOSIS OF THE TONGUE *

GORDON B. NEW, M.D.
ROCHESTER, MINN.

Blastomycosis is usually considered a skin lesion or a systemic disease. In a review of the literature I have been able to find only one case of blastomycosis of the tongue. Copelli[1] in 1913 reported a case of a woman who presented a tumor of the tongue consisting of an aggregation of six rounded nodules on the back part, with some enlargement of the submaxillary glands. She presented also blastomycetic lesions on both feet. Examination revealed the blastomyces in the affected tissues. The treatment used and the end-results are not stated in this case. I wish to report a case of blastomycosis of the tongue examined in the Mayo Clinic:

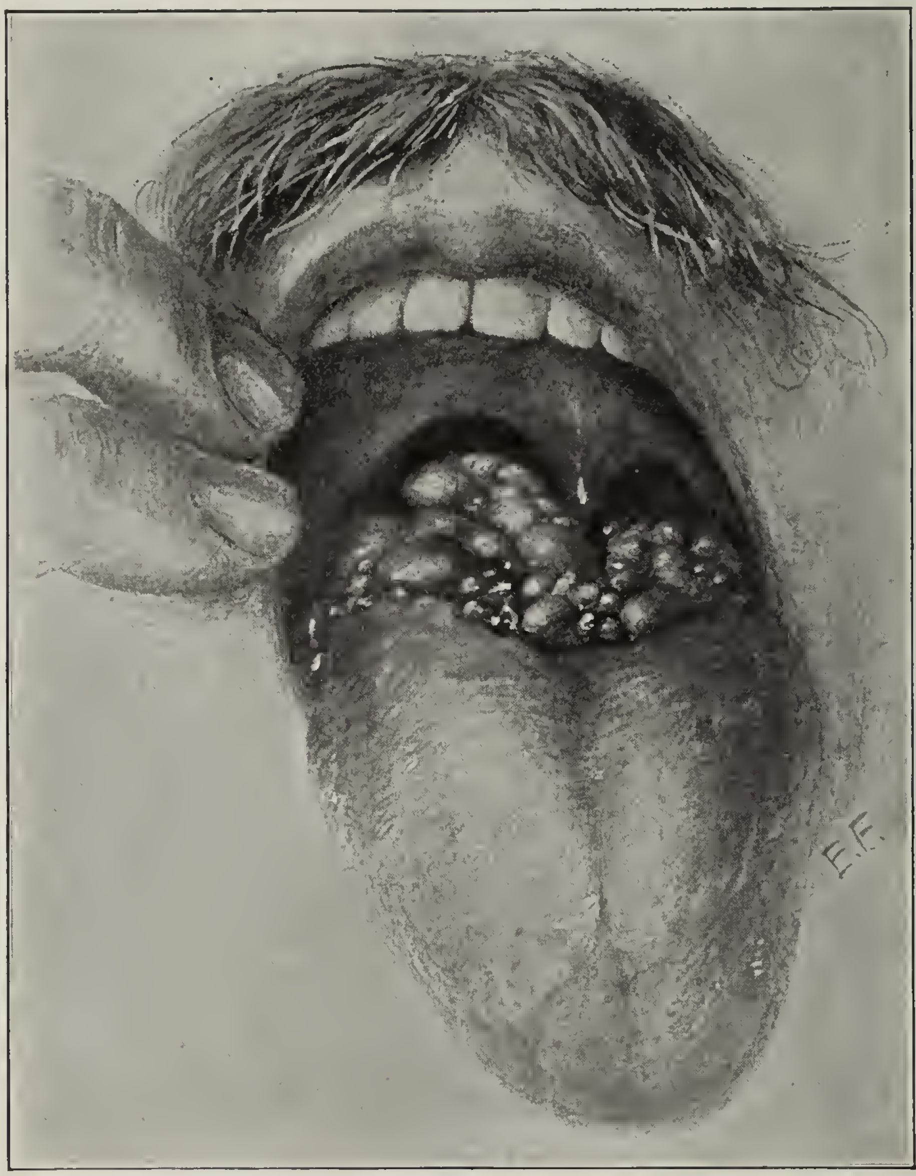

Fig. 1.—Blastomycetic tumor of the tongue.

J. S. M., man, aged 52, chief of fire department, came to the clinic, Feb. 7, 1916, for tumor of the tongue which had been first noticed eleven months previously. The family history was not important. Thirty-two years previously he had had a chancre which, from the history, was questionably specific. He had no secondary lesions. He smoked and chewed moderately, but had not used alcohol for thirty-one years. Sixteen months before examination at the clinic he had had tonsillitis and was treated by a physician. Eleven months before he had received an electric shock from touching an electric fixture with his right hand. On the following morning he noticed that his tongue was larger than usual. The next day he consulted a physician, who found a tumor at the base of the tongue and removed specimens for diagnosis. These specimens were reported as being "mostly lymphatic gland containing much granulation tissue; no evidence of malignancy or tuberculosis." Electric treatments for the tongue were given at this time. Nine months before coming to the clinic, he was given five treatments with neosalvarsan and eleven injections of sodium cacodylate, with no resulting change in the tumor. At this time he had much difficulty in swallowing and talking. A month later he consulted a physician who diagnosed the condition as lymphadenoma and cauterized the tumor several times with an electric needle.

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* From the Mayo Clinic.

[1] Copelli, M.: Jour. Cutan. Dis., 1913, **31**, 51.

This was done once a week over a period of two months. There had been shortness of breath for eight months, and also great difficulty in swallowing solids, though fluids were swallowed readily. The tumor seemed to be increasing in size, but no swellings in the neck were noted. The patient had lost 60 pounds since the onset of the trouble, and found it almost impossible to sleep at night as the tongue fell back and obstructed the pharynx, causing dyspnea. The normal weight had been 220 pounds; weight at the time of examination, 150 pounds. Speech was difficult; the voice was thick and mostly nasal in character.

Examination of the mouth showed a nodular tumor at the base of the tongue filling the entire pharynx so that the postpharyngeal wall was not visible. It was impossible to press down the tongue in order to examine the posterior part of the growth. The tumor was quite firm, but did not have the hardness of malignancy. It appeared in rounded folds between which were grayish-white areas. There were no lesions in other parts of the mouth. The systolic blood pressure was 110, diastolic blood pressure 70, pulse 96, temperature 98.6, urine negative. The white blood count was 5,400, red blood count 5,270,000. Roentgenoscopy of the chest was negative, as was also the Wassermann test. No lesions were found in any other parts of the body. The tissue removed from the tumor showed microscopically lymphoid hyperplasia with great numbers of plasma cells. Blastomycetes were found on culture from the areas in the folds of the tumor. A culture of blastomycetes injected into guinea-pigs yielded negative results.

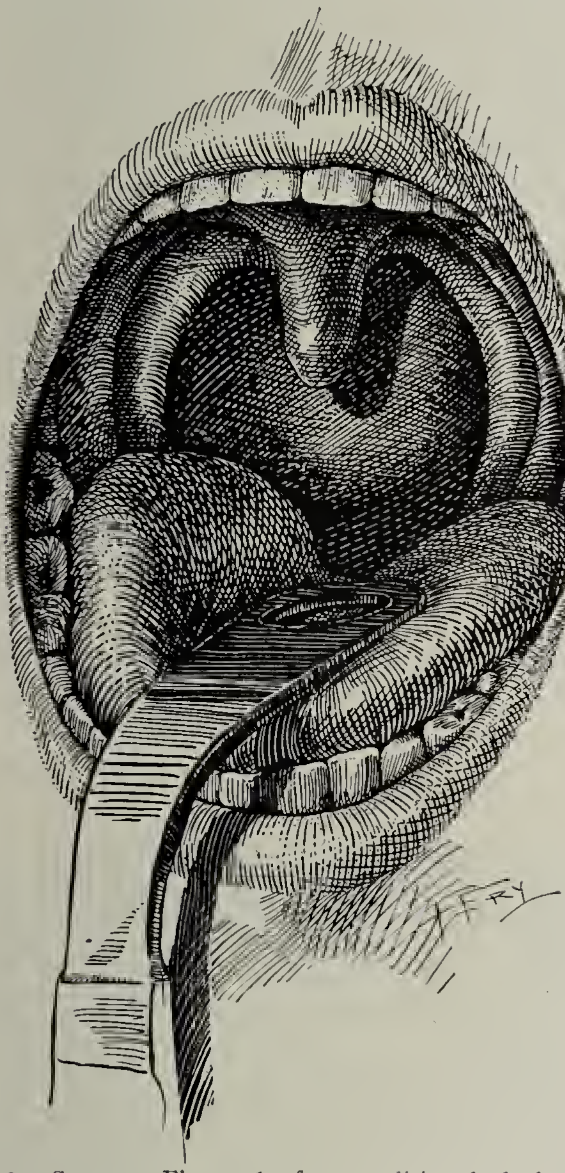

Fig. 2.—Same as Figure 1 after condition had cleared up.

A diagnosis of blastomycosis was made on the presence of blastomycetes with secondary lymphoid hyperplasia of the tissue of the tongue, and because all other findings were negative. Malignancy, tuberculosis and syphilis can be readily ruled out from the data stated in the history and the appearance of the tumor. The patient was given potassium iodid, 10 drops three times a day, the dose being increased by 2 drops daily until 125 drops were taken three times daily. Iodin was used locally to swab the tumor once a day, and radium, twenty-six hours of a 22 mg. tube, was given for a period of three weeks. Five weeks after this treatment the patient returned showing marked improvement in his general health. He was then able to eat and swallow without difficulty, had no dyspnea on exertion, and had gained 20 pounds in weight. The tongue showed remarkable improvement, and in a direct examination of the mouth very little of the tumor was visible. It was possible to see the pharynx, and by the use of the laryngeal mirror it was found that the tumor extended down the base of the tongue to the epiglottis.

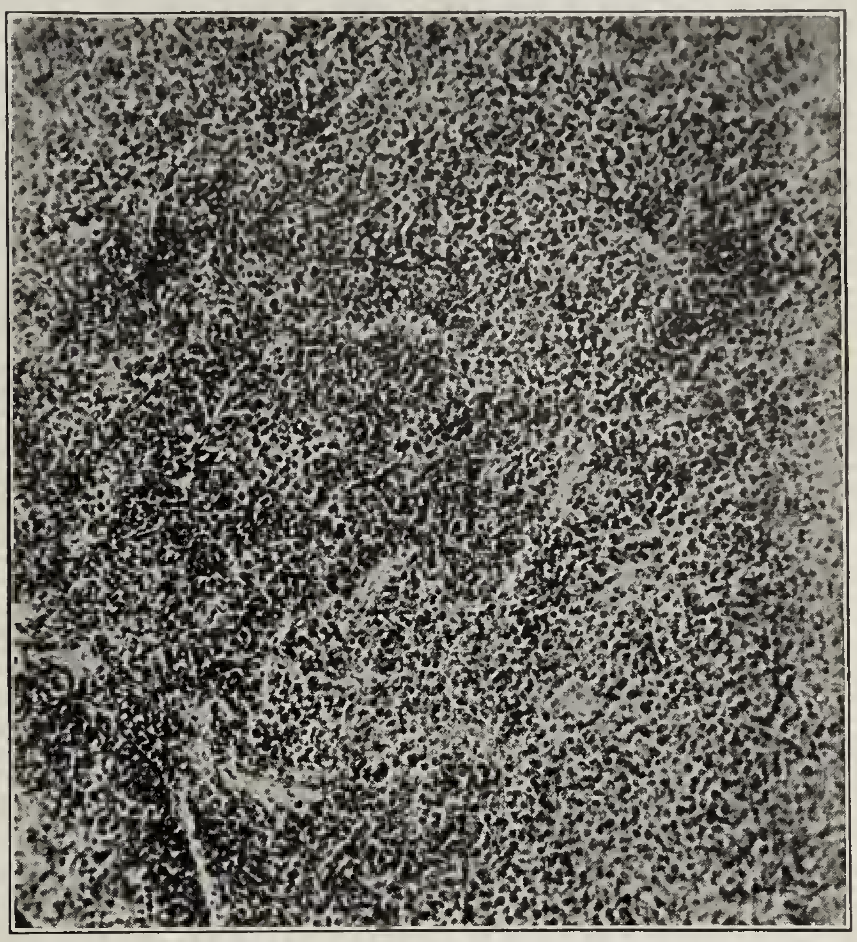

Fig. 3.—Low power: lymphoid hyperplasia.

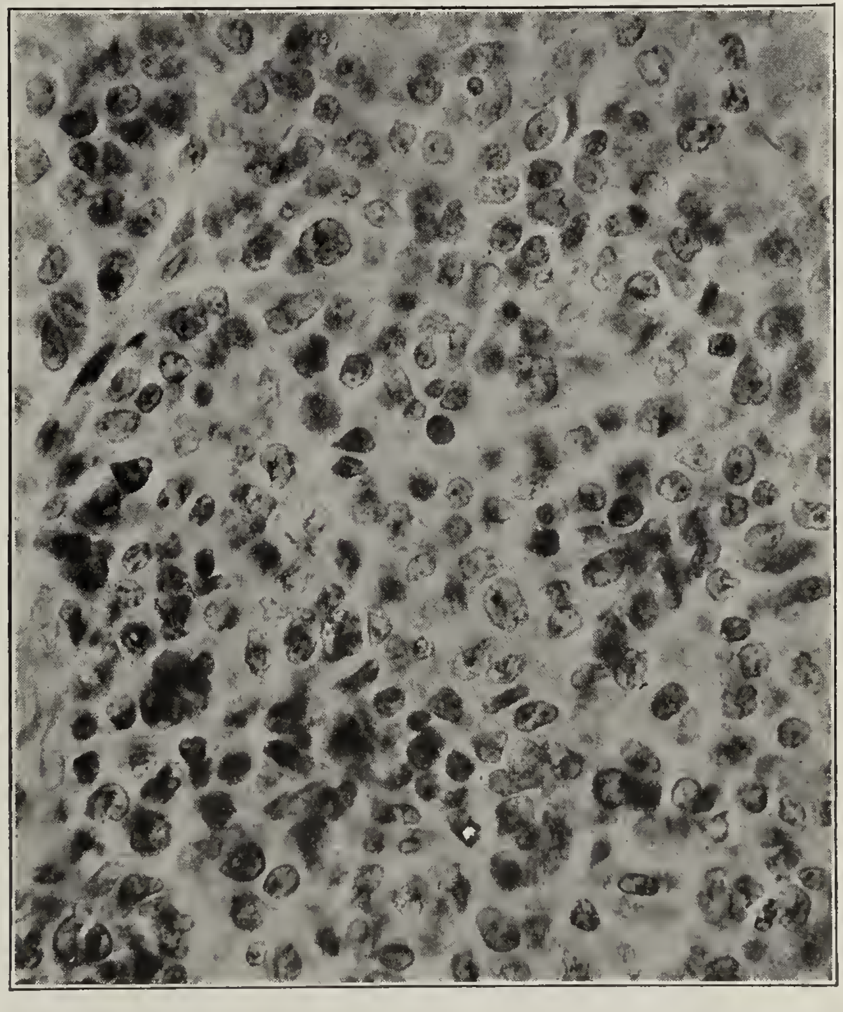

Fig. 4.—High power: great numbers of plasma cells and lymphocytes.

Sixteen hours of a 50 mg. tube of radium were then given for a period of two weeks, the iodin again applied locally, and the potassium iodid continued. Four weeks later the patient returned feeling perfectly well, eating and sleeping without any trouble. He had gained 15 pounds since his last visit. The tongue appeared normal on direct view, and it was possible to see the pharynx readily. By the use of a laryngeal mirror a nodular tumor 1½ inches in diameter was seen down at the base of the tongue. About it were several small nodular tumors. The larger one was removed by a snare and forceps. On microscopic examination it showed pure lymphoid hyperplasia. The smaller nodules were treated with radium, sixteen hours of a 22 mg. tube. Iodin was applied locally and the potassium iodid continued. When examined, Aug. 10, 1916, the tongue was normal. The patient had gained 16 pounds since his last visit, and was feeling well.

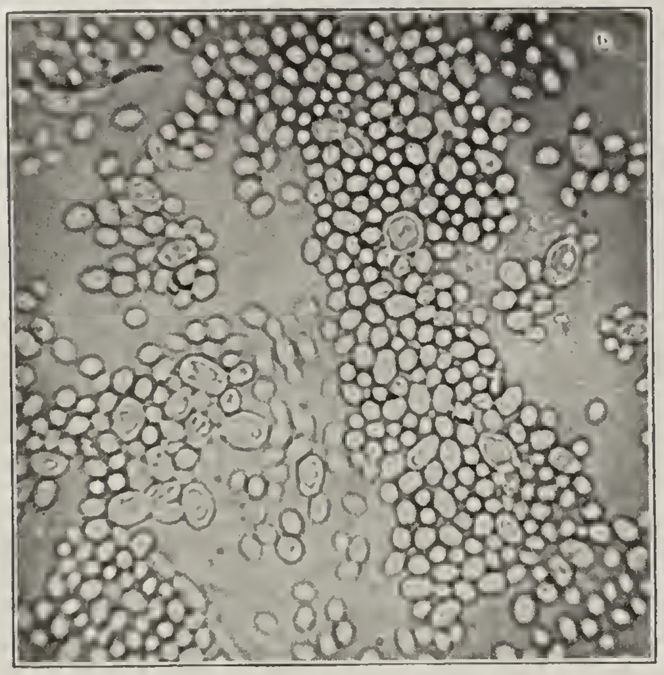

Fig. 5.—Pure culture: blastomycetes.

This case is of interest because of the rarity of blastomycetic lesion of the tongue and the remarkable results of the treatment. The nodular appearance of the tumor seemed to be the same as that reported by Copelli.[1] It must be remembered, however, that blastomycetes may be found in the tonsils and lingual tonsil so that the presence of blastomycetes alone does not necessarily mean that the disease is true blastomycosis. It would seem the lymphoid hyperplasia was a secondary condition stimulated to growth by the presence of blastomycetes, possibly in the lingual tonsil.

Malaria in the United States.—As a result of the study of malaria in the United States during the past four years, J. W. Trask of the Public Health Service (*Public Health Report,* Dec. 22, 1916) sums up the situation as follows: In the territory extending from the Gulf of Mexico to a line north of the Ohio River, and from the Atlantic seaboard to and into the eastern part of Kansas, Oklahoma and Texas, few, if any, localities are entirely free from malaria. In most of the lowlands it is very prevalent; in the mountains and better drained areas, less prevalent. The disease is also endemic in southeastern New York and parts of Connecticut, Rhode Island and Massachusetts, and in California in the Sacramento and San Joaquin valleys. There is probably no state in the Union in which the disease is not present and in which it is not spread by mosquitoes grown locally. The disease constitutes one of the big national health problems. It is also an economic problem of importance. The actual geographic distribution of the disease and its relative prevalence can be definitely determined only by making painstaking malarial surveys or by requiring cases to be reported to the health authorities and the authenticity of the reports verified by blood examinations.

A NEW OPERATIVE PROCEDURE FACILITATING THE ADAPTATION OF ARTIFICIAL DENTURES *

H. A. POTTS, M.D.
Fellow of the American College of Surgeons
CHICAGO

Authorities on prosthetic dentistry agree that, before taking an impression, a careful and comprehensive study of the mouth from both the physiologic and the pathologic aspects should be made. In an edentulous mouth, the thickness and firmness of the soft tissues are noted, as well as stomatitis, leukoplakia and other diseased conditions, if they are present. The bony ridges are studied with regard to undue pressure which may be brought to bear on them.

If natural teeth are to be retained, they and their supporting structures must be restored to health, and in either case the attachments of muscles are noted. All of these conditions are studied in order that the denture may meet the following requirements, namely, that they may be useful, look well and be comfortable (Prothero). Primarily all of these depend on their retention which is made possible by two physical factors, adhesion, which plays the lesser rôle, and atmospheric pressure.

On account of the varying density and compressibility of the different tissues in the same mouth, both impression and model are scraped in order that a perfect adaptation of the plate to the tissues may be maintained under all the various movements and different degrees of stress to which the plate may be subjected.

While the foregoing applies to the normal mouth, the same adaptation, adhesion and atmospheric pressure apply to the abnormal mouth. To correct the abnormal mouth, surgical procedures are resorted to, namely, the removal of loose fibrous or spongy tissues, the cutting of fibrous bands, the excision of spicules of process, or well defined osteoid growths which occur in the palate, labial, lingual or buccal regions of the jaws.

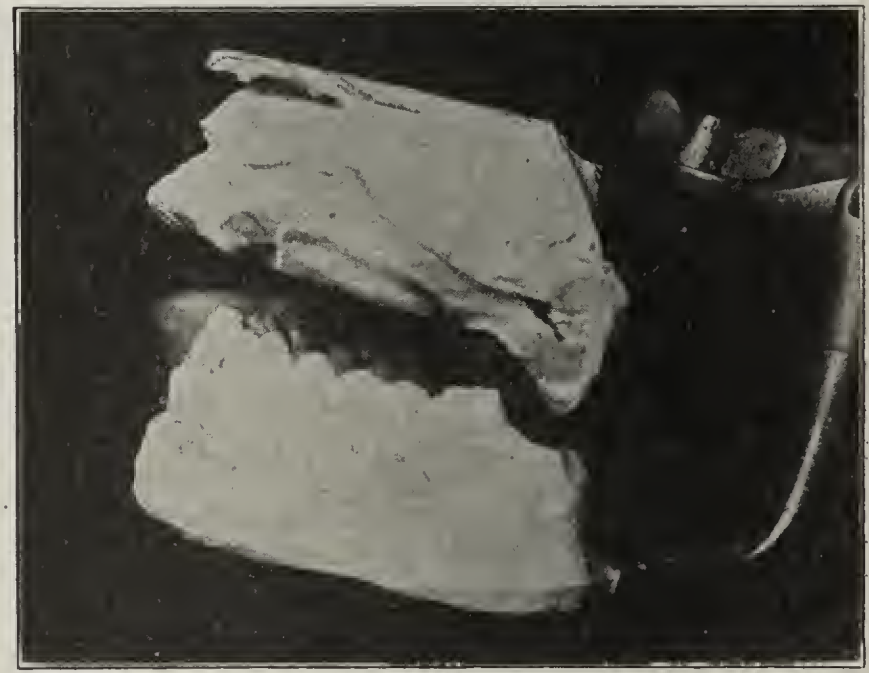

Fig. 1.—Casts of upper and lower jaws, showing their abnormal relation to each other, and marked protrusion of the upper bony arch.

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* Read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

The removal of exposed, projecting process after extraction should be more frequently done than is our habit.

There is another quite common condition which can be remedied by surgical interference and which, so far as I can judge from a review of the literature and conversation with some of the leaders in dental thought, has not been pointed out, and that is the practical elimination of bony undercuts in the upper jaw. If this is done, the making of metal dies and the swaging of metal plates would be simplified, and the making of cores unnecessary.

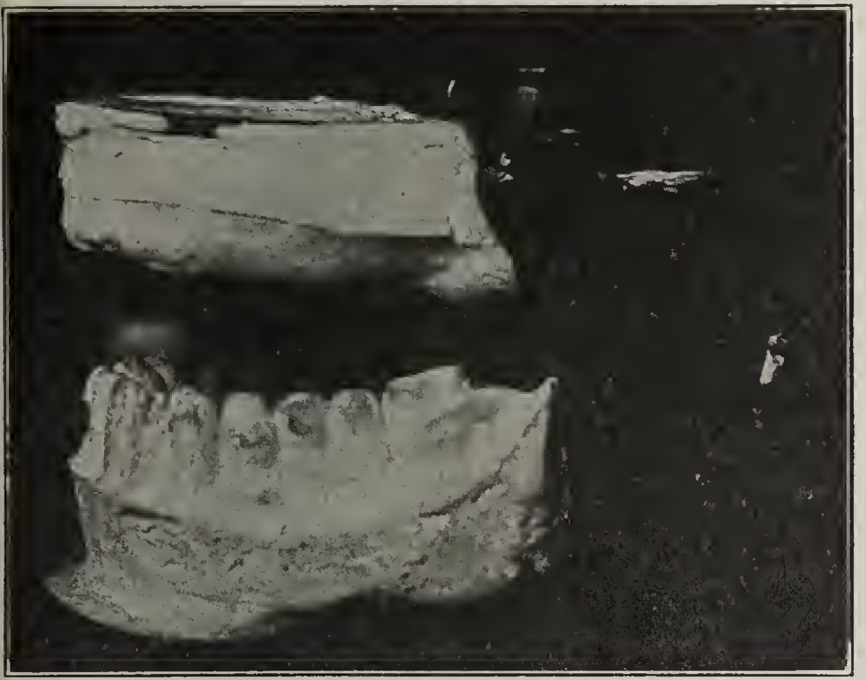


Fig. 2.—Casts of upper and lower jaws after operation, showing normal relationship.

A conformation which requires the slipping in of a plate as a shoe does not favor retention, but rather militates against it, as the chief factor in retention is atmospheric pressure.

When such a plate, the labial and buccal borders of which are forced into undercuts at one or more places, is subjected to the forces of mastication, the upper borders are carried away from the soft tissues, and air passes beneath the plate with its consequent release.

The study of the case here reported and the excellent result obtained by surgical means on the bony process seems to justify its more frequent performance.

The patient, a woman, aged 50, had long since lost all upper teeth posterior to the cuspids, and mastication on the remaining six anterior ones, together with some destruction of peridental membrane, had resulted in a marked protusion. Her dentist, Dr. F. H. Stafford of Chicago, extracted the remaining teeth and proposed to make an upper denture, but found it quite impossible.

He referred her to me for surgical intervention. As can be seen by the illustrations and models, there is a very marked protrusion of the alveolar process which was covered with quite normal gum tissue and mucous membrane (Figs. 1 and 3).

Two incisions along the alveolar ridge, extending from the second bicuspid region on the one side to the corresponding point on the other were made, which, being "quarter moon" shaped, eliminated the gum tissue which was between the teeth and left two cleanly cut borders of the flaps. A medium vertical incision extending from the reflection of the mucous membrane joined the other incision at right angles. The resulting flaps, together with the periosteum, were reflected.

By means of rongeur forceps and large bud shaped burrs the outer plate of bone was removed from the first bicuspid socket on the one side to the corresponding one on the other side. The thickness of bone removed varied, in the bicuspid region being the outer plate only, but the remainder extended to the posterior walls of the alveoli.

The incision along the alveolar border as well as the vertical one was closed with interrupted horsehair sutures; there was primary union within ten days. Impressions of the new normal mouth, as seen in Figures 2 and 3, were taken, and a perfectly satisfactory denture constructed.

31 North State Street.

ABSTRACT OF DISCUSSION

Dr. Chalmers J. Lyons, Ann Arbor, Mich.: This is the first operation of this kind that has been called to my attention, but I can see the good that can be accomplished in a great many of these seemingly impossible cases for the fitting of artificial dentures. Dr. Potts has practically restored this to a normal condition. This procedure should be brought to the attention of men working in prosthetic dentistry, because there is no doubt that a great number of cases come before them in which such an operation would simplify the fitting of the artificial denture.

Dr. Eugene S. Talbot, Chicago: I have removed small pieces of the alveolar process for the same purpose, but never to the extent that Dr. Potts has removed it. In a number of cases I have also dissected up the buccinator muscle, which extended down to the border of the alveolar process, cutting it clear up to the zygomatic process, in some cases a very little, in others quite extensively, but I would like to know how to prevent the tissues from growing together again. That has been the most difficult proposition I have met, especially in cutting the frenum of the lip, to keep the parts from coming together and healing over.

Dr. H. A. Potts, Chicago: In regard to the inquiry of Dr. Talbot, I think I can best answer that by referring to the operation for widening the pylorus of the stomach, known as the Heineke-Mikulicz operation, which involves making an incision in one direction and closing it in the other. The same principle can be applied in the case of the frenum. By carefully suturing the mucous membrane together it will make the reflection continuous, consequently there will be no raw surface to oppose the raw surface at the gum, and it cannot become attached because it is covered with mucous membrane. The operation can be varied by suturing the mucous membrane into that area of the buccinator region. I have since seen an enormous exostosis of the labial surfaces and the tuberosities which almost filled the palate. Another interesting case has been reported of an exostosis that almost filled the palate. In such a case I see no reason why an incision could not be made from one end to the other and the bone chiseled away, if necessary, removing part of the palatal, mucous membrane and periosteum, suturing that down and making a perfectly normal mouth. As I have said, many of these things have been done, but really not with the idea of facilitating the fitting of an artificial denture, and I think by paying a little closer attention and observing these cases they can be benefited very materially.

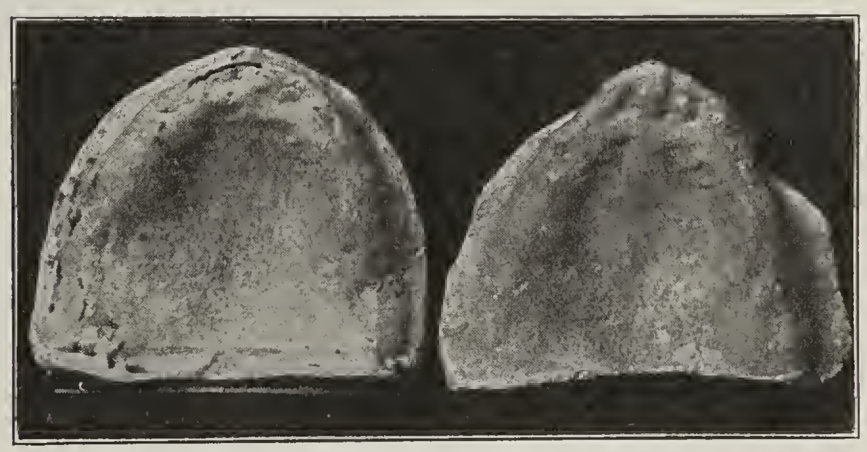


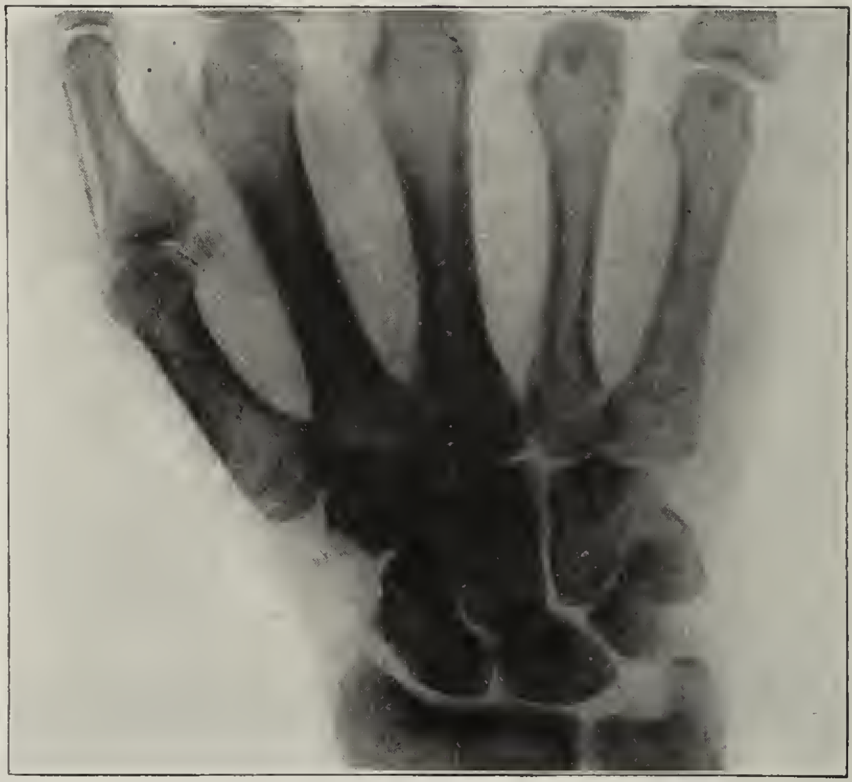
Fig. 3.—Casts of upper jaw made from impressions taken before and after operation; the result is a perfect arch.

COMPLETE FORWARD LUXATION OF CARPOMETACARPAL ARTICULATION OF THUMB

REPORT OF A CASE

E. L. BERRY
CHICAGO

The articulations between the carpus and the metacarpal bones are so constructed as to make complete luxations of these joints somewhat rare. From a surgical point of view these articulations are divided into two parts: first, the articulation of the multangulum majus (older terminology, trapezium) with the first metacarpal; second, the articulation between the inner four metacarpals and the carpus. The latter acts functionally as one continuous joint, having a synovial membrane in common. This union is of the arthroidal type, while the carpometacarpal joint of the thumb is one of reciprocal reception and is capable of motion in all direction, except axial rotation. This joint is separate from the other set, is surrounded by a strong separate capsule, and has its own synovial membrane. Although dislocations at this point are more common than at the other carpometacarpal joints, of the cases reported very few have been forward, backward luxation being by far the most common.



Displacement of os multangulum majus.

REPORT OF CASE

H., man, aged 30, baggage man at railway station, came to the office three hours after the injury, which occurred as a trunk which he was loading fell to the ground. The wrist was twisted, causing the dislocation. There was severe pain, and the patient had difficulty in using the hand, especially the thumb.

When I first saw the patient there was some swelling at the wrist and at the base of the thumb. There was considerable pain. Adduction of the thumb was difficult, painful and incomplete. The greater multangular was easily palpable on the ventral aspect, behind which the proximal end of the metacarpal formed a hard prominence beneath the thenar eminence. There was little or no shortening of the thumb. The roentgenogram shows the greater multangular displaced anteriorly and medially, with a considerable space between the proximal end of the metacarpal and the neighboring structures. There was no fracture, as often occurs, of the proximal ends of the first or second metacarpals or of the greater multangular itself.

Reduction was accomplished by the following procedure: The patient's thumb was grasped firmly in the operator's right hand, the wrist in the left, in such a manner that the tips of both of the operator's thumbs rested on the displaced bone. Then with traction on the thumb, and posterior and lateral pressure on the greater multangular, the wrist was slowly flexed. As the bone assumed its normal position there was a decided give felt by the operator, and a snapping sound that was clearly audible. The roentgenogram taken after the reduction showed the bone in its normal position. Inspection and palpation revealed no differences as compared to the other wrist, save the swelling.

A thin layer of bandage was placed round the wrist, over which was tightly wound a 3 inch strip of adhesive. The patient was able to work two weeks later, although he still wore a wrist support and the joint was somewhat weak.

1020 La Salle Street Station.

EARLY DIAGNOSIS OF TABES DORSALIS *

WALTER F. SCHALLER, M.D.
SAN FRANCISCO

Tabes dorsalis, as its name would imply, is a disease characterized by a degeneration of the posterior columns of the spinal cord. Spiller,[1] however, as far back as 1897, defined tabes in reality as a cerebrospinal disease, and indeed, certain symptoms referable to the cranial nerves may so dominate the clinical picture that the cord symptoms may be insignificant or even pass unnoticed. Prominent among these symptoms are those which are referable to the eye. Primary optic atrophy is especially frequent.

Recently, E. Frey,[2] from Schaffer's clinic, has studied 286 cases of incipient tabes, classifying these as oculo-pupillary, dysuric, lancinating and mixed forms, and studying sixty of them also from the standpoint of prognosis.

The session[3] of the Society of Neurology in Paris, Dec. 30, 1911, was devoted to a discussion of the symptomatic limitation of this affection ("Délimitation du tabes"), and the prominence of the men who took part in this discussion makes it a worthy contribution to the recent literature of this subject. J. Nageotte maintained that tabes could be defined only by terms of pathologic anatomy and by the etiology, reiterating his radicular nerve theory. Nageotte's conception was accepted by such clinicians as Babinski and André Thomas, the latter, however, not regarding the radicular lesion as pathognomonic. The question of monosymptomatic tabes was raised; and although many of those taking part in the discussion held that an isolated symptom, characteristic of tabes in a patient with a history of syphilis and presenting a typical evolution,

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* From the Neurological Clinic, Leland Stanford Junior University School of Medicine.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space this article is abbreviated in The Journal. The complete article with the chart appears in the Transactions of the Section and in the author's reprints.

* This article and the one by Drs. Riggs and Hammes which follows it are parts of a symposium on Syphilis of the Nervous System. The remaining articles, by Drs. Ball and Pilsbury, and the discussion will appear next week.

[1] Spiller, W. G.: The Pathology of Tabes Dorsalis, Int. Med. Mag., 1897, **5**, No. 5.

[2] Frey, E.: Ueber klinische Formen, Symptomatologie und Verlauf der Tabes auf Grund von 850 Fällen, Ztschr. f. d. ges. Neurol. u. Psychiat., **16**, 1.

[3] Rev. neurol., 1911, No. 24.

might make a diagnosis of tabes very probable, yet an absolute diagnosis was not justifiable. (Erb[4] in a recent communication elsewhere also expresses a similar opinion). Henri Dufour reported a necropsy case in which the only symptom during life was an Argyll Robertson pupil and in which the cord showed the characteristic lesions of tabes.

In answer to the question, how early one may venture to diagnose tabes, the quotation from John Babinski may not be out of order:

> A patient presents the sign of the Argyll Robertson pupil; furthermore, he is subject to lancinating pains showing the characteristics of those which occur in a plain case of tabes, and finally, notwithstanding the subjective pain, intensive faradization of the calf muscles is painless; in such a case, even in the absence of any other symptom, a diagnosis of tabes is almost sure. I can almost say as much of a patient in whom all the reflexes, including the pupillary reflex, are normal, and who presents together with the sensibility disturbance just noted a characteristic lymphocytosis of the cerebrospinal fluid. Certainly the diagnosis is not of a mathematical certainty, but of a great probability.

This statement, coming from a clinician of the prominence of Babinski, is noteworthy, and demands attention and further analysis. It is a long step from this picture to the picture presented by the classical tabetic: difficulty in walking, Romberg, ataxia, absent patellar reflexes, fixed pupils, advanced sensory disturbances and often typical complications. Syphilis is now regarded as the cause of tabes. Even Erb,[4] who has always recognized the important part which syphilis has played in this affection, has withdrawn from his former reserved position, and now states that syphilis is the sole cause outside of very exceptional and doubtful cases. How syphilis acts on the spinal cord has given rise to many theories, the toxic theory, and the meningeal theories of Obersteiner and Redlich, and of Nageotte occupying the foreground of attention. A considerable support to the toxic theory has been given by the recent experiments of Spielmeyer.[5]

In order to determine to what extent chronic leptomeningitis of the spinal cord exists in cases of tabes which have been examined at necropsy, I have collected fourteen cases, examined microscopically, from the records of the Pathological Department of Cooper Medical College and Stanford Medical School between the years 1898 and 1916. Thickening or cellular infiltration of the spinal meninges most marked in the posterior portion of the cord was present in all of these cases.

Recently, Spiller,[6] in discussing the pathology of tabetic ocular palsy, has stated that in his experience the most characteristic lesion in cerebrospinal syphilis is round cell infiltration of the pia, and that he believes that there is no acute manifestation of syphilis of the cerebrospinal axis without it. This author examined sections from eleven cases diagnosed clinically as tabes, and found in all lymphocytic infiltration of the pia, this being marked in nine cases. He quotes Bresowsky, who found this picture constant in forty cases of tabes. Schröder[7] found in all of five cases studied a pial inflammation of inflammatory nature.

I may mention here the studies of Leri[8] on optic atrophy in tabes, in which this author believes that the pathologic process is an interstitial neuritis of the optic nerve due to syphilitic meningitis and syphilitic vascular disease, and the contribution of Vincent,[9] who studied the degenerations of the third, ninth, tenth, eleventh and twelfth pairs of cranial nerves in tabes and found, in the sense of Nageotte, a transverse radicular neuritis at the place where these nerves are included in the dural and arachnoid envelopes.

I am inclined to favor the opinion that the cause of the tabetic degeneration is a radiculitis subsequent to primary syphilitic meningitis, believing that this meningitis is sufficient to explain the posterior root degeneration. Whether this meningitis affects posterior roots in the locality favored by Obersteiner and Redlich,[10] or by Nageotte,[11] although interesting from the histopathologic point of view, is of secondary practical importance: the important point to my mind is whether or not the tabetic process starts as an active inflammatory one in the meninges. The importance of a clear understanding of this question is primary, not alone on account of the great diagnostic importance of an inflammatory cerebrospinal fluid, but also from the standpoint of local intraspinal injections by specific remedies.

SYMPTOMATOLOGY

As a basis for a clinical study of the early tabes, I have selected and tabulated thirty-five cases from a total of 150 studied, 119 of these cases being similarly tabulated. Tabulated cases cannot be recorded as completely as separate case reports, but this table presents in graphic form the most prominent features of early tabes. The following discussion is limited to certain of these features; for the general symptomatology, further reference may be made to the table. This list of early tabes is manifestly too small to be of value as a statistical study as regards sex, age, occupation, nationality and the incidence of syphilis as an etiologic factor, but it may be mentioned in passing that in this list of thirty-six cases, sixteen patients denied syphilitic infection. Of this number the Wassermann was negative in the blood or cerebrospinal fluid in only six cases. In this series of six cases, only two (Cases 13 and 36) showed an absence of pupillary signs—Argyll Robertson pupils, anisocoria, and pupils of irregular contour, which we have come to regard as characteristic in syphilis.

Sensibility.—Among the complaints, some kind of pain was the most frequent. Under the headings of lancinating pains and pains described as rheumatism, we group the greatest number of these symptoms; our records show that only three cases — these all being cases of pronounced optic atrophy — gave no history of pain or paresthesias. Headache was a common symptom, being present in ten cases. Passing from the subjective complaint of pain to the objective disturbances of sensibility, we have grouped these disturbances under the headings deep and superficial sensibility. I shall not detail the results of these examinations, nor are they tabulated, reserving this study for a future communication. The frequency of objective

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4. Erb: Tabes, Deutsch. Ztschr. f. Nervenh., 1913, **47**, 74.
5. Spielmeyer, W.: Experimentelle Tabes bei Hunden, München. med. Wchnschr., 1906, No. 48, p. 2338.
6. Spiller, W. G.: Pathology of Tabetic Ocular Palsy, Jour. Nerv. and Ment. Dis., 1915, **42**, 15.
7. Schröder, P.: Ein Beitrag zur Histopathologie der Tabes dorsalis, Centralbl. f. Nervenh. u. Psychiat., Neue Folge, 1906, **17**, 585.
8. Leri, André: Etude du nerf optique dans l'amaurose tabétique, Nouv. iconog. de la Salpêtrière, 1904, No. 17, p. 356.
9. Vincent, V.: Des meningites chroniques syphilitiques, Thèse de Paris, Paris, G. Steinheil, 1910.
10. Obersteiner and Redlich: Ueber Wesen der Pathogenese der tabischen Hinterstrangs Degeneration, Obersteiner Arbeiten, 1894; abstr., Neurol. Centralbl., 1894, No. 12, p. 454.
11. Nageotte, J., and Riche, A.: Tabes dorsalis, Manuel d'histologie pathologique, Cornil et Ranvier, Ed. 3, 1907.

sensibility disturbance is parallel with the severity of the disease, and these disturbances are probably a constant symptom in tabes, negative results being due to the inefficiency of our method of examination. There appears to be no constant relationship between the presence of a positive Romberg symptom and a disturbance of the deep sensibility: notion of position, passive motion, localization, deep pressure sense, discrimination between two points and the vibration test. The loss of deep pressure pain brought out in Abadie's sign and Biernacki's sign was frequently present. Occasionally in testing for Abadie's sign hyperesthesia was present.

Superficial Sensibility: The radicular disturbance of the cutaneous sensibility noted by Leyden, Marie, Dejerine, Redlich, Massary and Brissaud has been particularly studied by Marinesco,[12] and by Patrick[13] in this country with reference to tactile anesthesia about the trunk. We have also noted the sensory involvement about the trunk and especially the increased sensitiveness to cold, and the girdle sensation. Ulnar paresthesias, diminished sensibility about the genitals and the anus has also been noted in our cases. In the lower extremities, however, the radicular disturbance of the sensibility has been in our experience less evident; in this locality the charts show a picture commonly seen in polyneuritis, or that described as a segmental distribution involving the feet and shading from the distal to the proximal end of the member. Marinesco[12] previously called attention to this point. The more frequent involvement of the superficial sensibility than the deep would be the opposite of what was to be expected in an involvement of the posterior columns of the cord only, which are not tracts for pain. The symptoms of pure posterior column involvement seen best, according to Dejerine,[14] in combined sclerosis, is not the picture here. We believe the frequency and constancy of pain in tabes one of the most convincing proofs of the radicular or meningeal cause of the disease.

Reflexes.—I wish to call attention particularly to the state of the tendon reflexes in the lower extremities, the tendon reflexes in the upper extremities being generally conserved in our series contrary to the opinion held by Frankel. Preservation of the patellar tendon reflex and the Achilles tendon reflex is compatible with a diagnosis of tabes: in thirteen of our cases such a condition was present. The loss of the patellar tendon reflex or Westphal sign is properly considered an important and characteristic symptom of tabes. I wish particularly to discuss the state of the Achilles tendon reflex in these early cases. Babinski[15] (1901) deserves the credit of calling attention to the early loss of this reflex, which he claimed generally disappeared before the patellar tendon reflex. During the period 1898-1901 this author observed forty cases of this nature, as opposed to five cases in which the patellar tendon reflex was absent and the Achilles tendon reflex present. Prior to Babinski's publication, Goldflam[16] noted the absence of this reflex in cases of tabes, and Ziehen[17] discussed its diagnostic signification in various psychoses and psychoneuroses. Following Babinski's first communication in 1898, C. K. Mills[18] found this reflex present in only three cases of tabes out of twenty-eight cases, in all of which the patellar tendon reflex was present. Van Gehuchten,[19] Biro[20] and Tumpowski[21] arrived at similar results. Kollartis[22] found eleven cases in 100 in which the Achilles tendon reflex was lost and the patellar tendon reflex conserved; and in only one case was the opposite the case: Achilles tendon reflex present, patellar tendon reflex absent (unilaterally). Sarbo,[23] in ninety-two cases, found 91 per cent. missing Achilles tendon reflexes, and in 190 cases 80.4 per cent. missing patellar tendon reflexes. In seven cases the Achilles tendon reflex was lost, the patellar tendon reflex conserved. Förster[24] and Strassburger[25] noted the absence of this reflex in tabes, without, however, calling attention to its relative importance. Bregman[26] draws an analogy between the loss of this reflex and cutaneous sensibility disturbances in the area supplied by the fifth lumbar and first sacral roots. Oppenheim[27] sounds a warning note against attaching too great importance to the absence of this reflex in the diagnosis of tabes, because of its frequency in sciatica and related peripheral nerve conditions. Jelliffe and White[28] state that the Achilles tendon reflex is not infrequently lost before the patellar tendon reflex.

The technic of eliciting this reflex is important, the kneeling position with the foot hanging free and relaxed being necessary for a proper performance of the test (Babinski). In our series there were twenty cases in which one or both of the Achilles tendon reflexes were absent with conserved patellar tendon reflexes, and in seven of these, the Achilles tendon reflex was absent on one side only. A striking relationship in regard to the absence of this reflex was seen in ten cases of primary optic atrophy, the extremities of the cerebrospinal axis, as it were, being affected by the tabetic process. It would then appear that the loss of the tendon reflexes in the lower extremities in tabes takes the form of a regular progression from below upward in the majority of cases, and in this regard Cases 33 and 36 seem to show both Achilles tendon reflexes lost before the patellar tendon reflex, the latter reflex being lost first on one side only. Further, in reviewing the total number of cases (150) we have encountered only one instance in which the patellar tendon reflex was absent when both Achilles tendon reflexes were conserved, and in this one instance only one patellar tendon reflex was lost. From these data, then, we believe that as a rule the loss of the Achilles tendon reflex precedes the loss of the patellar tendon reflex, and is therefore an earlier and more important diagnostic sign. It is possible in the cervical type of tabes that a different order may ensue, but such an example has not yet come under our observation.

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[12] Marinesco, G.: De la topographie des troubles sensitives dans le tabes; ses rapports avec les sensations des tabétiques, Semaine méd., 1897, No. 47, p. 369.

[13] Patrick, H. T.: Anesthesia of the Trunk in Locomotor Ataxia, New York Med. Jour., Feb. 6, 1897, p. 173.

[14] Dejerine, J.: Le syndrome des fibres radiculaire longues des cordons postérieurs, Presse méd., 1913, No. 104, p. 1053.

[15] Babinski, J.: Sur le tendon d'achille dans le tabes, Société médicale des hôpitaux, seance du 21. Oct., 1898. Société de neurologie de Paris, Séance du 2, Mai, 1901; abstr., Rev. neurol., 1901, **9**, 482.

[16] Goldflam, S.: Ueber die Ungleichheit der Knie Phänomene bei Tabes dorsalis, Neurol. Centralbl., 1888, pp. 529, 556.

[17] Ziehen, T.: Zur diagnostischen Bedeutung des Achilles-Sehnenphänomens, Deutsch. med. Wchnschr., 1894, No. 34, p. 670.

[18] Mills, C. K.: Some Points of Special Interest in the Study of the Deep Reflexes in the Lower Extremities, Jour. Nerv. and Ment. Dis., 1899, **26**, No. 3.

[19] Van Gehuchten, quoted by Babinski: Footnote 15.

[20] Biro, M.: Ueber Störungen des Achillessehnen Reflexes bei Tabes und Ischias, Deutsch. Ztschr. f. Nervenh., **19**, 188.

[21] Tumpowski, A.: Beitrag zur Aetiologie und Symptomatologie der Tabes dorsalis, Deutsch. Ztschr. f. Nervenh., 1897, p. 467.

[22] Kollartis: Das Verhalten einiger Reflexe bei Gesunden und bei Tabes, Deutsch. Ztschr. f. Nervenh., 1902, No. 23, p. 89.

[23] Sarbo, A. von: Klinische und statische Daten zur Symptomatologie der Tabes, Deutsch. Ztschr. f. Nervenh., 1902, No. 23.

[24] Förster, O.: Zur Symptomatologie der Tabes dorsalis, Monatschr. f. Psychiat. u. Neurol., **8**, 1.

[25] Strassburger, J.: Ueber das Fehlen des achillessehnen Reflexes und seine diagnostische Bedeutung, Deutsch. Ztschr. f. Nervenh., **17**, 315.

[26] Bregman, L.: Sehnenreflexe und Sensibilitätsstörung bei Tabes dorsalis, Neurol. Centralbl., 1905, No. 1, p. 2.

[27] Oppenheim, H.: Lehrbuch der Nervenkrankheiten, 1913, Berlin, Karger.

[28] Jelliffe and White: Diseases of the Nervous System, 1915.

In our cases we note bladder disturbance in ten cases, a very important early sign of cord involvement; also gastric crises in ten cases. The frequency of general glandular enlargement including epitrochlear enlargement (eleven cases), and cardiovascular disease is called attention to because they are important symptoms of syphilis and not of tabes. In fifteen cases psychic or neurotic disturbances were noted.

Eye Symptoms.—The frequency of eye symptoms in tabes has long been recognized, and among these, primary optic atrophy is probably the most frequent. The remarkable statistics of von Grosz[29] show 88 per cent. of diseased papillae in 100 cases examined, and in only two out of the twelve normal backgrounds were present normal vision, normal fields and normal color perception. In thirteen of our tabulated cases primary optic atrophy was found, being quite advanced in a number of these cases. From the study of these we were able to pick out many of the early forms of tabes enumerated here. Argyll Robertson pupils and those showing definite sluggish reaction to light were present in twenty-four out of twenty-five cases; and anisocoria and pupils of irregular contour were found, respectively, in fifteen and thirteen cases, which establishes these two conditions as of great importance as characteristic tabetic eye signs possibly antedating the Argyll Robertson pupil.

Ear Symptoms.—There were sixteen cases of diminished hearing, nine of these in association with optic atrophy. The absence of special examinations in all cases to determine the character of the deafness, whether a nerve deafness or of peripheral origin, is of course not conclusive; but recent observers, such as Knick and Zaloziecki[30] and Swift,[31] who called attention to syphilitic meningitis as the cause of diminution of hearing in certain cases of early syphilis, is important in suspecting a large percentage of our cases to be due to nerve deafness, consequent on radicular nerve disease. The fact that syphilitic disease of peripheral nerves is a very rare disease would support this view.

Trauma.—In eleven cases a history of trauma was obtained. The question of trauma as an exciting cause or a contributory cause in tabes in relation to disability has come up in industrial accident cases in California. An analysis of these eleven cases shows four patients (Cases 1, 10, 24 and 31) were injured before syphilitic infection took place. In two other cases (Cases 16 and 26) of failing eyesight and optic atrophy, trauma preceded the failing eyesight by so short a time that its rôle in the development of the optic atrophy was very questionable.

Wassermann Reaction and Cerebrospinal Fluid Analysis.—The Wassermann reaction was found positive in twenty cases in the blood and in twenty cases in the cerebrospinal fluid, and in one or both in twenty-seven cases. The globulin reaction was present in twenty-two cases out of the thirty-one done. The cell count was positive in twenty-seven out of thirty-two cases and was the most frequent positive cerebrospinal fluid reaction in our series. In five cases the cell count was not increased, three cells being regarded as the upper limit of normal per cubic millimeter. In a recent paper[32] on the subject of cerebrospinal fluid analysis in which 116 fluids were examined, it was my opinion that six cells per cubic millimeter were the upper limit of normal, but we have come to regard this figure as too high. The lower figure corresponds with the results of Nageotte, who found an average of three cells per cubic millimeter in fifty-six normal fluids examined. I myself prefer the Nageotte[33] counting cell, and count at least six cubic millimeters of fluid, making two separate spreads and being careful to obtain a good admixture of fluid and to count the fluid a short time after it is withdrawn. It is exceedingly likely that variation in results is often due to a failure in technic. In three cases the cells and globulin were not increased, and in two cases all reactions of the cerebrospinal fluid, including the Wassermann test, were negative. Nonne[34] reports eleven such cases in 167 cases of tabes. In Case 13 we have a record of an entirely negative cerebrospinal fluid with definitely thickened membranes.

This brings us to the consideration of the importance and constancy of the cerebrospinal fluid reactions indicating inflammation: increased cell count and increased globulin content and probably also the Lange gold test. Since Widal, Sicard and Ravaut[35] found an increased cell content in cases of paresis and tabes, and Guillian and Parant[36] noted an increased globulin content, these tests have occupied first rank as important diagnostic aids in detecting syphilis of the central nervous system. In the Paris meeting noted above it was the opinion of Sicard that a lymphocytosis was constant in tabes as a rule. Soques had found it absent one or two times in tabes. André Leri considered the lymphocytosis as indicating a meningeal process in evolution, and reported on the examination of a spinal cord in which at different levels the histologic picture varied; in the cervical region thickened membranes and infiltration of leukocytes, whereas the dorsal cord showed definite thickened meninges without infiltration of leukocytes.

This brings us to the important point of correlating our findings in the cerebrospinal fluid with our conception of the histopathology of tabes dorsalis. We have seen in our list of necropsies that a chronic syphilitic leptomeningitis, most intense in the posterior aspect of the cord, is a constant finding. It would be only natural to assume that such an inflammation in the meninges would manifest itself in increase of cells and globulin in the cerebrospinal fluid. I believe that repeated lumbar puncture will show at one time or another increased cell count and albumin in a progressive tabes, and that in a negative outcome of such repeated tests the diagnosis of tabes should always be made with reserve. It may not be amiss to report a case[37] previously but erroneously reported as tabes, which presented certain characteristic symptoms of tabes: gastric crises, ataxia, sensory disturbances and absent Achilles tendon reflexes and patellar tendon reflexes. Repeated examinations of the cerebrospinal fluid were constantly negative as regards cell count and globulin, but finally a faintly positive Wassermann reaction in the cerebrospinal fluid was obtained. Syphilis was denied. This patient subsequently died of an intercurrent affection, and necropsy revealed posterior column degeneration on cut sections of the cord which led to the diagnosis of tabes dorsalis; but the meninges were not thickened or infiltrated. This feature was commented on, and this was considered a case worthy to report, but Weigert's stain for myelin degeneration showed the typical picture of a combined sclerosis. I am not aware of any case of tabes being yet reported which has shown clinically a negative cerebrospinal fluid finding for cells or globulin, and in which a following postmortem examination has revealed normal spinal meninges by microscopic examination.

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[29] Von Grosz, quoted by Karl Schaffer: Handbuch der Neurologie, Lewandowsky, Spezielle Neurologie, 959.

[30] Knick, H., and Zaloziecki, A.: Ueber Acusticuserkrankungen in Frühstadium der Lues, Berl. klin. Wchnschr., 1912, **49**, Nos. 14, 15.

[31] Ellis, A. W. M., and Swift, H. F.: Involvement of the Eighth Nerve in Syphilis of the Central Nervous System, THE JOURNAL A. M. A., May 1, 1915, p. 1471.

[32] Schaller, W. F.: A Report on the Analysis of the Cerebrospinal Fluid, Jour. Nerv. and Ment. Dis., 1913, **40**, No. 8.

[33] Nageotte and Levy, Valensi: Numeration direct des élements cellulaires du liquid cephalorachidien, Compt. rend. Soc. de biol., 1907, **2**, 603.

[34] Nonne: Der heutige Standpunkt der Lehre von der Bedeutung der vier Reaktionen, Deutsch. Ztschr. f. Nervenh., **1911**, **43**, 201.

[35] Widal, Sicard and Ravaut: Cytologie du liquide cephalo-rachidien au cours de quelques processus méningés chroniques (paralysie générale et tabes) Bull. et mém. Soc. méd. d. hôp. de Paris, Jan. 18, 1901, p. 31.

[36] Guillian and Parant: Sur la présence d'albumines coagulables par la chaleur dans les liquid cephalo-rachidien des paralytiques spinaux, Rev. neurol., April 30, 1903, p. 406.

[37] Schaller, W. F.: Salvarsan in Syphilitic Disease of the Nervous System, California State Jour. Med., October, 1912, Case 10 (Tabes).

CONCLUSIONS

1. In tabes the syphilitic posterior leptomeningitis of the spinal cord (and probably also of the radicular nerve) is in etiologic relationship to the degeneration of the posterior columns of the cord. Every case of syphilitic posterior leptomeningitis and consequent multiple symmetrical radiculitis is a case of potential tabes.
2. This meningeal reaction is evidenced in the cerebrospinal fluid by an increased cell count and increased globulin content; and probably also by a positive Wassermann reaction indicating that this reaction is syphilitic in nature. During certain stages in the evolution of tabes, probably of repair, these reactions may be negative. It is therefore necessary to make repeated lumbar puncture in doubtful cases.
3. Syphilitic radiculitis has its characteristic disturbance of the sensibility: Subjective disturbances are pain and paresthesias; objective disturbances are deep and superficial sensibility impairment, the latter following radicular distribution. In the lower extremities, this radicular involvement cannot always be demonstrated, the sensory cutaneous involvement often presenting a peripheral or segmental type.
4. The Achilles tendon reflexes are lost as a rule before the patellar tendon reflexes: this phenomenon was observed in ten cases of primary optic atrophy from a total of thirteen cases.
5. Anisocoria and pupils of definitely irregular contour are found frequently in early tabes. These pupillary signs, even in the absence of the Argyll Robertson pupil, are highly characteristic of early tabes, provided there is no local assignable cause.
6. The symptom of diminished hearing is frequently encountered in early tabes.
7. Cardiovascular disease, especially aortic disease, and general glandular enlargement are frequently found in tabes, thus giving evidence of syphilitic processes elsewhere in the body.
8. In a patient with a history or other evidence of syphilis presenting characteristic sensibility disturbances of the radicular type with a tendency to symmetry, one should suspect a potential or early tabes. If, associated with the foregoing, we have a positive reaction in the cerebrospinal fluid indicating a chronic syphilitic meningitis, together with such pupillary phenomena as anisocoria, pupillary irregularity or sluggish reaction to light, the diagnosis of early tabes is most probable. Added to the foregoing symptoms, the loss of the Achilles tendon reflex establishes the diagnosis of early tabes even in the absence of those signs which we usually associate with tabes: Romberg, marked sensibility loss, absent patellar reflexes and Argyll Robertson pupils.

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SHALL WE TREAT THE PARETIC? *

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The first clear presentation of the clinical relationship of the mental and physical symptoms in paresis was made by Bayle in 1822, although the earliest description of this disease was given toward the close of the eighteenth century by Chiarugi and Haslam.[1] Almost forty years ago, Fournier startled and antagonized the medical world by suggesting that syphilis in the great majority of cases was the cause of locomotor ataxia. This has been a subject of bitter discussion for more than a third of a century; in fact it was Metchnikoff's infection of apes with syphilis in 1903 that robbed syphilis of its mystery, and gave it a definite standing among infectious diseases. This was the first definite step in the elucidation of our present knowledge of the pathology and symptomatology of nervous syphilis. Then came notable years. Schaudinn in 1905 discovered the *Spirochaeta pallida*. In 1906, Wassermann announced his reaction, which proved the presence of syphilis in the varied manifestations of syphilis. The researches of Noguchi, Moore, Marie and Levaditi, who have found spirochetes in the lesions of tabes and paresis, demonstrated that in these affections, we are dealing with actual syphilis: a late manifestation of the infection. It has been recently suggested that we discard the terms "paresis" and "tabes," and speak only of cerebrospinal syphilis, paretic or tabetic in type. The yearly economic loss to New York State on account of insanity is about $35,000,000. Syphilis was the principal cause of insanity in 19.8 per cent. of the male and in 7.2 per cent. of the female patients admitted to New York State hospitals in 1913. "Of the killing diseases," says Sir William Osler, "syphilis comes third or fourth." Church states that it is a conservative estimate that one man in every five is syphilitic. In the New York State hospitals, paresis constitutes one eighth of all the admission. Out of 4,000 syphilized men examined, twenty-two years after the last of them was infected, Mattauschek and Pilcz[2] found that 6.27 per cent. had developed paresis or tabes or both of these diseases. It has been estimated that from 9 to 25 per cent. of those infected develop nervous symptoms. At the San Francisco session of this Association, we placed great emphasis on the importance of the examination of the spinal fluids in early syphilis. Hoffman, Nicols and Steiner have observed that in 15 per cent. of the cases in primary and secondary syphilis, the spinal fluids are infectious, and infections by their inoculation can be obtained before changes can be observed in the Wassermann and other reactions.[3] After a syphilitic infection, it would appear that there is invariably an involvement of the central nervous system, even though it be of slight duration and unattended by neural change. That a variation in the spirochete occurs is shown by laboratory experiments. Wile[4] observed that spirochetes injected into rabbits from the living paretic brain were of a virulent type, and that the incubation was shorter than with other strains. Investigators in the laboratory of the Army Medical School in Washington have bred several varieties of spirochetes. "They can breed a variety which will produce a hard chancre, or a variety which will produce a chancre lacking the old hunterian characteristics of a saucer-like indurated base. They can produce a spirochete which will give a mucocutaneous efflorescence, or a spirochete which will be poor in cutaneous manifestations, with a tendency to confine its influence to the nervous system" (Church).

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Chiarugi and Haslam, quoted by Kraepelin: General Paresis, Nervous and Mental Diseases, Monograph Series, No. 14, 1913.

[2] Mattauschek and Pilcz: Ueber die weiteren Schicksale 4,134 katamnestische verfolgte Falle luetische Infektion, Med. Klin., 1913, 9, 1544.

During the past decade, our conception of syphilis and its therapy has been absolutely revolutionized. The latter was based largely on hypothesis and empiricism. Twenty-seven years ago, we were taught that the essential and primitive anomaly in the paretic's brain was "a vasomotor disturbance."[5] Trephining was therefore suggested by Batty Tuke of Edinburgh, to overcome cerebral congestion and we (Dr. Riggs) can well recall the enthusiasm with which he discussed the potentialities of the new procedure. This was the first step in the subdural medication of today. In 1901, Dr. Ford Robertson,[6] suggested that paresis was a disease due directly to the toxins of bacteria, the point of attack being the alimentary tract. In 1903, he first announced his theory of *Bacillus paralyticans* as a cause of dementia paralytica.[7] In 1905, Robertson and McRae[8] reported the presence of the diphtheroid bacilli in the genito-urinary tract in general paralysis and tabes dorsalis. The same authors,[9] in 1907, discussed the treatment of paresis and tabes by vaccines and antiserum. While they first tried vaccines, they placed their reliance on the antiserum. The latter was obtained from immunized sheep which had been inoculated with dead cultures of the *Bacillus paralyticans-longus*, isolated from the brain of a general paralytic. After two months' treatment of the sheep, the serum was fit for use. It was administered by mouth, nose or hypodermic. Of twelve cases of paresis treated by them, they report that "all have shown remarkable signs of improvement." In tabes the ataxia was much benefited.

The favorable influence of an intercurrent acute febrile disease in certain cases of general paralysis has long been a matter of common observation. Since it would be neither judicious nor wise to infect the patients with a serious specific fever, other means for inducing a harmless temporary febrile reaction have been suggested. The tuberculin treatment of von Wagner[10] and the sodium nucleinate injections of Donath are the two classical methods of inducing artificial pyrexia in this disease. In 1909, von Wagner announced his treatment of general paralysis by injections of tuberculin (Koch) combined with mercurials and iodids. His pupil, Pilcz, in 1910-1911, reported eighty-six cases of clinically demonstrated paresis which were treated by this method. Small doses, from 0.0005 to 0.01 c.c. of tuberculin, were injected every second day, the dose being gradually increased until 0.3 or 0.5 or even 1 c.c. was administered. In 39.44 per cent. there was no perceptible or only a slight improvement, while in 60.32 per cent. there was a distinct clinical betterment observed. Remissions were noted in 26 per cent. of the cases. In 1903, Donath[11] reported six cases of paresis and of cerebral syphilis treated by salt infusion, given every third or fifth day. The infusion was administered for the purpose of freeing the system of toxins formed by the degenerating nervous substances. All these patients were improved by the treatment, and he believed the subcutaneous injections of salt solution of particular value in early paresis. In 1910, he suggested the use of sodium nucleinate in place of the salt infusion.[12] He injected 1 gm. of this salt (a 2 per cent. solution in normal saline) once a week. There is a rise of temperature, which attains its maximum in from four to ten hours and returns to the normal in from one to two days; a transient leukocytosis numbering from 10,000 to 25,000 per cubic millimeter occurs, which disappears generally by the fifth day. He reported the treatment of fifteen patients with paresis; 60 per cent. showed improvement in tremor and memory and a lessening of acute mental symptoms; three were able to return to work; six were improved; in five there was no change; one died of apoplexy. Mercury was also used.

Last fall, we (Dr. Riggs) wrote twenty-six of our leading neurologists and alienists in regard to their experience with the pyrexia treatment in paresis. None had used tuberculin; two, Dr. Dana and Dr. Barrett, had tried the sodium nucleinate injections. The former stated that he had used the nucleates of soda in several cases of paresis. He had not seen it do any good and had not heard of any good results. The latter wrote: "We did a little work with the nuclein treatment of Donath, but our work was not carried very far. I felt that with such methods as these we could not get at the real root of conditions present in paresis." In Dr. Church's reply, he said: "Many years ago (twenty-five years) some such cases were treated with inoculations of modified erysipelas germs, or what amounted to that, in the hospital at Elgin, only, however, with unfortunate results." Regarding this method, Dr. Purves Stewart says: "I have made a number of observations with a moderate amount of encouragement." Dr. C. W. Burr questions the beneficial influence of an acute febrile attack in these patients. "I have seen a few patients, who, during a febrile attack, seemed to temporarily improve. My impression is that the cause of the fever was of no importance. I have never seen any permanent good result. I have seen many other patients with paresis in whom fever had no influence at all."

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[3] Church, Archibald: Some Modern Views of Syphilis of the Nervous System, The Journal A. M. A., May 20, 1916, p. 1596.

[4] Wile U. J.: Experimental Syphilis in the Rabbit Produced by the Brain Substance of the Living Paretic, Jour. Exper. Med., 1916, **23**, 199.

[5] Spitzka, E. C.: Manual of Insanity, 1889.

[6] Robertson, Ford: Brit. Med. Jour., 1901.

[7] Robertson, F. W.: Histologic Evidences of the Presence of an Organism Resembling the Klebs-Loeffler Bacillus in Cases of General Paralysis of the Insane, Rev. Neurol. and Psychiat., 1903.

[8] Robertson, F. W., and McRae, G. D.: Observations on the Treatment of General Paresis and Tabes Dorsalis by Vaccines and Anti-Sera, Rev. Neurol. and Psychiat., 1907, **5**, 673.

[9] Robertson, F. W., and McRae, G. D.: Rev. Neurol. and Psychiat., 1907.

[10] Von Wagner: Ueber die Behandlung der progressiven Paralyse, Wien. med. Wchnschr., 1909, No. 27; International Medical Congress, Budapest.

[11] Donath, Julius: Die Behandlung der progressiven Paralyse sowie toxischer und infektiöser Psychosen mit Salz Infusion, Deutsch. med. Wchnschr., 1903, **29**, 110.

[12] Donath, Julius: Weitere Ergebnisse der Behandlung der progressiven Paralyse mit Natrium nucleinum, Berl. klin. Wchnschr., Dec. 19, 1910.

In 1905, Dr. Myer[13] said, "The important point about general paresis seems to be finding out what makes general paresis a progressive disease." Modern research answered that question. The important problem now is how to destroy the spirochete. The potentiality of our therapeutic resources has been greatly enhanced by Ehrlich's discovery of salvarsan in 1909. It is the consensus of opinion that all the varied manifestations of syphilis can best be treated by the combined use of mercury and salvarsan. Since these patients first consult the general practitioner, on him rests a grave responsibility, for only by an early recognition of the initial lesion and a radical use of modern methods of therapy can a cure be obtained, or late syphilis (paresis or tabes) be prevented. After invasion of the nervous system, one of two modes of procedure may be advised: intrathecal or intensive medication. To Marinesco, in 1911, belongs the credit of the initiation of the former. Swift and Ellis used salvarsanized serum intraspinally in the therapy of tabes dorsalis in 1912, while Robertson of Edinburgh employed it in paresis in 1913. In 1914, Ravaut injected neosalvarsan directly into the spinal fluid. Byrnes during this year used intraspinal injections of mercurialized serum. In 1915, Hammond and Sharpe treated three paretic patients by direct injection, into the lateral ventricles, of salvarsanized serum and neosalvarsan added to the serum.

This multiplicity of procedure is not chaotic, as it would at first appear, it is an expression of the scientific purpose to reach the hitherto inaccessible spirochetes, to bring the spirocheticidal solution into contact with the infecting organism; it is simply science groping, if somewhat blindly, for a definite result. "The end in view in this treatment of nervous syphilis," says Swift, "is threefold, i. e., cure, amelioration or prolongation of life." Have modern methods, as employed in paresis, been of value in any of these respects? Certainly not in cure in fully developed types of the disease. Do they arrest or favorably influence paresis or prolong life? Many believe that as good results were obtained from the routine treatment of the presalvarsan period. Others regard modern methods as most disappointing. Evans and Thorne[14] state that as much improvement may be seen in patients who have received no special treatment as they observed in their cases following the combined use of the intraspinal and intracranial methods. Such, however, has not been our observation or experience.

We believe that, by intraspinal medication, remissions are greatly increased in frequency; that in early paresis, marked improvement may occur, with a possible arrest of symptoms. Paine[15] has observed 1,279 untreated cases in which there occurred ninety-five remissions. Statistics vary greatly as to their occurrence, varying anywhere from 4 to 20 per cent. Cotton has observed as the result of treatment 35.5 per cent. of remissions, while in the untreated cases, the number of spontaneous remissions was about 4 per cent. Ogilvie[16] has reported twenty-six remissions, averaging over a year each, out of thirty-five cases. The minimum number of injections required to induce a remission was six; the maximum, fourteen. "The establishment of a remission," says this writer, "is something gained, but it is merely one step in the right direction." The favorable results of this treatment, according to Amsden, can best be expressed in terms of remission. "The value of remissions in general paresis in any line of treatment is difficult to estimate," says Barrett. "We have, however, gained the impression from a considerable amount of work, that remissions are more complete and patients are able to remain out of the institutions longer when treated intraspinally than by any other mode we have used."

Regarding the arrest of the paretic process, Marinesco and Minea[17] say:

> Modern therapeutics cannot accept the dogma of the incurability of general paresis, not even of its steady progress; there are cases known where the disease is stationary; such are rare. There are many cases in which repeated remissions occur. The stationary state, as well as the repeated remissions, prove not only that the lesions can stop for some time, but also that there must be in the brain of general paralytics alterations which can be replaced.

These writers suggest that remissions are due to the formation of antibodies as in other infectious diseases.

We have had the opportunity of observing seventy-one cases of paresis during the past four years, of which twenty-one have been treated by us. Of the fifty untreated cases, or those treated intravenously or with mercury, one only has had a remission. The brief citation of four cases will be sufficient.

Case 1.—Man. The grandiose type, with characteristic spinal blood and fluid findings of paresis. A remission of four months' duration occurred after the sixth treatment. A relapse occurred and after further treatment there was a second remission of five months' duration, which still persists. He is steadily improving and is practically normal, aside from occasional periods of mild elation. This patient has had forty-one intraspinal injections (thirty-four salvarsanized serum; seven mercurialized serum) with no untoward symptoms. The spinal fluid gives a positive Wassermann in 0.8 c.c.; there is a trace of globulin; no lymphocytosis; blood Wassermann negative; no change in the colloidal gold reaction.

Case 2.—Man, aged 44; family and personal history negative; aside from alcoholism. Acute grandiose type; patient showed mental unbalance a year before coming to us. Biologic findings typically those of paresis; remission took place after the seventh injection, which lasted for eight months. He was able to resume the oversight of his business affairs. He then became homicidal and suicidal and was sent to the state hospital. Aside from the suicidal propensity, his mental condition seems good. He received twenty-one injections of salvarsanized serum (Swift and Ellis); blood Wassermann negative; spinal fluid negative in 0.8 c.c.; positive in 1 c.c.; no globulin; no lymphocytosis; colloidal gold curve uninfluenced.

Case 3.—Man, aged 48; single; gonorrhea in 1900; denied syphilis; when seen by us he was acutely excited; it required four men to bring him to the hospital. Since January, 1915, patient has been indifferent about his work and restless. He became elated in March, 1915. There were Argyll Robertson pupils and increased knee jerks. Serobiologic findings those of paresis. After the sixth injection of salvarsanized serum, he was able to return home and help on the farm. At present writing, aside from slight nervousness, he is apparently normal. He received in all twenty-six intraspinal treatments (Swift and Ellis). After a time, we gave him weekly, in addition, 2 grains of mercuric salicylate intramuscularly. Blood serum is negative; spinal fluid positive in 0.8 c.c.; no lymphocytosis; no globulin; colloidal gold curve unchanged.

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[13] Myer, Adolph, discussion, Dana, Charles L.: The Curability of Early Paresis, The Journal, A. M. A., May 6, 1905, p. 1413.

[14] Evans, B. D., and Thorne, F. H.: The Treatment of Paresis, Am. Med.-Psychol. Assn., 1915, **22**.

[15] Paine, L. H.: Boston Med. and Surg. Jour., 1913, **148**, 648.

[16] Ogilvie, H. S.: New York Neurological Society, Jour. Nerv. and Ment. Dis., March, 1916.

[17] Marinesco and Minea: L'emploi des injections de serum salvarsanisé "in vitro" et "in vivo" sous l'arachnoid spinale et cérébrale dans le tabes et la paralysie générale, Rev. Neurol., 1914, **27**, 337.

Case 4.—Man, aged 38, contracted syphilis in 1902; consulted us, March, 1916; was talkative, disoriented, very restless, expectorated constantly and made grimaces; Argyll Robertson pupil, increased knee jerks and Babinski. Biologic findings those of paresis; was given mercurialized serum intraspinally with intramuscular injections of mercury. He grew gradually worse and died, April, 1916. No biologic reduction. Evidently this was a case of so-called "galloping paresis."

Of the twenty-one patients treated with salvarsanized serum intraspinally (Swift and Ellis) with and without mercury intramuscularly, ten showed a decided improvement. Of these, five are at present attending to their business affairs; one had a remission of eight months; another one of four months; one has had two remissions of four and five months' duration, respectively; one is at home. In this patient, there is a slight improvement with an occasional epileptic attack. Still another is home and is able practically to attend to his business. Three died, not following an injection, but some time after discontinuing treatment. The eight remaining are still living and have manifested some improvement physically, but no change in the mental condition. In all but two of these patients who were sufficiently treated, the Wassermann in the blood became negative, but none gave a negative Wassermann in the spinal fluid; lymphocytosis disappeared; globulin a trace. We have been unfortunate that in none of our cases have we been able to render the spinal fluid negative. According to Ogilvie, it is practically impossible to get a negative Wassermann in true parenchymatous disease of the brain. When obtained, it indicates that the specific process is confined largely to the interstices of the cerebral tissues.

"At this hospital, we have treated, in all," says Dr. Blumer,[18] "twenty-five cases, twenty paretics and five tabetics (December, 1915). Of the paretics, five are now dead, four having shown no improvement; one died of a convulsion after having shown considerable improvement. In five other cases, the course of the disease continues unabated. The remaining ten have all shown great clinical improvement and have been able to return to their homes and business. Of these, three men have had no recurrence during nearly two years' absence from the hospital. The laboratory results have been rather discouraging. Only four patients have obtained a persistently negative Wassermann. Most of the others show no change, while in some the Wassermann has appeared and disappeared irregularly. Three show disappearance of the gold chlorid reaction, while the remainder show practically no change. In all cases the cell count has shown a steady reduction; the globulin content has been more varied, but in most cases has fallen to normal with the improvement of the patient." "We have a number of cases of paresis," writes Barrett, "who were treated intraspinally, in which the diagnosis was unquestionable, who are now carrying on their accustomed occupations with remarkable efficiency, considering their disease."

Amsden[19] states that "intraspinal treatment with salvarsanized serum has in a considerable number of cases a positive influence in checking the progress of the disease, at least clinically; it does not stop it except in very rare cases." The writer also calls attention to the fact that from the standpoint of the family, the value of this treatment is a matter of importance, since the patient may become able to give information about his affairs, enabling him, as it were, to put his house in order. "In the use of salvarsanized serum," Cotton says, "we have an agent which does cause definite arrest in paresis, which arrest includes improvement in the clinical symptoms, physical signs and a corresponding change in the biological reactions from positive to negative." The writer points out that as it is necessary to treat tuberculosis in the incipient stage in order to obtain results, that it was equally true in regard to paresis, it was fallacious to condemn the treatment of paresis because we could not cure the end stage. He says:

> The emphasis should be placed on treating the cases early. This is especially so in regard to state hospital work, where 75 per cent. of the cases are admitted too late for treatment to be of any benefit to them, but 25 per cent. can be materially improved, as shown by our records. The mortality from paresis has dropped 33⅓ per cent. in the hospital in the last three years. We also have no bedridden paretics, which as a rule are the bane of most hospitals. If these results can be produced on fairly well advanced cases, it augurs well for the success of the treatment of early cases.

The time, then, of greatest opportunity in the treatment of paresis is in its incipiency, before the parenchyma of the cortex has become the seat of degenerative change. "It would be unfortunate," says Amsden, "if apparent poor permanent success in arresting the disease should keep us from trying it and trying to improve it." We are in entire accord with Ogilvie when he says that intraspinal treatment is entitled to recognition as a rational therapeutic procedure and that a far greater percentage of all kinds of cases respond to it than to the older methods of therapy. We have persisted in the use of the Swift and Ellis procedure because there is less hazard in its use, and therapeutically it is as efficient as any. Ayer[20] has described intraspinal injections of serum under prolonged high pressure. He has been able to demonstrate the serum in the subarachnoid space over the frontal lobes. It is possible that this method may possess an increased curative value. Mercurialized serum has given us good results, although it has seemed somewhat more irritating than salvarsanized serum. Several times the injection has been followed by incontinence of urine. We have not employed cerebral puncture as suggested by Wardner;[21] there is much to commend it, and in cases of paresis of long standing it is perhaps the method to be chosen. It is certainly preferable to ventricular puncture as suggested by Hammond and Sharpe. The employment of Ogilvie's standardized serum is a conservative means of injecting salvarsan directly into the spinal canal. Its beneficial effect cannot be doubted. Cotton is using this method for cerebral puncture and mercurialized serum for both cerebral and intraventricular puncture. While the value of drainage of cerebrospinal fluid cannot be explained on theoretical grounds, yet benefit has, in our observation, followed this procedure in some hitherto intractable cases. Sachs believes that he has seen as marked and satisfactory improvement from intravenous as from intraspinal therapy, and he has come to feel that the latter has been unduly pushed; it is more difficult to give, more likely to lead to serious complications, and at times it has been followed by disastrous consequences. Cotton says he considers intravenous injections of salvarsan more dangerous than intraspinal; that with myocardial trouble the former might prove fatal. He says:[22]

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[18] Personal communication to Dr. Riggs.

[19] Amsden, George: New York Neurological Society, Jour. Nerv. and Ment. Dis., March, 1916.

[20] Ayer, J. B.: Cerebral Syphilis, A Method of Treatment by Prolonged Intraspinal Injections of Serum under High Pressure, Boston Med. and Surg. Jour., **174**, No. 17.

[21] Wardner, D. M.: Intracranial Injections of Salvarsanized Serum, Tr. Am. Med.-Psychol. Soc., 1915, **22**.

> We have given as near as I can figure about 3,000 treatments in the last three and a half years, and have had no unfavorable results whatever, except one or two cases have developed an irritative meningitis which subsided within a week without any bad results.

Ogilvie states that the use of his serum "in more than 1,800 treatments has shown it to be both safe and effectual as a curative agent in types of syphilitic nervous diseases, in which intraspinal therapy is indicated." We have made over 600 injections of salvarsanized serum (Swift and Ellis method) with no serious ill effects. In one patient only, there developed an aseptic meningitis, which quickly subsided. Our experience teaches us that this method is a safe and conservative form of therapy, and should be preferred to intensive medication in all serious cases of cerebrospinal syphilis and its late manifestations, paresis and tabes. Over 74 per cent. of Ogilvie's series of cases were influenced favorably to a degree not attained by the most heroic intravenous treatment, either with or without mercury.

CONCLUSIONS

1. Both clinically and biologically it has been demonstrated that treatment is a material benefit to the paretic.

2. Before the salvarsan era, the number of remissions varied from 4 to 20 per cent. Since its use and the employment of modern forms of therapy, they have been greatly increased in frequency.

3. Treatment, to be effective in paresis, must be given in its earliest stage; in cases of long standing it is useless; cell destruction cannot be replaced. Also, to be effective, it must be persistent. It may be a matter of many months before the activity of the infection can be influenced.

1019 Lowry Building.

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[22] Personal communication to Dr. Riggs.

A Warning Against Trichinosis.—The federal meat inspectors do not inspect pork or pork products to determine the presence or absence of the organisms causing trichinosis, as even careful microscopic examination is unreliable. They do require, in establishments under their supervision, that pork that is to be made into products to be eaten raw shall be heated or subjected to extreme cold so as to destroy such organisms, but as federal inspection covers only establishments engaged in interstate commerce, it is not safe to rely on it altogether. Even such products should be avoided unless they are known to have come from establishments under federal or equivalent inspection. In fact, the Bureau of Animal Industry, United States Department of Agriculture, in a warning just issued against the danger in raw pork, gives no countenance to its use as an article of diet, but emphatically sets forth that the safest plan is to cook no pork products of any kind raw. According to the bureau, the records show that the number of cases of trichinosis increases during the holidays, partly because of hog-killing time, and partly because farmers frequently make up special forms of sausage which are eaten without cooking. The rule of safety laid down by the bureau is to cook pork until it has lost its red color throughout all portions, or, if a trace of this color is still present, at least until the fluids of the meat have become more or less jellied.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 120)

CASTS

There are several kinds of tube casts: (1) hyaline; (2) epithelial; (3) blood; (4) granular; (5) fatty; (6) waxy or amyloid, and rarely (7) bacterial. Cylindroids formed from so-called mucus are shorter and broader than hyaline casts, but are less firm in structure, being readily broken up. They are of no significance except when they occur in considerable numbers, when they indicate kidney irritation and an abnormal increase of mucous secretion. Cylindroids and hyaline casts are formed from the same substance as that which forms the mucous threads sometimes found in the urine.

1. A hyaline cast is a secretion of this mucus, perhaps by the glomerulus, which has remained in a tubule until it has become formed and shaped, although its size may not represent the region of the kidney from which it comes, as the tube may have become dilated. Most hyaline casts probably come from the Henle loops. Albumin passing through the glomeruli may also coagulate and form hyaline casts. It is probable that a hyaline degeneration may occur in certain pathologic conditions and in acute infection of the epithelial cells of the tubules, and hyaline casts be thus formed. Both cylindroids and hyaline casts are more likely to be found in concentrated and acid urines, as low specific gravity urine and neutral and alkaline urines cause disintegration of these frail structures. Like cylindroids, hyaline casts indicate only kidney irritation and a sluggish urinary flow in some part or parts of the kidneys. Of course the freer the flow of urine, the shorter time will mucus or any other substance remain in the tubule.

High power microscopic examination shows hyaline casts to have many organized particles and not to be absolutely homogeneous.

Not only hyaline, but also epithelial and fine granular casts may be found in the centrifuged urine of normal persons, especially if this urine is first sedimented. However, they usually represent some slight kidney irritation. If hyaline casts are repeatedly found in the urine of the same person, particularly if he is over 40 years of age, and if there are traces of albumin, it may indicate the beginning of chronic interstitial nephritis; but it should be emphasized that hyaline casts can occur with physical strain, with mental anxiety and mental strains that would disturb general metabolism or the circulation, and with any acute infection, even the simplest.

2. Epithelial casts represent hyaline casts with loosened epithelium of the tubules, and the form of the epithelium may denote the region of the kidney in which the casts originated. Irritation or passive congestion may cause this type of casts to occur in slight disturbances, as well as in tubular nephritis.

3. Blood casts show acute kidney congestion or kidney hemorrhage, and are composed of blood cells and serum. Many epithelial, hyaline and finely granular casts may show both white and red corpuscles. Blood casts are most frequent in acute nephritis. When found in hematuria, they show that the bleeding, in part at least, is from the kidney structure. Even when in acute nephritis the blood casts are in large amount, they may not be of serious omen unless the patient is

uremic. With signs of uremia and serious kidney congestion, the prognosis is unfavorable.

All urines will contain some leukocytes and frequently red cells, which may come from any part of the tract. However, unless the urine has been obtained by the ureteral catheter (without injury), or there are blood casts or blood cells in casts, it cannot be positively stated that these blood cells come from the kidney.

4. Granular casts are degenerated epithelial casts. When there is a diffuse nephritis and degeneration occurs in the epithelial cells of the convoluted tubules, more or less débris is thrown into the lumen of the tubules which, remaining there for some time, causes the production of granular casts, in the beginning, with fine and later with coarse granulations. When, with degenerative disease of the epithelium of the tubules, there is a large amount of urine passed, the débris may not remain in the tubules long enough to form casts; consequently such urine, when centrifuged, will show epithelial and granular débris. Also, long and rapidly centrifuged urines may have the granular casts broken down, forming débris.

5. Fatty or oily casts represent fatty degeneration of epithelial casts. They may be composed wholly of fat or of oil, or may be epithelial or granular casts containing oil globules due either to an infiltration or to degeneration of the cell contents. They generally indicate a serious diseased condition, and occur when there is chronic nephritis of any type which has been of considerable duration.

6. Waxy or amyloid casts are somewhat like hyaline casts, but show amyloid reaction. They are not necessarily confined to amyloid infiltration or degeneration of the kidneys, but are signs of severe nephritis, and may be due to a degenerated blood coagulum. They are either straight, bent or twisted, and represent molds of the convoluted tubules. The hemorrhage may be from the glomeruli, the blood remaining in the tubules, or it may come directly from the walls of the tubules. It should perhaps be emphasized that waxy casts do not necessarily denote amyloid disease of the kidneys.

7. Serious kidney infection is sometimes accompanied by casts of bacteria in the urine. However, before deciding that these casts come from the kidneys, one must be certain that the urine examined is fresh, as rolls of bacteria resembling casts frequently occur in old urine.

Casts may come from one or more infected regions of the kidneys, but may represent an acute or chronic disturbance of just one portion. They do not disturb the general function of the kidneys, though they must impair that of the parts affected. In this relation we should bear in mind the great recuperative power of the kidneys.

(To be continued)

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

ACETYLSALICYLIC ACID.—Acidum Acetylsalicylicum.—Acidum Acetylosalicylicum.—Aspirin.—$C_6H_4.O(CH_3CO).COOH$, 1:2.—The acetyl derivative of salicylic acid.

Dosage.—From 0.3 to 1 Gm. (5 to 15 grains), repeated once in three hours until symptoms of salicylism (ringing in the ears, etc.) are noted. It may be administered in the form of a powder, wafers, or capsules. If prescribed as a powder, this may be administered by dissolving it in sweetened water, or by placing it on the tongue followed by a swallow of water. The powder should be dispensed in wax paper.

Acetylsalicylic acid may be obtained by the condensation of acetyl chloride or acetic anhydride with salicylic acid, and subsequent purification by recrystallization from chloroform or other suitable solvent.

It occurs in small colorless crystals or as a white crystalline powder; odorless; of acid taste and reaction; melting point from 134 to 136 C. It is sparingly soluble in cold water, gradually decomposing into acetic and salicylic acids; rapidly decomposed by boiling water; freely soluble in alcohol, soluble in chloroform and ether; also soluble, with decomposition, in solutions of alkali hydroxides and carbonates.

When 0.5 Gm. of acetylsalicylic acid is treated with 10 Cc. of warm sodium carbonate solution (10 Gm. $Na_2CO_3+H_2O$ in 100 Cc.) a clear solution results.

When 0.5 gm. of acetylsalicylic acid is boiled for from two to three minutes with 10 Cc. of 5 per cent. sodium hydroxide solution, and to the cooled solution 10 Cc. of diluted sulphuric acid are added, a crystalline precipitate is produced, which, after washing and drying, responds to tests for salicylic acid, and the filtrate has the odor of acetic acid.

If to a solution of 0.1 Gm. of acetylsalicylic acid in 5 Cc. of alcohol 20 Cc. of water be added and then a drop of diluted ferric chloride solution (1 volume of ferric chloride test solution to 4 volumes of water) no violet coloration should be produced (salicylic acid).

When 0.5 gm. is shaken with 25 Cc. of distilled water for five minutes and filtered, 5 Cc. portions are not affected by hydrogen sulphide (absence of heavy metals), nor with silver nitrate solution (absence of chloride), nor with barium chloride solution (absence of sulphate).

When heated on platinum, 0.5 Gm. should leave no weighable residue.

It should be kept in well-stoppered containers.

IOCAMFEN.—A liquid obtained by the interaction of iodine 10 parts, phenol 20 parts and camphor 70 parts, containing about 7.25 per cent. free iodine.

Actions and Uses.—Iocamfen is said to have the antiseptic and germicidal properties of iodine and also the analgesic, stimulating and antiphlogistic properties of camphor and phenol.

Iocamfen is used especially in the treatment and dressing of surgical and traumatic wounds, joint injuries, fractures, infected processes, contusions, etc.

Dosage.—Iocamfen is applied in small quantities directly to wounds, the skin, cavities, etc., or on tampons or drainage material. It should not be applied to wet surfaces.

Manufactured by Schering and Glatz, New York. No U. S. patent. U. S. trademark No. 112,934.

Iocamfen Ampules.—Each ampule contains iocamfen 20 minims.

Iocamfen is a dark, reddish-brown, viscid liquid, having a camphoraceous odor. Iocamfen is insoluble in water, but soluble in all proportions in alcohol, ether, benzine and liquid petrolatum.

Iocamfen, like free iodine, interacts with fats and waxes, its free iodine entering into combination.

The free iodine content of iocamfen may be determined as follows: About 2 Gm. iocamfen is weighed into a glass-stoppered flask, dissolved in about 25 Cc. chloroform, about 10 Cc. potassium iodide solution (1:10) added and the free iodine determined by titration, under agitation, with tenth normal sodium thiosulphate solution, using starch as indicator.

Comparison of Rural and Urban Mortality.—In an analysis of the figures shown in the new United States life tables based on the United States Census of 1910 and the mortality statistics for 1909, 1910 and 1911 in the original registration states, J. W. Glover (*Public Health Reports,* Jan. 5, 1917), says that the excess of city over rural mortality should receive the attention of health authorities to determine its cause and to what extent it may be reduced. Out of 100,000 births of males in the country, 58,117 survive to the age of 60, while among the same number of city births only 43,454 survive to that age. Glover says these figures are so astounding that they deserve the utmost prominence. Recent life tables, it is said, show similar differences in England and Germany. The tables also show that the mortality rates among women are lower throughout the entire range of life than for men and that the expectation of life is much greater. A striking exception is in the case of women in rural communities. Between the ages of 20 and 40, the mortality rate for rural women is almost as great as that for men, except from 25 to 31, in which period it is actually greater. The same is true for negro women from the ages of 10 to 20.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 20, 1917

SOME EFFECTS OF EPINEPHRIN ON THE DISTRIBUTION OF THE BLOOD

Early in the investigation of the action of extracts of the suprarenal glands and the preeminently active component, epinephrin, produced by them, it became apparent that this substance can exert a pronounced local vasoconstriction. The contraction of arterioles which it brings about has rendered it one of the most powerful local styptics; in the same way not only hemorrhage but also inflammation is diminished in mucous membranes to which solutions of epinephrin are applied locally. The first classic researches on the effects of suprarenal extracts injected directly into the circulation showed as the invariable outcome a pronounced rise of blood pressure in the arterial system. As the pressor response was apparently brought about by diminution in the caliber of the blood vessels, particularly in the abdominal areas, it seemed more than probable that the blood must be driven more effectively into other areas as the result of such special vasoconstriction. It is not surprising, therefore, that it was soon concluded that the function of the suprarenals is so to regulate the blood vessel caliber throughout the body that an adequate circulation to the vital tissues can be maintained with a minimal cardiac effort.

The physiology of the suprarenals and epinephrin has grown much more complex since these pioneer investigations were completed about twenty years ago. The pendulum of opinion respecting the real physiologic significance — rather than the pharmacodynamic potency — of epinephrin has swung back and forth with each new announcement of experiments. For a time it appeared as if the actual participation of suprarenal secretion in the regulation of blood distribution was of doubtful occurrence. Gradually, however, the discoveries of the relations of epinephrin to the sympathetic nervous system have made it seem most unlikely that in normal life suprarenal secretion should fail to play an important part. We know that it acts preeminently on all the functions innervated by the sympathetic system. The action of epinephrin on any organ is always the same as the effect produced by excitation of the sympathetic nerve supply to that organ. It may vary in different species, just as in some the stimulation of a sympathetic nerve may cause activity, while it causes inhibition in others. Furthermore, the action of epinephrin does not seem to be limited solely to these effects on the sympathetic end-organs. Lately the possible physiologic importance of suprarenal secretion has been enhanced by the seemingly well founded claims that the stronger emotions lead to discharge of epinephrin into the circulation in more than normal amounts. The mobilization of carbohydrates, the efficiency of muscle, the coagulability of the blood, and other functions are said to be affected in ways which make for physiologic preparedness in times of bodily stress.

It has been well said that theoretically any hormone might exercise a profound influence on body functions by shifting the circulation in favor of one organ at the expense of another.[1] This has led Hoskins and his collaborators[1] at the Northwestern University Medical School, Chicago, to give renewed attention to the possibilities suggested. The subject is, of course, not a new one, and the contradictions reported are numerous. The data are in many cases fragmentary and incoordinated, having been obtained from observations on isolated organs or localized structures without due regard to the interrelations which may and doubtless do exist between widely different parts of the body. The new studies indicate that, in an intact animal, epinephrin in any general sense is neither a vasoconstricting nor a vasodilating agent. It is one or the other, depending on what vessels are involved. In some cases, as in the lungs, the effect seems to depend on the dosage. Epinephrin injected intravenously in the intact animal generally, though not inevitably, causes in all doses a constriction of the limbs; but when the skin of the part is removed, the contraction is converted to expansion. There is active vasodilatation in the muscles, whereas the cutaneous vessels experience vasoconstriction. Accordingly, the Chicago investigators point out that one cannot generalize to the effect that the splanchnic vessels are constricted while the peripheral vessels are dilated. In the peripheral circulation are included not only the skin but also other less extensive structures which respond by constriction, while observations have shown that the intestine is often dilated. The effect of epinephrin in such a structure as a limb is a composite one, the limb as a whole either contracting or expanding, depending on whether vasodilatation in the muscle or vasoconstriction in the skin predominates.

Considerable emphasis has been placed recently on the possible part played by an outpouring of suprarenal secretion in promoting muscular efficiency. Hoskins, Gunning and Berry suggest that the selective vasodilator effect of epinephrin in skeletal muscle probably accounts to a considerable degree for its favorable influence in improving contractile activity as well as hastening recovery from fatigue. To these considerations may be added the newer evidence of long claimed possible physiologic interrelationships between the thyroid and suprarenal tissues in the body. Augmented thyroid secretion called forth by stimulation appears to sensitize the sympathetic structures so that they respond more effectively to suprarenal secretion.[2] The action of thyroid secretion on sympathetic endings is a selective one, for there is no concomitant increase in excitability of the augmentors of the heart. Thus the physiology of the endocrine organs has become involved in a maze of complexities through which the light of intelligible interpretation is only beginning here and there to find its way.

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[1] Hoskins, R. G.; Gunning, R. E. L., and Berry, E. L.: The Effects of Adrenin on the Distribution of the Blood, I, Volume Changes and Venous Discharge in the Limb, Am. Jour. Physiol., 1916, **41**, 513.

ACETYLSALICYLIC ACID, NOT ASPIRIN

The Council on Pharmacy and Chemistry publishes a report in this issue giving its reasons for deleting "Aspirin-Bayer" from New and Nonofficial Remedies. In order that a standard may be provided, the drug, acetylsalicylic acid, is retained[3] in N. N. R. under its scientific name, acetylsalicylic acid, aspirin appearing as a synonym. The attempt on the part of the Bayer Company to perpetuate the monopoly it has had for seventeen years in the United States was briefly discussed editorially in THE JOURNAL, Aug. 12, 1916. We quoted from *Printers' Ink,* a magazine devoted to advertising, in part as follows:

> "The manufacturers of aspirin are about to launch an extensive advertising campaign to clinch the market as far as possible before the expiration of their patent rights next year. . . . The purpose of the campaign is to identify the product with the trademark of the Bayer Company and to this extent hamper competition after the expiration of the patent."

It is worth while reminding physicians of the privileges the Bayer Company has enjoyed for so many years, owing largely to our inequitable and crude patent laws, or to their construction. First, it should be remembered that practically no other country in the world, not even the original home of the preparation, would grant a patent on either acetylsalicylic acid, the product, or on the process for making that product. The United States granted both! As a result, for seventeen years it has been impossible in this country for anybody except the Bayer Company to manufacture or sell acetylsalicylic acid, either under its chemical name or under any other name. Neither was it possible for individuals, hospitals or any other institutions to import it, legally, for their own use.

Needless to say, the American people have been made to pay exorbitantly for the monopoly our patent office granted this firm. Three or four years ago THE JOURNAL, through the American consuls, obtained information regarding the price at which acetylsalicylic acid was sold in foreign countries. At that time, acetylsalicylic acid, as "aspirin," was costing American druggists — and of course the American public had to pay still more for it — 43 cents an ounce. Just across the border in Canada it sold for one-third the price asked here. In some of the foreign countries, acetylsalicylic acid under its scientific name could be purchased by the druggists of those countries at from one-sixth to less than one-tenth the price that it cost American druggists. Here are some of the figures:

Austria-Hungary	4 cents an ounce
British Isles	6 cents an ounce
Denmark	4 cents an ounce
France	4 cents an ounce
Germany	4 cents an ounce
Holland	4 cents an ounce
Norway	4 cents an ounce
Sweden	4 cents an ounce
United States	43 cents an ounce

Not content with the iron-bound monopoly which it had been granted through our patent laws, the company attempted further to clinch its exclusive rights by giving the preparation a fancy name, "aspirin," and getting a trade-mark on this name. The patent on acetylsalicylic acid expires next month (February, 1917). After its expiration the product, and its method of manufacture, become common property. American manufacturers will now be able to do what manufacturers in other countries, other than the patentees, have long been doing — make and sell acetylsalicylic acid.[4]

Unfortunately, it is extremely improbable that any American manufacturer will market acetylsalicylic acid under the name aspirin, although we believe they would have a legal right to do so. The courts have held in related instances that when a patented article has been known during the life of the patent under a trade-marked name, with the expiration of the patent the name as well as the product becomes common property. The classical "Singer Sewing Machine" decision and the lanolin case are in point. The Bayer Company, through a widespread newspaper advertising campaign, seems to be attempting to perpetuate its seventeen-year monopoly by leading the public to believe that there can be only one brand of genuine acetylsalicylic acid on the market — that made by the Bayer Company.

The firm will, of course, continue to manufacture and advertise the product under the name "Aspirin-Bayer," and will probably charge high prices for it, as was the case with phenacetin (acetphenetidin). In any event, physicians hereafter should do what for a long time we have been advising should be done, namely, prescribe the compound under its scientific name, acetylsalicylic acid. They should do this if for no other reason than that they would be using the name which carries with it a reminder of the composition of the preparation. Of course, for those who have been writing "aspirin" it will be rather difficult to write "acetylsalicylic acid," just as a quarter of a century ago it was difficult for the physician of that day who had been using the copyright name "antifebrin" to write "acet-anilid," a name which nowadays is easy, even for laymen.

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[2] Levy, R. L.: Studies on the Conditions of Activity in Endocrine Glands, IV, The Effect of Thyroid Secretion on the Pressor Action of Adrenin, Am. Jour. Physiol., 1916, **41**, 492.

[3] See page 213, this issue.

[4] The Bayer people may try to convey the impression that "Aspirin" is pure and reliable whereas other brands are not. Since acetylsalicylic acid is a definite chemical compound, there is no more likelihood of this being sophisticated than there is of quinine being adulterated. Furthermore, the Council in accepting acetylsalicylic acid for New and Nonofficial Remedies has provided standards of purity which will insure a uniform product. The brand of one firm—Powers-Weightman-Rosengarten Co., of Philadelphia, has been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies, 1917.

GASES, FIRES AND EXPLOSIONS IN MINES

Among the dangers involved in the hazardous occupation of coal mining, those attaching to the gases which may contaminate the air are prominent. Up to and including 1912, in 275 coal mine accidents in the United States, in which five or more men were killed, involving a total loss of 6,777 men, 5,111, or about 75 per cent., were killed by gas and coal dust explosions, the next largest category of fatalities including those by mine fires and amounting to somewhat over 15 per cent.[1]

Black damp or choke damp, the miner's term for what the chemist discovers to be carbon dioxid, is almost always present in mines in quantities exceeding that in which it appears about us under ordinary conditions of life. As carbon dioxid is a product of decomposition, of combustion, and of respiration in man and animals — all factors which play a part in mining operations — the accumulation of this gas in the absence of good ventilation can readily be understood. The essential danger of carbon dioxid lies in its possible interference with respiration; on combustion it has at most an antagonistic effect.

There are other possible poisonous mine gases, however, such as hydrogen sulphid, or stink damp, and carbon monoxid, the latter of which is highly poisonous even in small quantities. For the detection of harmful proportions of the latter, Haldane recommended the use of birds and mice, which succumb to a concentration of carbon monoxid at which men show no symptoms of distress. Hydrogen sulphid may be found occasionally as an occluded gas in coal seams. In other mines it is usually the product of decomposition of the sulphid-containing pyrites in the presence of moisture. When mixed with air it is violently explosive.

In mine fire explosions it is undoubtedly methane, hydrogen and carbon monoxid which play a significant rôle. How these gases, dangerous because of their explosibility when mixed with air, arise in mines is not so widely understood. Methane, also known as carburetted hydrogen or marsh gas, is a product of decomposition of organic matter and thus can come from pores and pockets in coal, at ordinary temperatures, and can also be produced by heat reactions. Hydrogen and carbon monoxid are not found normally in coal mines; hence their presence in the gases of mines which are on fire is due to the destructive distillation of the coal or wood, the action of carbon dioxid and hot coal or wood, and the action of steam on hot carbon. The experts of the Bureau of Mines have pointed out in a recent technical paper[2] that in a fire above ground, combustion may be complete because sufficient air can be supplied to the burning material to permit the formation of carbon dioxid and water as the principal products of combustion. On the other hand, a mine fire, as a rule, is quickly covered with fallen coal, slate, timber, etc., and the oxygen content of the mine atmosphere is more or less rapidly diminished, and oxygen does not have ready access to the burning fuel. As a consequence, combustion soon becomes incomplete, and intermediate products of combustion, such as carbon monoxid, are formed. The character and quantity of the gases produced differ according to the stage of the fire, from the time it is first noticed, through the period during which it is being fought, and up to and through the time it is sealed, if sealing becomes necessary. The changes which take place may be studied by comparing mine fire combustion processes with changes which coal undergoes, and the gases which are given off when the coal is subjected to different combustion processes above ground. Such studies have to do with the destructive distillation of coal in retorts, as in making illuminating gas, the manufacture of coke in coke ovens, the production of producer gas, and the burning of coal in boiler furnaces. In mine fires, chemical reactions may occur which are related to the reactions which take place during any of the foregoing well known processes, from that of complete combustion, as in properly fired boiler plants, to destructive distillation, as in gas-house retorts, in which practically no oxygen enters into reaction except that from the coal. It is thus that methane, carbon monoxid and hydrogen in particular arise.

Usually the methane which makes a mine gaseous is largely responsible for explosions which take place when ventilation is stopped, but the other inflammable gases produced by fire may likewise become largely responsible. According to Burrell and Oberfell,[2] methane is the most dangerous gas as regards low limit of explosibility, whereas carbon monoxid and hydrogen are especially dangerous because of their wide explosive ranges. In the low-temperature destructive distillation of coal in mine fires, the principal danger is from methane. As regards a mine fire which has been burning for some time, it is probable that when the oxygen of the air has been so depleted that products of destructive distillation appear, the embers will have cooled to a point at which the low-temperature products are given off in largest quantity.

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[1] Kober and Hanson: Diseases of Occupation and Vocational Hygiene, Philadelphia, 1916, p. 619.

[2] Burrell, G. A., and Oberfell, G. G.: Explosibility of Gases from Mine Fires, Bureau of Mines, Technical Paper 134, Washington, D. C., 1915.

According to the government experts, carbon monoxid formed by the reducing action of hot carbon on carbon dioxid is a highly important agent in some mine fire explosions; but it is probable that water gas (carbon monoxid and hydrogen), produced by the action of steam on hot carbon, plays a relatively unimportant rôle in causing mine fire explosions.

THE HEALTH OF MUNITION WORKERS IN RELATION TO THEIR WORKING OUTPUT

The European war has forced attention in an acute way to the problem of the working day, which was recently referred to in THE JOURNAL[1] as being primarily a question in physiology. It is at first thought almost unbelievable that in a grim struggle in which life is being sacrificed daily in the most reckless and ruthless manner the participants should attempt to make detailed inquiries respecting the relation of conditions of work to the efficiency of the worker. Yet this has been done in a variety of ways; for all the combatants realize in this war, as never before, that the dictates of science demand just consideration in a competitive struggle of the most intense description.

Overwork which leads to the inefficiency attributable to undue fatigue may be as detrimental as the indifference of the "slacker" who, though fully able to work, fails to meet his working obligations. For this reason, evidently, the British minister of munitions has appointed a committee "to consider and advise on questions of industrial fatigue, hours of labor, and other matters affecting the personal health and physical efficiency of workers in munitions factories and workshops." Among the memoranda already published by this committee, a recent memorandum prepared by Dr. H. M. Vernon[2] of the University of Oxford gives instructive statistical information concerning output in relation to hours of work in munition factories under government supervision. Many women, for example, were supposed to work more than seventy hours a week in some of the munition plants. An actual determination of the output of these employees before and after the reduction of the hours of work under otherwise comparable environmental conditions leaves little doubt that, even aside from any physiologic benefit to the working individual, a great gain results in the fact that as much or even more was actually accomplished in the shorter period. Thus, in speaking of one group, Vernon states that it is probable that the sixty hours of work a week were still too many to give the best total output, but they justify the statement that, in order to attain a maximum output, women engaged in moderately heavy manual labor should not work more than sixty hours a week. The conclusion derived from observations is that an equally good total output could be maintained if the actual working hours were reduced to fifty-six or less a week. Vernon appreciates that it might be thought that the great improvement in hourly output under the shorter hours' regimen was due, partly or wholly, to increased skill of the operatives or improvements in the machinery. Neither of these hypotheses can be substantiated.

Further proof of the advantage of shorter hours was afforded by the output data of some of the operatives on an earlier occasion. One group of seventeen worked only from 51$^{8}/_{10}$ to 62$^{6}/_{10}$ hours a week for five weeks in June and July, and during the last three weeks of this period their hourly output was 18 per cent. greater than that of another group of fourteen operatives who were working the usual long hours. Subsequently, when the two groups worked the same long hours, their output was identical.

The desirability of considering the type of work involved and perhaps even the individual in the regulation of working conditions — a feature emphasized by Lee[3] — is likewise expressed in Vernon's observations. He concludes that the hours of labor should be varied between wide limits according to the character of the work performed. This obvious fact is not realized by many managers of munitions works, and the tendency is usually toward uniformity of hours for all types of labor and for workers of both sexes. The British data suggest that not only are women unsuited to the heavier types of work, but that even when engaged on the moderate and light types they are unable to stand such long hours as the men. Several sets of operatives, both male and female, were kept under close observation for many days in order that their powers of application might be investigated. Men engaged in boring the powder chamber and in turning and finishing shells were found, almost without exception, to stick to their work with admirable persistence, seldom resting even for a minute. On the other hand, women engaged in turning fuse bodies rested for various periods which in the aggregate amounted to one and one-half hours out of the twelve-hour day, and over an hour out of the ten-hour day, in addition to the hour or so of compulsory rest required for attention to their lathes at the hands of the tool setters. About half an hour of the voluntary rest pauses occurred at the beginning and close of work, but much of the remaining hour or half hour was probably due, not to idleness on the part of the women, but to fatigue, and to an instinctive knowledge that short rest pauses helped to prevent undue fatigue.

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[1] Physiologic Aspects of the Working Day Problem, editorial, THE JOURNAL A. M. A., Jan. 13, 1917, p. 122.

[2] Vernon, H. M.: Statistical Information Concerning Output in Relation to Hours of Work, Health of Munition Workers Committee, Memorandum 12, 1916.

[3] Lee, F. S.: Is the Eight Hour Working Day Rational? Science, Nov. 24, 1916, p. 727.

In considering the specific facts related in the British memorandum, it must be remembered that the work is being conducted under great stress. Realizing this, Vernon says that the hours still in force necessarily impose a great strain on the operatives, and there can be no doubt that in many instances the strain is too great to be borne, and that the operatives are compelled to drop out altogether. That is to say, the data quoted relate to the fittest who were strong enough to survive in the struggle, and not to the general mass of workers of all classes who tried to do munition work. It is almost impossible to discover the extent of this weeding out, but it is inevitably considerable. Hence the best hours of work, suited for peace times, are in every case considerably shorter than those mentioned, though the principle of graduating the number of hours of labor to the type of work performed still holds with undiminished force.

Current Comment

CREATINURIA IN CHILDHOOD

Although creatinuria in adults is commonly believed to belong essentially to the pathology of metabolism, the excretion of creatin along with creatinin in the urine of children has been accepted as a phenomenon of normal character ever since it was carefully studied by Rose.[1] Creatin is usually excreted by children until the age of puberty. It forms a fairly large component of the total creatin plus creatinin present in the urine at this early period of life. No satisfactory explanation for this peculiar difference between the metabolism of the young and the adult has been given until recently, when Powis and Raper[2] made observations on the incidence of creatinuria which may help to throw light on the problem. They found in a study of the diurnal and nocturnal variations in the excretion of creatinin and creatin in children that the rate of creatinin output is slightly less during the night than during the day. More striking is the fact that the rate of creatin excretion is highest during the morning, less during the latter part of the daytime, and very small at night. The chief factor in the output of creatin appears to be the state of rest of the skeletal muscles associated with the temporary cessation of voluntary control which occurs during sleep. Powis and Raper conclude that the results so far obtained are most simply explained by assuming that creatinuria in children is due to the immaturity of the muscles. Creatin is not entirely an index of endogenous metabolism in the way that creatinin is, because the two do not show parallel variations. This may be due to the fact that creatin is utilizable, whereas creatinin is not. The production of creatin at night is probably lower than during the day, and anabolic processes at rest, by utilizing or destroying part of it, cause a further diminution in the amount excreted. Sleep is apparently not the only factor involved, since creatin excretion during the afternoon is less than during the morning. In a case of amyotonia congenita studied by Powis and Raper[2] at the University of Leeds, the excretion of creatinin per kilogram of body weight was much lower, and that of creatin much higher, than for a normal child of the same age. Morse[3] has found a high creatin content in the urine of children with diseases involving atrophy. These involved less extreme cases of muscular immaturity than amyotonia congenita, in which the muscles are soft, toneless and underdeveloped. Putting the known facts together with these observations, the British investigators conclude that the fully matured muscle produces only creatinin, and no creatin, or only such small amounts that utilization processes prevent their coming to excretion. As the child develops, the creatinin coefficient gradually increases, and the creatin diminishes until it finally disappears. This hypothesis will doubtless be tested further by students of metabolism in adolescence.

TRAFFIC ACCIDENTS

At least 60 per cent. of all accidents are street and traffic accidents. Figures just announced by the Bureau of Records of the Department of Health of the City of New York show that there were 18 per cent. more deaths from accident during the first eleven months of 1916 than during an equal period in 1915. The experience of New York is not unique in regard to street accidents. The figures for Chicago and other large cities show the same alarming increase. The "safety first" campaign has not yielded the same satisfactory results in street accidents that it has in industrial establishments and for railroads. The reason is plain: cities are not managed on the business principles industrial establishments employ. Perhaps another factor is that "safety first" signs have become so common that pedestrians no longer pay attention to them. When cities study these problems in the same scientific manner that private corporations study them, and apply the remedy indicated, the number of preventable traffic accidents will decrease.

A MEDICAL METAPHOR

Stump speakers, Chautauqua lecturers and graduation orators utilize the classics, poetry and romance to add polish to their effusions; they seldom go to the sciences, and least of all to medicine, for this purpose, as did Congressman Bennett of New York, who, recently, in a discussion of a proposed rule, "brought down the House" with the following:

> What does this rule do? In the first place, it performs a cesarean operation on the Committee on Interstate and Foreign Commerce, and takes from it a resolution that it has a perfect right to show its parturitive ability by itself delivering.

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[1] Rose, W. C.: Experimental Studies on Creatine and Creatinine, III, Excretion of Creatine in Infancy and Childhood, Jour. Biol. Chem., 1911, **10**, 265.

[2] Powis, F., and Raper, H. S.: Creatinuria in Children, Biochem. Jour., 1916, **10**, 363.

[3] Morse, M.: Creatine in Atrophy, Jour. Biol. Chem., 1916, **24**, xxviii.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Unified Health System for Birmingham.—After a conference between Dr. Francis E. Harrington, the new health officer of Jefferson County, and Dr. Cecil D. Gaston, city health officer of Birmingham, it was announced that Dr. Gaston would continue to act as city health officer. According to the plans for a unified health system prepared by Surg. Carroll Fox, U. S. P. H. S., the share of expense of the county for the new system will be about $30,000. The unified plan provides that the health supervision of the Birmingham public schools, now handled by the board of education, shall be placed under the supervision of the county health officer.

ARKANSAS

Birth and Death Registration.—The Supreme Court of Arkansas has decided that local registrars of births and deaths appointed by the state registrar of vital statistics are state officers and cannot be paid by the counties. In that respect the law recently passed providing for the appointment of such local registrars is held to be unconstitutional. The opinion is published in full in *Public Health Reports*, Jan. 5, 1917.

CALIFORNIA

State Society Meeting.—The Medical Society of the State of California will hold its next annual meeting at the Hotel del Coronado, San Diego, April 17.

Psychopathic Hospital Needed.—The California Society for Mental Hygiene recommends a law providing $500,000 for a psychopathic hospital to be conducted as a unit of the Affiliated Colleges under the management of the University of California. The association also endorses the establishment of a state colony in southern California for mental defectives, to cost $250,000. The following officers were elected: president, Dr. George E. Ebright, San Francisco; vice presidents, Drs. Robert L. Richards, Talmadge; Lillian Martin and Fred W. Hatch, Sacramento; secretary, Miss Julia Green, and treasurer, Mr. Knox Maddox.

Personal.—Dr. Harry J. Pittock, Pasadena, resident physician of the LaVina Sanatorium, has accepted a position as assistant to Dr. Floyd L. R. Burks, Fresno.——Dr. George B. Somers has been reappointed a member of the board of health of San Francisco.——Dr. George F. Pache, Angels Camp, is under treatment at St. Joseph's Hospital, Stockton, for septicemia.——Drs. Howard Wright, San Francisco, and Fred Cozelman, Los Angeles, have been appointed to the medical staff of the Stockton State Hospital.——Dr. Edward H. Julien, San Francisco, was seriously injured in an automobile collision, December 28.——Dr. George H. Derrick, Oakland, was held up, December 23, and robbed of his watch, fob and money.——Dr. Judson Liftchild, Ukiah, has resigned as superintendent of the Mendocino County Farm and Hospital, after ten years' service.

DISTRICT OF COLUMBIA

Education of Tuberculous Children.—The board of education has appealed to the public for $1,000 for fifty-nine tuberculous children recently excluded from school. Buildings and teachers are available, but there is no fund for transportation, blankets, clothing or food. It is expected that Congress at the present session will make provision for the education of these children after the present school year.

IDAHO

Personal.—Drs. D. E. Everette and Susie V. Standard, Burns, Ore., have moved to Nampa.——Dr. Ralph Falk, Boise, has resigned as secretary of the state board of health.——Dr. Ellis Kackley, Soda Springs, has succeeded Dr. Oscar B. Steely, Boise, as a member of the state board of health.

ILLINOIS

State Hospitals Society to Meet.—A meeting of the Illinois State Hospitals Medical Society will be held, January 25 and 26, at the Chicago State Hospital, Dunning, Ill.

Sanatorium Directors Named.—Rev. John P. Quinn, Ottawa, Mrs. Virginia LeRoy, Streator, and Dr. Kimball W. Leland, Utica, have been appointed the first board of directors for LaSalle County Tuberculosis Sanatorium, and have been given authority to select the site for the building, and to determine the kind of structure to be erected, the plans to be subject to the approval of the state board of health.

Health Consolidation in Illinois.—In the interest of economy and better administration, Governor Lowden has adopted a general policy for the reorganization of the executive department of the state government and the consolidation of as many departments and bureaus as possible. As a part of this policy, plans are being considered for the assembling in a department of health of the present state board of health, the state board of pharmacy, the state board of dental examiners, the nurses examining board, the new optometry board and others. A bill providing for a department of health with a commissioner at the head will probably be introduced early in the present session of the legislature.

Chicago

Women Hear About Health Insurance.—The Medical Women's Club of Chicago gave a dinner and reception at the college club rooms of the Chicago College Club, January 10, at which Dr. William A. Evans spoke on "Health Insurance."

Annual Meeting of Visiting Nurse Association.—At the twenty-seventh annual meeting of the Visiting Nurse Association of Chicago, held at the Blackstone Hotel, January 17, Dr. Hugh T. Patrick, on behalf of the committee on the after-care of infantile paralysis, delivered the principal address. Reports were made by the various committees, and officers and directors for 1917 were elected.

INDIANA

New Officers.—At the annual meeting of the Fort Wayne Medical Society, December 5, Dr. Charles G. Beall was elected president; Dr. Allen Hamilton, vice president; Dr. Miles F. Porter, Jr., secretary, and Dr. Elmer E. Morgan, treasurer.

Care of Mental Defectives.—The board of state charities, in its biennial report to the legislature, recommends adequate care and prevention for mental defectives. The five hospitals for the insane in Indiana are now so crowded that it is impossible to classify the patients. Instead of enlargement of existing hospitals or the building of new ones, the board recommends the purchase of farms a short distance from the hospital, yet near enough to be under its supervision. A beginning has been made in the purchase of a colony farm near the Eastern State Hospital, Richmond.

Personal.—Dr. Loren A. Hyde, Indianapolis, has succeeded Dr. Benjamin S. Potter as superintendent of the Marion County Hospital for Incurable Insane at Julietta.——Dr. Brown S. McClintic, Peru, after three years' service with the Russian army, is on his way home.——Dr. Paul F. Martin, Indianapolis, who went abroad last May under the auspices of the American Medical Relief Expeditionary Association, is now in charge of 2,000 beds in the Pardubitz Hospital, Austria, which has a capacity for 10,000 patients.——Dr. Noah D. Berry, Muncie, was knocked down by an automobile recently and suffered painful injuries.——Dr. Arthur L. Oilar, who has been ill with appendicitis in the Methodist Hospital, Indianapolis, is reported to be improving.——Dr. E. Trent Stout, Upland, has started for the border in command of an ambulance company.

IOWA

Personal.—Dr. Ella Blackburn, assistant physician at the State Hospital, Mount Pleasant, has accepted a position as assistant physician at the Kenilworth Sanitarium, Kenilworth, Ill., to succeed Dr. Margaret S. Grant, who has been appointed pathologist at the Lutheran Hospital, Fort Wayne, Ind.——Dr. Charles E. Nelson, Centerville, suffered severe injuries in a collision between streets cars in Burlington, December 26.——Dr. Thaddeus C. Cooper, Ogden, will leave in a short time for six months' work with the English forces on the western front.——Dr. Adolph M. Evetz, Carroll, was painfully injured in a runaway accident, December 22.

State Supply of Antitoxins.—The state board of health has contracted for a year's supply of antitoxin, which will be distributed from 250 stations. The board expects to increase the number of stations to 300. The state contracts for the antitoxin at less than one fourth the rate to the drug trade and then retails it at cost. The new prices for diphtheria antitoxin are: 1,000 unit package, 50 cents; 3,000 units, $1.25;

5,000 units, $1.80; 10,000 units, $3.35. Tetanus antitoxin will be sold at the following prices 1,500 units, $1.67; 3,000 units, $2.87; 5,000 units, $4. Typhoid vaccine in the three-ampule package will sell for 28 cents. These prices are lower than last year. Smallpox vaccine has also been reduced in price.

KENTUCKY

License Revoked.—It is reported that at a recent meeting the State Board of Health of Kentucky revoked the license of Dr. John Karagiozian of Louisville on the ground of his dispersing narcotic drugs for purposes other than their legitimate use.

Personal.—Drs. Lewis S. McMurtry, Hugh N. Leavell and Clarence H. Harris have been appointed, by the state board of health, members of the Jefferson County Board of Health for two years.——Dr. Philip E. Blackerby, Erlanger, has been appointed registrar of vital statistics by the state board of health, to succeed Dr. W. Lucien Heizer, Bowling Green, recently appointed secretary of the state tuberculosis commission.

MARYLAND

New Superintendent for Sydenham Hospital.—Dr. Harry H. Johnson, Baltimore, was appointed superintendent of the Sydenham Hospital, January 2, succeeding Dr. John F. Hogan, Baltimore, appointed second assistant commissioner of health.

Rare Books Presented to Johns Hopkins Library.—A number of valuable and rare old medical books, the collection of which covered thirty years, have been given to the Johns Hopkins University library by Dr. Henry J. Berkley, clinical professor of psychiatry in the Johns Hopkins Medical School.

Personal.—Dr. John T. O'Mara, Baltimore, has been appointed physician to St. Mary's Industrial School, to fill the vacancy caused by the recent death of Dr. Alexander H. Saxton, Baltimore.——Dr. Archibald C. Harrison is a patient at St. Joseph's Hospital, where he recently underwent an operation for appendicitis.——Dr. Joseph I. Lawrence, formerly associated with the American Ambulance in Paris, read a paper before the Baltimore Medical Society, January 5, on "The Method of Treating Wounds as Practiced by Carrel."

Annual Meeting of the Eudowood Board.—Dr. Henry Barton Jacobs, Baltimore, president of the board of directors of Eudowood Sanitarium, points out in his report the need of a nurses' home and advantages of the development of the farm colony into an industrial colony in which shops could be established and men could pursue their trades while regaining their health.——Dr. Martin F. Sloan, Towson, the superintendent, stated that 302 patients had been treated, 200 of whom had been discharged. Of these, seventy-nine were able to return to their former work.

Hunterian Laboratory Opened.—The Hunterian Laboratory of Johns Hopkins Medical School, the dream of the foremost physicians and surgeons of Johns Hopkins Hospital years ago, has been completed and is now formally opened. The building cost about $115,000. Its erection was made possible through the munificence of the Rockefeller Foundation. The scientific equipment alone cost many thousands of dollars. The purpose of the laboratory is to facilitate the work of the men engaged in the highest form of research work. Tunnels connect the laboratory with the medical school and the physiologic building. On the first floor are the medical library and the department of art as applied to medicine. Work at the laboratory is directed by a committee of professors and instructors of the medical school. Dr. Milton C. Winternitz is chairman of the committee, and has a laboratory on the fourth floor. The second floor has been leased to the Carnegie Embryological Institute. The third floor will be devoted to work in clinical medicine and children's diseases. The pathologic department will be located on the fourth floor.

Commission to Study Feebleminded.—After a conference with Dr. Arthur P. Herring, Baltimore, secretary of the State Lunacy Commission, the governor has announced that he will appoint a commission to study causes of mental defectiveness and to suggest preventive methods. The thirty-first annual report of the lunacy commission shows that there are at present 5,065 patients in all the institutions in Maryland, public and private. The total number under treatment during the year was 7,048, and 2,215 patients were admitted to the institutions during 1916. Of this number about 25 per cent. were discharged as recovered. The ratio of the insane to the population in Maryland is 1:270. The State Lunacy Commission asks that the investigating commission be composed of two members of the last legislature, one or more of the superintendents of the state hospitals for the insane and feebleminded, a representative of the state and city public school boards, a representative of the State Board of Penal Control, the secretary of the lunacy commission, the secretary of the state board of health, and one or more persons who have given special attention to the subject in some of its phases. The governor also announced his intention of later appointing a commission to study and report on the tuberculosis situation in Maryland.

MICHIGAN

Physician Fined.—Dr. Lemen L. Harrison, Niles, charged with neglecting to notify the health authorities of a case of scarlet fever, pleaded guilty and was fined $10 and costs.

Personal.—A farewell reception was given in honor of Dr. Gale W. Huber, Detroit, city physician at the Receiving Hospital, December 4.——Dr. Robert A. McGregor, Jackson, has been appointed state prison physician.——Dr. William H. Cressy, who has been serving in the Russian Medical Corps, is home on leave and is visiting in Grand Rapids.——Dr. Henry T. Sethney, Menominee, is ill with diphtheria.

MISSOURI

Personal.—Dr. William E. Minor, Kansas City, has recovered from an operation for appendicitis.——Dr. Eugene H. Bullock, Edina, has been selected as superintendent of State Hospital No. 2, St. Joseph, succeeding Dr. William L. Whittington.——Dr. Hasbrouck Delamater, Kansas City, has been appointed full time health officer of St. Joseph.——Dr. Austin B. Allen, Marysville, has retired after nearly forty years of practice. He will spend several months in southern California.

St. Louis

Gifts to Society.—The heirs of Dr. Charles H. Klie have presented a bust of Aesculapius and a number of volumes to the library of the St. Louis Medical Society.——Vice President William H. Stauffer has presented a clock to the society.

The Workman's Compensation Law.—The meeting of the St. Louis Medical Society, January 13, was devoted to the proposed Workman's Compensation Law for Missouri, which comes before the legislature for action this month or February. The subject was presented by Dr. Malcolm A. Bliss.

Personal.—Dr. Hugo Summa will spend several months in California.——Dr. Malvern B. Clopton, associate in surgery in Washington University Medical School, who has been on duty with the American Ambulance in Paris, delivered an illustrated lecture recently on "American Ambulance Work in Paris," at the annual meeting of the Pilgrims' Congregational Church Brotherhood.——Dr. W. H. Wiedemann will deliver a lecture before the St. Louis Academy of Medicine, January 29, on "Chemistry of High Explosives and Poisonous Gases as Used in the European War."——Drs. Walter C. G. Kirchner, Lux H. Bock, Benjamin W. N. Klippel and Allan A. Gilbert have been appointed to the St. Louis Unit of the American Physicians' Expeditions Committee.

NEW JERSEY

Personal.—Dr. Albert Pittis, Plainfield, is reported to be seriously ill with septicemia, due to an operation wound, in the Huhlenberg Hospital, Plainfield.——Dr. Millard Knowlton, health expert and publicity agent for the state department of health, Trenton, has resigned.——Dr. Charles S. Braddock, Jr., Haddonfield, is reported seriously ill in New York as the result of a cerebral hemorrhage.——Howard E. Winter, Plainfield, has been appointed a member of the state department of health, to succeed the late Dr. John R. Everett, Trenton.

NEW YORK

Hospitals for Insane Overcrowded.—The State Hospital Commission reports that $2,000,000 a year for the next five years must be spent to provide for the insane in New York. There are 34,000 insane persons in the state hospitals, which have a normal capacity of 28,000. The commission favors the construction of a new hospital at Mohansic and of new buildings at Marcy, near Utica, where 1,500 of the insane of New York City could be sent.

New York City

Health Department to Furnish Pneumonia Serum.—The city department of health announces that it will supply for the treatment of lobar pneumonia a serum perfected by the Rockefeller Institute of Medical Research.

Health Department Will Examine Cancer Tissue.—The budget of the department of health for 1917 provides for a pathologist who will examine tissue for cancer diagnosis. The work will be conducted under the bureau of laboratories as soon as the details can be arranged.

Staffs of City Hospitals Dine.—The medical staffs of the nine hospitals of the department of charities, about 450 physicians, dined recently at the Hotel Astor. Commissioner John A. Kingsbury was toastmaster. Among the speakers were Mayor Mitchell, Comptroller Prendergast, and Drs. James J. Walsh and Orrin S. Wightman. This is the first time that all the attending and house physicians of the city hospitals have been called together.

Report of Charity Organization Society.—The report for the fiscal year, ending Sept. 30, 1916, shows that while practically the same number of persons received aid as during the years of 1912 and 1913, the years immediately preceding the period of widespread unemployment, there has been an increase in the amount of illness encountered. In 3,000 families 2,016 cases of illness were found, including tuberculosis, respiratory and digestive diseases, rheumatism and paralysis. In 198 instances there were mental defects, and in about 20 per cent. of the cases alcoholism and the use of drugs were complicating problems.

Personal.—Dr. Hermann M. Biggs, state commissioner of health, has been granted an indefinite leave of absence on the urgent request of the Rockefeller Foundation, that he may go to France to study the tuberculosis problem there and organize measures to combat the spread of the disease in that country. Dr. Biggs is accompanied by Dr. Alphonse R. Dochez of the Rockefeller Institute.——During the absence of Dr. Biggs, Dr. Linsly R. Williams, deputy health commissioner, will be the acting commissioner.——Dr. Alfred E. Shipley, Brooklyn, has been appointed secretary of the board of health, to succeed Eugene W. Sheffer, who was retired, January 1, after more than twenty years of service.——Dr. John S. Billings, Jr., deputy commissioner of health, and director of the bureau of preventable diseases, has resigned, to take effect May 1. Dr. Billings has been in the service of the city for more than twenty years.——Dr. Woods Hutchinson sailed on the *St. Paul* for Liverpool, January 13.

OHIO

Hospital Closed.—The Stamm Hospital, Fremont, was closed, December 30, for the first time in sixteen years. This leaves Fremont without a hospital of any kind.

Hospital Corpsman Dies.—J. S. Clifton, a former medical student in the Ohio State University, and a member of Ohio Field Hospital No. 2, died from pneumonia at the base hospital, El Paso, Texas, December 21.

State Board Meeting.—At the annual meeting of the State Medical Board in Columbus, January 2, Dr. John H. J. Upham, Columbus, was elected president; Dr. John K. Scudder, Cincinnati, vice president; Dr. George H. Matson, Columbus, secretary (reelected), and Dr. Sylvester M. Sherman, Columbus, treasurer (reelected). Eugene C. Waters, Chillicothe, was appointed on the osteopathic committee, succeeding E. R. Booth, Cincinnati.

Personal.—Dr. David E. Sheehan, director of safety of Cuyahoga Falls, has resigned to accept the superintendency of a clinic in the dental school of the Western Reserve University, Cleveland.——Physicians of Nelsonville have presented Dr. Isaac P. Primrose with a handsome leather chair, in recognition of the completion of fifty-eight years of practice in Nelsonville and vicinity.——Dr. John E. Monger, Greenville, has been appointed state registrar of vital statistics.——Dr. Martin Stamm, Fremont, will sail for South America, January 28.

Cincinnati

Appropriation for Sanatorium.—The county commissioners of Hamilton County have appropriated $25,000 for the Cincinnati Tuberculosis Sanatorium.

Medical Reserve Corps Division Organized.—The Cincinnati Section of the Association of the Medical Reserve Corps, U. S. Army, organized, December 7, and elected Lieut. Robert D. Maddox, president; Lieut. Goodrich R. Rhodes, vice president, and Lieut. Elmer A. Klein, secretary-treasurer.

Personal.—Dr. Wade W. Oliver, a member of the staff of physicians appointed by the Rockefeller Foundation to study disease in South America, who was taken ill with appendicitis while in Buenos Aires, is making a satisfactory recovery after an operation.——Dr. Ernest Zueblin, professor of medicine in the University of Maryland, Baltimore, has accepted a position on the faculty of the Medical Department of the University of Cincinnati, and will be director of the tuberculosis service at the Public Hospital.——Drs. Charles A. L. Reed and John E. Greiwe have resigned as members of the staff of the Cincinnati General Hospital.——Dr. Edward F. Nippert, of the house staff of the Cincinnati General Hospital, will sail for Germany this month for service in a hospital unit.——Dr. Gustav A. Hinnen has resigned as a member of the junior staff of the otologic service at the Cincinnati General Hospital.

PENNSYLVANIA

Record of Pennsylvania Railroad.—On the Pennsylvania lines east of Pittsburgh 196,294,146 passengers were carried last year without a fatality, and in the last four years 616,626,957 persons have been transported without loss of a life. On the entire system of the Pennsylvania Railroad, east and west of Pittsburgh, three years have passed without the loss of a passenger's life, and in this period 553,890,063 persons have been carried a total of 15,000,000,000 miles by 9,000,000 trains over 12,000 miles of railroad and 27,000 miles of trackage.

Philadelphia

Estimates Invited for Institution for Feebleminded.—The Department of Health and Charities has invited estimates on four dormitories and connection corridors at the Philadelphia Institute for Feebleminded, Byberry Farms.

Council Reconsiders Omission of Money for Nurses.—An ordinance was introduced, January 4, in the common council to provide $25,000 to reemploy the nurses who were engaged until about a week ago in caring for convalescents from infantile paralysis, but who were dropped for lack of funds to pay them.

Personal.—Dr. W. Wayne Babcock was operated on for removal of the appendix, December 15, at the Samaritan Hospital.——Dr. John K. Mitchell, who has been confined to his home with heart trouble, has greatly improved.——Dr. Richard H. Harte addressed the Philadelphia Association Medical Reserve Corps, U. S. Army, January 19, on the "American Red Cross Base Hospital."

Banquet for Dr. Jackson.—The Philadelphia Laryngological Society will tender a dinner, January 23, to Dr. Chevalier Jackson, Pittsburgh, recently called to the chair of laryngology of the Jefferson Medical College to succeed the late Dr. D. Braden Kyle. Dr. Jacob Solis-Cohen will make the address of welcome. Dr. J. Chalmers DaCosta will represent Jefferson Medical College, Dr. Edward Martin, the University of Pennsylvania, and Dr. Judson Daland, the Medico-Chirurgical College. Dr. Hobart A. Hare will act as toastmaster.

SOUTH CAROLINA

Course in Public Health.—The Medical College of the State of South Carolina has provided a course of lectures in public health. The first lecture in the course was delivered by State Health Officer James A. Hayne. Other lectures will be given during the season.

Personal.—Dr. Luther A. Riser, Columbia, has been appointed assistant in the field work of the United States Public Health Service.——Drs. Charles W. Kollock, A. Johnston, Buist, and Ernest C. Baynard, Charleston, have been elected members of the Roper Hospital Fund Commission.

New Officers.—The South Carolina Medical Society, Charleston, December 27: president, Dr. Lane Mullally; vice president, Dr. Edward Rutledge; secretary, Dr. Henry P. Wagener and treasurer, Dr. Daniel L. Maguire.——Sumter County Medical Association, December 26; president, Dr. Thomas R. Littlejohn; vice president, Dr. Archie China, and secretary-treasurer, Dr. Marvin L. Parler.——Spartanburg County Medical Association, at Spartanburg, December 29: president, Dr. James E. Edwards; vice president, Dr. W. Boykin Lyles; secretary, Dr. L. Rosa H. Gantt, and treasurer, Dr. Walter B. Lancaster.

TENNESSEE

New Officers.—At the annual meeting of the Memphis and Shelby Counties Medical Society, December 19, Dr. William Britt Burns was elected president; Dr. William F. Clary, vice president; Dr. Robert H. Miller, secretary, and Dr. W. Battle Malone, censor, all of Memphis.

Personal.—Dr. W. Scott Farmer, Cookville, has been elected superintendent of the Central Hospital for the Insane, near

Nashville, succeeding Dr. Albert E. Douglas, Nashville, resigned.——Dr. Harold S. Hulbert, Ann Arbor, has been selected by the state board of control to complete the survey of the Tennessee hospitals for the insane, and also a county survey.——Dr. Bryce W. Fontaine, Memphis, has been appointed representative of the Memphis and Shelby Counties Medical Society on the directorate of the Memphis Antituberculosis Society.

WASHINGTON

State Board Election.—At the annual meeting of the State Board of Medical Examiners, held in Spokane, January 2, Dr. Royal A. Gove, Tacoma, was elected president; Dr. Daniel M. Stone, Seattle, vice president; Dr. Conrad N. Suttner, Walla Walla, secretary, and H. R. Morse, Wenatchee, treasurer.

Combination of Boards Recommended.—State Auditor Clausen, in his annual report, recommends that the medical board, pharmacists board, embalming examiners board, dental board, optometry board, hotel inspectors board and barber examining board be consolidated under the state board of health in order to obtain greater efficiency, and to decrease the cost of operation.

WISCONSIN

Group Practice.—Six physicians of Marshfield have organized the Marshfield Clinic.

Sanatorium for La Crosse.—The County Board of Supervisors voted, December 28, to establish a sanatorium for the treatment of tuberculosis, to cost $50,000.

Milwaukee Leper.—The United States Public Health Service has notified the health authorities in Milwaukee that the government will not be responsible for the care of the Greek leper found in that city.

Children's Hospital.—The board of directors and the medical staff of the Milwaukee Children's Hospital are considering plans for the new hospital, made possible by the gift of $150,000 by Mr. Ferdinand Schlesinger, conditioned on the raising of an equal sum for the endowment of the institute.

Contagious Diseases.—On account of the spread of scarlet fever and diphtheria, the board of health at Stevens Point on December 28 closed all grade and parochial schools, the model school of the State Normal School and all junior Sunday schools. Children and young people were warned away from the moving pictures shows, stores and other places of public gathering.

New State Laboratory Opened.—The second state cooperative laboratory, organized by joint action of the municipality and the state board of health, has been opened in St. Mary's Hospital, Fond du Lac, in charge of Dr. Frederick M. Harris, La Crosse, as director. The state board of health grants state aid of $500 a year to the laboratory, the city defraying the remainder of the director's salary and the expense of housing and upkeep.

Personal.—Dr. John W. Coon, Waukesha, has purchased a controlling interest in the River Pines Sanatorium, Stevens Point, and will assume immediate charge.——Dr. B. L. Williams has succeeded Dr. Frank Brockway, Oshkosh, as superintendent of the Wisconsin Tuberculosis Sanatorium, Wales. ——Dr. Jacob Lang was the guest of honor of the Milwaukee Medical Society, December 14, when the semicentenary of his entrance into practice in Milwaukee was celebrated.——Dr. William E. Buschman, Milwaukee, is said to be seriously ill with cerebral hemorrhage.——Dr. John R. McDill, Milwaukee, chief surgeon of the American Physicians' Expedition and on duty at Grandez, West Prussia, has been appointed inspector of fortress hospitals.——Dr. Paul Withington, Madison, has been appointed coach of the Wisconsin University football team.

CANADA

Health Officers to Meet.—The Ontario Health Officers' Association will hold its annual meeting in Toronto, May 29 and 30.

Personal.—Capt. E. Stanley Ryerson, who has been with the University of Toronto Base Hospital at Saloniki, has returned to Toronto on a short leave of absence.——Col. James A. Roberts of the University of Toronto Base Hospital has arrived in England from Saloniki. It is reported that the University Hospital will probably be withdrawn from Saloniki, as many of the men have suffered severely in health.——Dr. Walter W. Chipman, Montreal, has been appointed medical inspector of military hospitals throughout Canada.

Hospital News.—Canadian soldiers are now being sent home from England for active hospital treatment, and not merely for convalescent hospital treatment, thus necessitating large additional accommodation.——At Montreal eighty beds are being provided in the Royal Victoria Hospital; 300 in the Grey Nunnery; at Ottawa, eighty beds in St. Luke's Hospital; at Kingston, 600 in the Queen's University Building; at Winnipeg, 100 in the General Hospital; at Edmonton, 150 in Strathcona Hospital, and at Vancouver, 300 in the General Hospital.——For convalescent Canadian soldiers, the hospital commission has secured the Loyola Building in Montreal, which will accommodate 200 patients; the Rest Haven Building, Vancouver Island, B. C., 200; the Spadina at Toronto, 230, and the Ontario Military Hospital at Coburg, for 150 neurasthenic patients.——The Central Prison at Guelph, Ont., is to provide accommodation for 500 returned soldiers.——The Canadian accommodation for military tuberculous patients is now as follows: Kingston, 175; Hamilton, 175; London, 110; Frank, Alberta, 60; Kitchener, Ont., 30, and Sunny View, Kamloops, B. C., 20. New buildings are being provided at Kingston, Hamilton and London, Ont.——Surgeon General Kendall of the Gravenhurst Sanatorium has been put in charge of training physical instructors in Toronto so that every convalescent hospital in Canada will have a physical instructor.——A handbook for soldiers suffering from tuberculosis has been issued by the Canadian Military Hospitals Commission. It was written by Lieut. John R. Byers, M.D., in charge of the two sanatoriums at Ste. Agathe, Que. A copy has been sent to every Canadian soldier in Canada and overseas.——Mr. S. A. Armstrong, deputy provincial secretary for Ontario, has been placed in charge of organization and supervision of hospitals under the Canadian Hospitals Commission.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

Episcopal Hospital, Philadelphia, $500; Presbyterian Hospital, $2,000, and Methodist Hospital, $1,000, by the will of Martha L. Binder, Philadelphia.

Chester Hospital, Viscose Company of Marcus Hook and its employees, a contribution of $1,523.65.

Homeopathic Hospital, Chester County, a donation of $20,000 from Mr. Pierre S. DuPont, contingent on the raising of an additional $30,000.

German Hospital, Philadelphia, $5,000, by the will of Otto C. Wolf.

Medical Education in Chicago.—The subscription of the $5,300,000 for the development of higher medical education in Chicago, in accordance with the plans announced in The Journal, Nov. 18, 1916, is nearing completion. The following list shows the contributions so far made for this purpose:

General Education Board	$1,000,000
Rockefeller Foundation	1,000,000
Mr. and Mrs. Julius Rosenwald	500,000
F. H. Rawson	300,000
Martin Ryerson	250,000
J. Ogden Armour	200,000
Billings family for Albert M. Billings Memorial Hospital (C. K. G. Billings, Albert Billings Ruddock, Charles H. Ruddock and Dr. Frank Billings)	1,000.000
Mrs. Gustavus Swift	100,000
Charles Swift	100,000
Dr. Norman Bridge	100 000
Three anonymous contributions of $100,000 each and one of $50,000	350,000
Mrs. Edward Morris	50,000
A. D. Thompson, Duluth (James Nevins Hyde Memorial)	25,000
Charles F. Grey	20,000
Robert L. Scott	5,000

This makes a total of $5,000,000, and leaves $300,000 to be raised. The Albert M. Billings Hospital will be built on the Midway, and will consist of a $1,000,000 building containing 250 beds which will be utilized for teaching and clinical study. It will have an endowment of $3,000,000. The entire teaching force of the undergraduate medical school on the Midway, including the clinical departments of the Billings Memorial Hospital, will be full time salaried men. The F. H. Rawson gift of $300,000 will be used to erect a laboratory building for the graduate school, on the site of the present Rush Medical College Building. In the graduate school, the heads of the departments of medicine, surgery and obstetrics and all the laboratory men will be whole time salaried instructors. Promises already made practically complete the $8,000,000 required. The organization and administrative details will be worked out later.

Martin I. Wilbert—An Appreciation.—The following has been unanimously adopted by the members of the Council on Pharmacy and Chemistry. W. A. Puckner, Secretary.

The death of Martin Inventius Wilbert, a member of the Council on Pharmacy and Chemistry of the American Medical

Association since its organization, removes one of its most able and loyal members. He was possessed of an intellectuality and a manhood which commanded the attention and respect of the members of both the medical and the pharmaceutical professions. He was fearless, honest and unselfish. He was uncompromising in his denunciation of the evils which beset the practice of medicine and pharmacy, but was never ungracious either with his pen or in his speech. If after due deliberation he was sure that a definite policy should be promulgated to improve the conditions of these professions, he proclaimed his view and conducted a campaign that inevitably received the support and recognition of those best informed. He gave a life of service with never a thought of reward and earned every honor which was bestowed on him. His knowledge of pharmacy was such that he could have obtained prominence in the manufacturing field and with it would have come a large measure of financial reward. But he chose to devote his thoughts and energies to the general good rather than to his own profit. His influence on medicine and pharmacy was unique. The forcefulness of his personality was equaled only by his modesty and sincerity. His greatest work—one which will be cherished as a part of the history of the American Medical Association—was his devotion to the aims and objects of the Council on Pharmacy and Chemistry and his unselfish and indefatigable labors in its behalf.

We, the members of the Council on Pharmacy and Chemistry of the American Medical Association, mourn the loss of one of our most useful associates, and one whose life may be held up to the younger generation of pharmacists as an example of unselfishness and devotion to high ideals.

FOREIGN

Poliomyelitis in South America.—Advices from Montevideo, Uruguay, state that twenty-four cases of infantile paralysis have been reported in that city.

Medical Society for Mechanotherapy.—At Berlin has been recently founded the Aerztliche Gesellschaft für Mechanotherapie. The board consists of Schütz, Berlin; Hasebroek, Hamburg; Egloff, Stuttgart; Hirsch, Salzschlirf; Lubinus, Kiel, and Jacob, Posen.

Typhoid at Lisbon.—There has been a sudden outbreak of typhoid at Lisbon, 236 patients having been admitted to hospitals in two weeks. It is estimated that there were 639 cases throughout the city. In the 1912 epidemic there were 1,023 patients admitted to the hospitals in one week. In that epidemic the mortality was 9.7 per cent. The drinking water is probably responsible for the epidemic.

Pasteur Institute at Florence, Italy.—The report of the P. Grocco Institute for the four years ending with 1915 shows that 1,947 persons applied for treatment and that 1,336 were given the antirabic course. The highest number of applicants in any month was in April, with 132, and the lowest in February, with sixty-eight. Of those given treatment ninety-seven had been bitten by cats, 1,109 by dogs and twenty-three by pigs. The total mortality was 0.48 per cent., and since the foundation of the institute, 0.29 per cent. The reduced mortality for this entire period has been 0.092 per cent.

Prizes Awarded by the Academy of Medicine at Paris.—The Académie de Médecine had thirty-seven prizes to distribute at its annual meeting in December, but more than one third could not be awarded, as no suitable articles had been received in competition. One prize was given to J. Glover of Paris for his research on what he calls the *voix solidienne,* in contrast to the *voix aérienne.* By this he means the vibrations which the different tissues, at the moment of the emission of the voice, conduct to the entire surface of the body, even to the hands and feet. He has devised means to collect transmit, measure and record these vibrations. He includes respiratory and cardiovascular movements as well as vocal vibrations. . . . The prize for historical research was awarded to E. Wickersheimer, who has been editing the annual reports of the medical department of the University of Paris. The faculté de médecine dates from the thirteenth century; its first known records bear the date of 1267. The earliest reports are lost, but from November, 1395 to 1786, they have been preserved intact, and form twenty-four folio parchment volumes written by hand in Latin. These Wickersheimer has edited and published, down to 1516, in a quarto volume of 561 pages.——Another prize went to Maillard for his synthetic production of polypeptids by submitting amino acids to the action of glycerin. The *Bulletin* of the Académie, No. 49, gives the list and conditions for the numerous prizes open to competition in 1917, 1918 and 1919.

PARIS LETTER

Paris, Dec. 21, 1916.

The War

TRENCH FOOT

The directors of the health service at the main army headquarters have sent to the hospitals a paper by Drs. Raymond and Parisot on freezing of the feet, commonly called trench foot. It states that this affection is particularly grave among the Indian troops, a number of whom are afflicted not only with serious and extensive local lesions, but also with symptoms of a general septicemia, accompanied by thermal blisters, adynamia, frequent epistaxis, and sometimes by collapse. At the outset, this condition may resemble typhoid, subsequently developing into a serious icteric state, pulmonary congestion or nephritis. These complications may result fatally, the necropsy in such cases revealing impairment of the liver, spleen, lungs and kidneys, and organic mycosis. Inoculation of animals with the bile taken from these patients under aseptic conditions produces the blister and eschar characteristic of trench foot. This septicemic condition, as observed in the Indian troops, is also found in Europeans in serious cases. Raymond and Parisot have succeeded in overcoming the disease among French soldiers without loss of toes by employing the following treatment:

1. The feet are bathed in lukewarm water with ordinary and borated camphor soap; the suds must be mild so as not to irritate the foot. The nails should also be manicured, care being taken not to injure the toes.

2. A dressing well moistened with borated camphor solution is applied. This dressing is made by applying loosely to the foot, taking care to include the nails, a layer of absorbent cotton about an inch thick, wrapped in gauze, and soaked in a solution of borated camphor. Over this is placed an ample covering of adhesive tape, and the entire dressing is stabilized with a band. Caution must be used not to bind the foot in any way. This dressing should remain moist until the next day, when it is removed. It is necessary to renew the dressing daily until the edema has totally disappeared, which usually occurs between the second and fourth day, when the impermeable dressing is discontinued for a day or two. Treatment is then limited to daily unctions of camphorated oil until a cure is effected. Camphorated alcohol, which is undesirable in such cases, should be avoided.

3. If the blisters are no larger than 2 centimeters, they can be left unopened as they heal with the treatment of the edema. Larger, or hemorrhagic, blisters should be aseptically excised, the underlying skin removed, and the blisters then dressed with compresses saturated with a solution of 30 gm. of camphor in 1,000 gm. of ether. The usual dressing is employed until all traces of edema have disappeared; it is then followed by a camphorated ether dressing.

4. In serious cases accompanied by fever, it is advisable to inject camphorated oil hypodermically in doses of from 5 to 10 c.c. daily.

5. As tetanus is to be particularly guarded against, it is well always to give a prophylactic injection to each patient. This injection should be repeated every eight days when ulceration develops, the dose being doubled in serious cases (Pasteur serum, 20 c.c., or American serum, 3,000 units).

6. Finally, it is important to apply the treatment early, transporting the patients to the nearest field hospitals, where they may receive immediate care. Under these conditions the average period of treatment is from twelve to fifteen days.

Transportation facilities have just been perfected whereby soldiers suffering with frozen feet may be brought from the front for prompt attention. Dr. Chavasse, general director of the health service of the army in the field, in transmitting the paper by Drs. Raymond and Parisot, emphasizes the great advantage in using the treatment described, the splendid results of which, as compared with those of other known methods, he has been able to appreciate.

EFFECT OF CRANIAL WOUNDS ON FITNESS FOR ARMY SERVICE

The fitness for army service of those who have received cranial wounds has been the subject of much discussion. At a meeting of the members of the neurologic society of Paris, and the representatives of the military neurologic centers (The Journal, July 1, 1916, p. 47, and July 22, 1916, p. 297), the problem was discussed, and the decisions then made have just been adopted by the undersecretary of state of the military health service. It has been decided to exclude from the service those with cranial wounds who are affected with serious organic disorders of the nervous system manifestly incompatible with any kind of military service (such as hemiplegia, monoplegia, difficulty of speech, loss of a large part of the skull, etc.). It is also necessary in each case to search carefully for a certain number of other disorders which are of considerable importance from a prognostic point of view, such as chronic cephalalgia, dizziness, vertigo, aural and visual trouble, mental derangements, emotional, sympathetic, circulatory, secretory reactions, and finally hyperalbuminosis of the cerebrospinal fluid, etc. As to the manner of dealing with those afflicted with any of these disorders, it is difficult and undesirable to establish any arbitrary rule. In fact, the peculiarities of each case should be considered separately. In general, however, no soldier who has received a cranial wound should return to the front except in markedly exceptional cases and after prolonged observation.

LONDON LETTER

London, Dec. 23, 1916.

The War

DISABLED SOLDIERS

The report of a committee of the Royal Colleges of Physicians and Surgeons on the medical treatment of dischargeable disabled soldiers has just been issued. It deals only with soldiers not yet discharged from the army. The case of soldiers already discharged is now under consideration and will form the subject of a further report. The committee has agreed to the following conclusions: 1. A considerable proportion of disabled soldiers require continued institutional treatment. 2. An essential condition of success is that the patient be throughout under discipline and that no form of discipline can adequately replace military discipline. 3. Consequently a disabled soldier should not be discharged from the army until a specially constituted board of medical experts has decided that no further institutional treatment will improve his condition, provided such treatment does not extend beyond some general maximum limit to be determined by the military authorities. 4. They should be retained in military hospitals until they are fit to be discharged to convalescent camps or other suitable institutions, or to return to their own homes. 5. On their discharge from military hospitals, such of them as are likely to benefit by institutional treatment should be transferred to annexes to the existing convalescent camps, or to such other camps as may be set up, officered by members of the army medical corps, to whom civilian help should be supplied. 6. In the camps their treatment should be, as far as possible, the same as that of soldiers who are expected to return to active duty, except that curative manual treatment, including technical and mechanical training should, in many cases, take the place of military exercises. 7. Several kinds of special boards will be necessary: (*a*) For general cases, the board should consist of one physician, one surgeon and a third officer; (*b*) for ophthalmic cases, one physician, one ophthalmic surgeon and a third officer; (*c*) for neurasthenic cases and epileptic cases, one physician, one neurologist and a third officer, and (*d*) for mental cases, one physician, one alienist and a third officer.

A STATE MEDICAL SERVICE

I have stated before that from the insurance act a state medical service in which the physicians would be whole time state officials would probably develop. For some time a controversy has been going on in the *Times* and in medical journals on the subject, and the war has provided the advocates of a state service with a new argument. The attempts to conserve the practices of the large number of physicians (practically every one up to the age of 41) who have joined the army have not been very successful. It was arranged that their neighbors would attend their patients for them and retain only a proportion of the fees, but the practices have shown a constant dwindling with the protraction of the war. Consequently a fund has been opened to which the profession is invited to subscribe for the purpose of lending money to physicians on their return from the war to buy practices. Then in the lay press attention was called to the exceedingly efficient army medical organization for the treatment of all the diseases and injuries of the soldiers, and the question was raised why the state should not organize in civil life an equally efficient system for the civilian population. It was pointed out that the physicians who had joined the army were thoroughly trained in this system and would be able to place their experience at the services of the public. Moreover, the giving of state appointments would be a far better way of recognizing their patriotism than the suggested loan fund. Curiously this further development of socialism has been strongly advocated in the *Times* which, like the rest of the conservative press, at the time of its passage offered the most virulent opposition to the insurance act. In these days, when the necessity for the state controlling almost all the activities of life is undisputed, the cry of socialism which confronted all social reforms, good or bad, has been silenced. On the other hand, what remains of the civilian medical profession is strongly opposed to the proposal, and the British Medical Association has condemned it. The association has exposed itself to the taunt of having done so before any details were brought forward. The panel physicians are also opposed to the proposal, and their organization is again considering the advisability of forming a trade union so as more effectively to protect their interests in this as well as in other respects.

Epidemic of Influenza in London

A widespread epidemic of influenza is prevailing in London. It is of a mild type, however, and manifests itself only by slight fever and general aching lasting only a few days and attended by very little or no catarrh of the respiratory mucous membrane. In the last four weeks the deaths from the disease have numbered only 17, 41, 55, and 81, respectively.

The Fallibility of Dying Declarations

According to the law of this country, the declaration of a person who is dying, and knows the fact, is admitted in the courts as evidence of equal value to that given on oath, and such evidence has often been the means of convicting criminals. That it is not always reliable is shown by the following case: A woman was dying as the result of an illegal operation for abortion. She made three separate "dying declarations," which were admissible, therefore, as evidence. They showed minor variations, but substantially agreed in attributing to a physician two unsuccessful attempts to induce abortion followed by a successful and fatal attempt by a woman. Fortunately the physician kept his books in good order, and by means of them was able to show that the woman had seen him only once, when she gave a false name, paid him 4 shillings and received from him a prescription for a tonic. According to his evidence she requested him to undertake an illegal operation which he refused. He was therefore vindicated. Presumably the fear of death was not sufficient to deter the woman from making a false accusation. A motive which has been suggested was the desire for revenge because the physician refused her request. Another possibility is that she was under some delusion in the matter.

Marriages

John Marshall Page, M.D., Littleton, N. H., to Miss Agnes L. Greene of Cambridge, Mass., at Alston, Mass., December 24.

Robert Garfield Pearson, M.D., Sacramento, Calif., to Miss Margaret E. Crawford of Philadelphia, at Sacramento, November 9.

Stephen Decatur Harrison, M.D., Brooklyn, to Miss Louise Hunter of Cornwall-on-Hudson, N. Y., at Brooklyn, December 28.

William Barnard Sharp, M.D., Shanghai, China, to Miss Alice Percy of Anaconda, Mont., at Helena, December 22.

Charles Chapin Childs, M.D., Niagara Falls, N. Y., to Miss Eva Saunders of Baltimore, December 20.

Arnold Noble Allen, M.D., Boston, to Miss Blanche A. Greenaway of Roslindale, Mass., December 23.

Edward Giles McConnell, M.D., to Miss Elizabeth M. Scott, both of San Francisco, December 26.

Orville Jackson Walker, M.D., Oklahoma City, to Miss Mary Getty of Wilmington, Pa., recently.

Thomas Abram Boger, M.D., Milwaukee, to Miss Camille Collins of Waukesha, Wis., December 20.

W. Harman Evans, M.D., to Miss Agnes Irene McGregor, both of Lynchburg, Va., December 24.

Elmer Walker Barron, M.D., Boston, to Miss Ruth Stanwood Patch of Malden, December 25.

Benjamin F. Sturgis, Jr., M.D., to Mrs. E. Janet Sherry, both of Salem, Mass., December 25.

Lucky Fred Lundy, M.D., Seattle, Wash., to Miss Ruby Leedom of Omaha, December 23.

Deaths

Hamilton Wright, M.D., Washington, D. C.; McGill University, Montreal, 1895; aged 49; died at his home in Washington, D. C., January 9. Dr. Wright is probably best known as one under whose guiding hand the Harrison Narcotic Law and other federal legislation for the regulation of the sale of habit-forming drugs developed and became laws. He had, however, an international reputation even before he entered on that work, having served from 1899 to 1903 as assistant director of the London County (England) laboratories, during which time he was sent by the British government to the Malay states to study beriberi and other tropical diseases. While engaged on this mission he founded the Institute for Medical Research in the Federated Malay States and Straits Settlements. In 1909 he was appointed by President Roosevelt as one of the United States Commissioners to attend the International Opium Convention in Shanghai. Later he was retained by the Department of State to take charge of affairs growing out of that convention, and served as one of the United States delegates to the international opium conferences, held at the Hague in 1911 and 1913. In 1915, Dr. Wright went to France to assist in relief work, and while there was seriously injured in a motor accident, from which he never fully recovered. His death, however, was the result of pneumonia.

Tarleton Hoffman Bean, M.D., Smithtown Branch, N. Y.; George Washington University, Washington, D. C., 1876; aged 70; a veteran of the Civil War; assistant in charge of the Division of Fish Culture and Curator of the Department of Fishes in the United States National Museum from 1880 to 1895; director of the New York Aquarium from 1895 to 1898, and since 1906 state fish culturist; an honorary member of the Danish Fishery Society; editor of the *Proceedings and Bulletin of the United States National Museum* from 1878 to 1886; president of the American Fisheries Society in 1908 and 1909; a scientist of great renown in his specialty; who had received decorations from France, Germany and Japan; died in Albany, December 28, as the result of injuries sustained in an automobile accident two months before.

Samuel Anderson McWilliams, M.D., Chicago; Northwestern University Medical School, 1866; aged 81; a Fellow of the American Medical Associatioon; formerly lecturer on urinary and renal disorders in his alma mater and later professor of anatomy in the Northwestern University Woman's Medical School; one of the organizers of the College of Physicians and Surgeons, Chicago, and later one of the founders of the Chicago Hospital College of Medicine; professor of diseases of the chest, clinical medicine and physiology in Reliance Medical College, Chicago; a specialist in physical diagnosis; died at his home, January 4, from arteriosclerosis.

Charles Henry Rice, M.D., Fitchburg, Mass.; Harvard Medical School, 1866; aged 73; formerly a Fellow of the American Medical Association; a member and once vice president of the Massachusetts Medical Society; consulting surgeon to the Burbank Hospital, Fitchburg; formerly major surgeon of the Sixth Infantry, Massachusetts Volunteer Militia, and retired in 1897 as lieutenant colonel; first city physician of Fitchburg and first chairman of the board of health; for twenty-five years a member of the board of trustees of the public library, and for sixteen years a member of the school board; died at his home, January 5.

DeWitt A. Paine, M.D., Eugene, Ore.; Hospital College of Medicine, Louisville, Ky., 1887; aged 63; formerly a Fellow of the American Medical Association and president of the Lane County Medical Society; president of the Eugene Loan and Savings Bank and of the United States National Bank, Eugene; consulting surgeon for the Southern Pacific Railroad; superintendent of the Oregon Insane Asylum from 1895 to 1901; died suddenly at his home from cerebral hemorrhage, December 27.

William Wallace Rodman, M.D., Pierce City, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1875; aged 62; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association, and Association of Military Surgeons of the United States; formerly major surgeon of the Second Infantry, Missouri National Guard; died in Kansas City, Kan., December 19, from cerebral hemorrhage.

Jesse Houck Ramsburgh, M.D., Washington, D. C.; University of Virginia, Charlottesville, 1895; aged 47; a Fellow of the American Medical Association; a member of the faculty of Georgetown University Medical College; a member of the staff of Georgetown University Hospital; chief of clinic of the Free Dispensary for Consumptives; prominently identified with the tuberculosis movement in the district; died in the Emergency Hospital, Washington, January 2, from cerebral hemorrhage.

Edward Boicourt Trovillion, M.D., Boulder, Colo.; Rush Medical College, 1885; aged 55; a Fellow of the American Medical Association and president of the Boulder County Medical Society in 1912; for several years professor of anatomy in the University of Colorado; health officer of Boulder County for five years; died in the University Hospital, Boulder, December 23, from tumor in the head of the pancreas and cirrhosis of the liver.

Hulbert H. Clark, M.D., Santa Cruz, Calif.; Medical College of Ohio, Cincinnati, 1871; aged 81; formerly a Fellow of the American Medical Association; acting assistant surgeon, U. S. Army, during the Civil War; formerly local surgeon of the Chicago and Eastern Illinois Railroad; coroner and public administrator of Santa Cruz County from 1894 to 1898, and in 1896 mayor of Santa Cruz; died at his home, December 26.

Henry H. Amos, M.D., Charles City, Iowa; King Eclectic Medical College, Des Moines, Iowa, 1888; aged 58; formerly a Fellow of the American Medical Association, and president of the Floyd County Medical Society; a specialist on diseases of the eye, ear, nose and throat; local surgeon to the Chicago, Milwaukee and St. Paul Railroad; died suddenly in a drug store in Charles City, December 19, from heart disease.

William E. Whitney, M.D., Eldora, Iowa; Rush Medical College, 1891; aged 61; a Fellow of the American Medical Association; surgeon to the Iowa State Industrial School, boys' department, and assistant superintendent of the institution; at one time superintendent of the Orphan's Home, Davenport, and also deputy sheriff of Hardin County; died at his home, January 3, from cerebral hemorrhage.

Joseph Weatherhead Warren, M.D., Harrisburg, Pa.; University of Bonn, Germany, 1880; aged 67; assistant to the state commissioner of health; demonstrator of anatomy and instructor in Harvard Medical School from 1881 to 1891, and from 1891 to 1913 professor of physiology in Bryn Mawr College; died in Keystone Hospital, Harrisburg, December 20, from disease of the kidney.

Jean J. Dumortier, M.D., South Norwalk, Conn.; University of Ghent, Belgium, 1890; aged 51; a Fellow of the American Medical Association; a member of the staff and president of the Norwalk Hospital; once health officer of South Norwalk; was found dead at his home, December 13, having taken his life by strangulation while of unsound mind on account of ill health.

Frank M. Galer, M.D., Degraff, Ohio; Starling Medical College, Columbus, Ohio, 1867; aged 73; a member of the Ohio State Medical Association; president of the Citizens' Bank, Degraff, and vice president of the United Telephone Company; a member of the city council and board of education of Degraff; died at his home, January 1, from kidney disease.

Paul Monroe Pilcher, M.D., Brooklyn; College of Physicians and Surgeons in the City of New York, 1900; aged 40; a Fellow of the American Medical Association, and a specialist in abdominal surgery; consulting surgeon to the East Long Island Hospital; first editor of the *Long Island Medical Journal;* died at his home, January 4, from pneumonia.

Peter John Livingstone, M.D., Detroit; University of Michigan, 1892; aged 51; a Fellow of the American Medical Association; a member of the American Academy of Ophthalmology and Oto-Laryngology; a specialist on diseases of the eye, ear, nose and throat; died at his home, December 28, from cerebral hemorrhage.

George W. Grabenstatter, M.D., Buffalo; University of Buffalo, 1900; aged 42; a Fellow of the American Medical Association; for two years acting assistant surgeon, U. S. Army, with service in the Philippine Islands; died at the Buffalo General Hospital, January 3, nine days after an operation for appendicitis.

Charles Michael McLaughlin, M.D., Greencastle, Pa.; Jefferson Medical College, 1889; aged 55; a Fellow of the American Medical Association; and once president of the Cumberland Valley Medical Association; a member of the board of health of Greencastle; died at his home, January 6, from chronic endocarditis.

Joseph A. E. Reed, M.D., Lancaster, Pa.; Pennsylvania Medical College, Gettysburg, Pa., 1854; aged 84; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; a surgeon of volunteers throughout the Civil War; died at his home, January 3.

Frederick W. Fochtman, M.D., Cumberland, Md.; College of Physicians and Surgeons, Baltimore, 1889; aged 49; a Fellow of the American Medical Association; a pioneer Roentgen-ray operator of western Maryland; was found dead in his automobile at Ellerslie, January 5, from cerebral hemorrhage.

William F. Ingram, Kaysville, Utah (license, five years' practice, Utah, 1894); aged 76; formerly a member of the Utah State Medical Association; for more than forty years a practitioner of Davis County; a veteran of the Civil War; died at the home of his son in Bristol, R. I., December 7.

John Willard Meeker, M.D., Brooklyn; New York University, New York, 1863; aged 82; for forty years a druggist of Williamsburg, and for a time a surgeon in the army; a charter member of the New Jersey Microscopical Society; died at his home, January 1, from pneumonia.

John L. Hoshall, M.D., Oklahoma City; College of Physicians and Surgeons, Baltimore, 1899; aged 43; a member of the Oklahoma State Medical Association; was accidentally killed, January 4, by a collision between the automobile in which he was riding and another car.

Roy Gavin Fisher, M.D., Tucson, Ariz.; Dearborn Medical College, Chicago, 1907; College of Physicians and Surgeons, Chicago, 1909; aged 33; formerly professor of ophthalmology in the Chicago Eye, Ear, Nose and Throat College; died at a hospital in Tucson, December 26.

Harry Blair Warriner, M.D., Philadelphia; Maryland Medical College, Baltimore, 1912; Hahnemann Medical College, Philadelphia, 1914; aged 28; chief resident physician at the Children's Homeopathic Hospital; died in that institution, January 4, from pneumonia.

George Everett Titus, M.D., Hightstown, N. J.; Bellevue Hospital Medical College, 1877; aged 61; a Fellow of the American Medical Association; at one time a member of the common council of Hightstown; died at his home, January 4, from cerebral hemorrhage.

George Clary, M.D., New Britain, Conn.; Yale University, New Haven, Conn., 1857; aged 87; a member of the Connecticut State Medical Society; surgeon of the Thirteenth Connecticut Volunteer Infantry during the Civil War; died at his home, December 30.

Elias L. Kinyon, M.D., Brighton, Colo.; Eclectic Medical Institute, Cincinnati, 1899; aged 52; died at his home, January 4, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Ernest Samuel Feagin, M.D., Mobile, Ala.; University of Alabama, Mobile, 1905; aged 35; a member of the Medical Association of the State of Alabama; for five years house physician of the City Hospital, Mobile; died suddenly at his home, December 30.

Albert Weeks, M.D., Phoenixville, Pa.; Jefferson Medical College, 1880; aged 58; formerly a Fellow of the American Medical Association; one of the organizers of the Stratford Castle Hospital, Phoenixville; died at his home, December 27, from erysipelas.

Edmund T. Spotswood, M.D., Terre Haute, Ind.; Rush Medical College, 1851; aged 90; surgeon of the Seventy-First Indiana Volunteer Infantry during the Civil War; a member of the legislature in 1858; died at his home, January 5, from senile debility.

Alphonse Louis Eakin, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1863; aged 77; died at his home, January 2, after an invalidism of several years, due to a wound received while serving as a medical officer in the Civil War.

John S. Sellers, M.D., Hartford City, Ind.; Medical College of Indiana, Indianapolis, 1888; aged 72; formerly a Fellow of the American Medical Association and a member of the Indiana State Medical Association; died at his home, January 3.

Carl Shadiker Adams, M.D., Colorado Springs, Colo.; Harvard Medical School, Boston, 1902; aged 42; a specialist on dermatology; a member of the Colorado State Medical Society; died at his home, about January 1, from tuberculosis.

William Clarence Kluttz, M.D., El Paso, Texas; University of Pennsylvania, Philadelphia, 1899; aged 40; a Fellow of the American Medical Association, and a member of the American Association of Railway Surgeons; died, January 4.

Erich A. Hermsmeier, M.D., Milwaukee; College of Physicians and Surgeons, Memphis, Tenn., 1911; aged 28; a Fellow of the American Medical Association; died at his home, December 28, from pneumonia complicating influenza.

Kenton Harper Trimble, M.D., Monterey, Va.; University of Virginia, Charlottesville, 1884; Bellevue Hospital Medical College, 1885; aged 57; a member of the Medical Society of Virginia; died at his home, December 22.

John T. Fugate, M.D., Urbana, Ill.; Missouri Medical College, St. Louis, 1859; aged 86; one of the oldest practitioners of central Illinois; died at the home of his daughter in Urbana, December 25, from senile debility.

Richard Edward Sweeney, M.D., New York; Niagara University, Buffalo, 1898; aged 39; died in the Gouverneur Hospital, New York, December 25, from burns sustained by the accidental upsetting of an oil stove.

Charles Cleveland Frederick, M.D., Lizella, Ga.; Medical College of Georgia, Augusta, 1912; aged 29; a member of the Medical Association of Georgia; died at the home of his sister in Macon, about December 21.

James Bingham, M.D., Washington, Pa.; Western Reserve University, Cleveland, 1868; aged 84; for forty-two years a practitioner of Clinton, Pa.; died at the home of his daughter in Washington, Pa., December 25.

Benjamin Franklin Hopkins, M.D., Hot Springs, Va.; Jefferson Medical College, 1855; aged 88; a member of the Medical Society of Virginia; died at the home of his daughter in Staunton, Va., December 26.

Erastus H. Cummings, M.D., Grand Rapids, Mich.; Hahnemann Medical College, Chicago, 1877; aged 81; a veteran of the Civil War, in which he served as a hospital steward; died at his home, December 20.

Charles Edwin Stone, M.D., Lynn, Mass.; University of Vermont, Burlington, 1906; aged 48; a member of the Massachusetts Medical Society; died in the Lynn Hospital, November 5, from chronic nephritis.

Sarah Abbie Jenness, M.D., Wolfeboro, N. H.; Boston University, 1889; aged 70; for many years a practitioner of Boston; was burned to death in a fire which destroyed her home, December 26.

Wilson L. Kutz, M.D., Weissport, Pa.; Jefferson Medical College, 1878; aged 62; a Fellow of the American Medical Association; died at his home, December 23, from malignant disease.

Ellera J. Whittleton, M.D., Webster, N. Y.; Homeopathic Hospital College, Cleveland, 1884; aged 57; died at his home, November 20; from cerebral hemorrhage.

Francis Lamb Howland, M.D., Huntsville, Ont.; McGill University, Montreal, 1867; aged 74; died at his home, November 8, from chronic nephritis.

Russell Henry Nevins, M.D., Waterford, Conn.; College of Physicians and Surgeons in the City of New York, 1876; died in New York, December 21.

James Kiron Dorsey, M.D., Wichita, Kan.; New York University, New York, 1892; aged 46; died at his home, December 24, from pneumonia.

James Harry Ralston, M.D., Kansas City, Mo.; Medico-Chirurgical College of Kansas City, 1904; aged 45; died at his home, about December 29.

Richard Edward Cavanaugh, M.D., Duluth, Minn.; Rush Medical College, 1894; aged 48; died at his home, December 24, from heart disease.

William Ferdinand Radue, M.D., Union Hill, N. J.; New York University, New York, 1888; aged 55; died at his home, December 26.

Charles E. Caldwell, M.D., Chicago; Rush Medical College, 1877; aged 65; died at his home, January 5, from pneumonia.

Sarah J. Millsop, M.D., San Diego, Calif.; Hahnemann Medical College, Chicago, 1886; died at her home, November 2.

John Becker, M.D., Chicago; Rush Medical College, 1865; aged 87; died at his home, December 29, from tuberculosis.

Edwin Mayo Bangs, M.D., Ithaca, N. Y.; Boston University School of Medicine, 1878; died at his home, December 24.

Alexander Gaertner, M.D., Boston; University of Jurjev, Russia, 1889; aged 56; died at his home, December 30.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ASPIRIN

Report of the Council on Pharmacy and Chemistry

The referee's report on Aspirin-Bayer which follows was submitted to the Council and adopted by it and, in accordance with the referee's recommendation, was sent to the Bayer Company, Inc. The company's reply contained nothing to warrant the continued recognition of this product by the Council. It was accordingly directed that Aspirin-Bayer be omitted from New and Nonofficial Remedies.

W. A. PUCKNER, Secretary.

REFEREE'S REPORT

The referee's attention has been called to the systematic campaign of advertising aspirin to the public. He is informed that tablets have been marketed for some time in "vest-pocket" boxes, bearing the name "Aspirin" permanently affixed, which is in technical conflict with the Council's rule against indirect advertising to the public. More recently, conspicuous advertisements have appeared in daily papers. These are technically in conflict with the rule against direct advertising to the public.

In addition to the plain technical conflicts with the Council's rules there is a feature of the case which has not hitherto been raised and which should be fully considered: It may be remarked that the advertisements contain no therapeutic recommendation, and do not, on their face, urge the public to employ aspirin but apparently merely tell the public how it may protect itself against sophistication. In substance, they say: "If you are a user of aspirin, this is how you may obtain the genuine." It might be said that this is not an attempt to increase the use or sale of aspirin—the ordinary object of advertising—but that the means of protection against adulteration is a "subject on which the public should be instructed." The principle of such exceptions is stated in the comments to Rule 3 (New and Nonofficial Remedies, 1916, p. 15); and although the present case does not come under the exceptions specified under these comments, it may be urged that the exceptions need to be increased as occasion arises. The notorious adulteration of aspirin may well be urged as establishing a need for a similar exception in its use.

The general principle of protecting the public against fraud, adulteration and substitution is directly in line with the objects of the Council, and deserves commendation and support. It is obvious, however, that the means adopted for this end must be efficient, that they must not open the door to other, perhaps greater evils and that they must be used in good faith. The policy of advertising "Aspirin-Bayer" must be examined in these respects.

In the first place, the acceptance of a product by the Council implies an agreement by the manufacturers or agents that they will adhere strictly to the Council's rules and will not depart from the letter or spirit of these rules without notice to the Council. This principle has been grossly infringed in the present case. There can be no doubt that the agents were aware that their advertisements conflicted, at least with the letter of Rule 3. Nevertheless, they did not, in any way, inform the Council of the change in policy. In this respect, at least, they have not acted in good faith.

Secondly, the wording of the advertisement implies that only the tablets stamped with "The Bayer Cross" are genuine. This is misleading, since every druggist has the right to make unstamped tablets of aspirin, fully as genuine as those stamped with the cross.

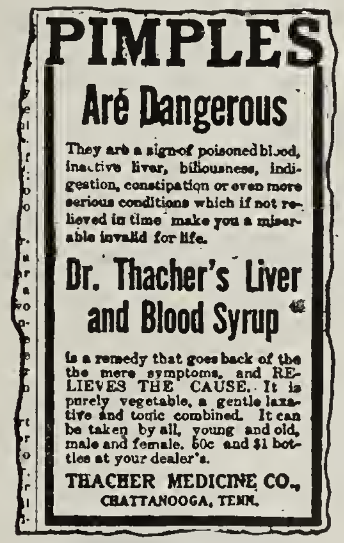
Thirdly, the cross itself cannot be considered an efficient protection; for people who imitate aspirin will not hesitate to imitate the stamp. The remedy, in either case, and as with any other drug, is the examination of trade samples, and the vigorous prosecution of those guilty of violating the law.

Fourthly, the permanent affixing of the name "Aspirin" to the vest-pocket boxes is also inefficient as a protection, and serves mainly as an advertisement.

Fifthly, whatever may have been the motives of the advertisers, and however carefully the advertisements are worded, they will inevitably tend to increase the use of aspirin by the public, and this is directly against the interests of public health. The public does not know, as physicians do, that headaches are merely symptoms of other, sometimes very serious conditions; and that they are often the signal for the need of a thorough physical examination and diagnosis. It is true that they are often also the symptoms of very minor derangements, which will right themselves spontaneously; and that, in such cases, drugs like aspirin may give relief and may do no harm. The patient, however, is not educated to distinguish one class from the other, and therefore anything that tends to promote the indiscriminate use of such remedies as aspirin is detrimental to the public health. Furthermore, aspirin itself is not always harmless. Alarming idiosyncrasies are sufficiently common that the use of the first doses, at least, should require medical supervision. With these considerations in mind, the referee is of the opinion that the direct and indirect advertising of aspirin is to be condemned.

MORE MISBRANDED NOSTRUMS

Dr. Thacher's Liver and Blood Syrup.—This preparation, which admittedly contained 12½ per cent. alcohol, was sold by the Thacher Medicine Company, Chattanooga, Tenn. The claims made by the company that the stuff contained no aloes but contained potassium iodid and sarsaparilla combined with May apple, gentian, juniper berries, buchu leaves, dandelion root and yellow dock root were declared by the government to be false and misleading. It was further claimed by the company that Thacher's Liver and Blood Syrup would "cure All Liver Complaints, Biliousness, Costiveness, Drowsiness, Yellow Jaundice, And All Liver Complaints, Impure or Bad Blood including Scrofula, Salt Rheum, Erysipelas, Pimples, and all Diseases of A Syphilitic Character, Also Loss of Appetite, Dyspepsia, Sour Stomach, Sleeplessness, Pains in Back and Sides, Sick Headache . . ." Naturally, the government declared these claims misleading, false and fraudulent. As no claimant appeared for the property, the court ordered that it should be destroyed by the United States marshal.—[*Notice of Judgment No. 4351*].



PIMPLES
Are Dangerous

They are a sign of poisoned blood, inactive liver, biliousness, indigestion, constipation or even more serious conditions which if not relieved in time make you a miserable invalid for life.

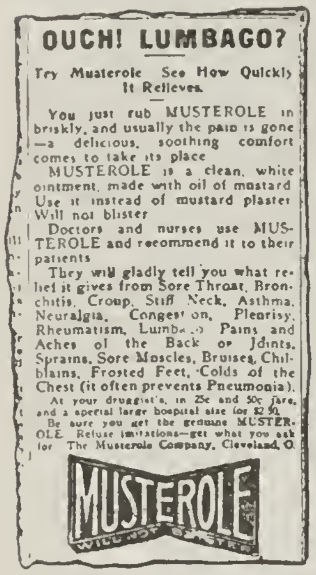
Dr. Thacher's Liver and Blood Syrup

is a remedy that goes back of the the mere symptoms, and RELIEVES THE CAUSE. It is purely vegetable, a gentle laxative and tonic combined. It can be taken by all, young and old, male and female. 50c and $1 bottles at your dealer's.

THACHER MEDICINE CO.,
CHATTANOOGA, TENN.

Black's Pulmonic Syrup.—W. F. Black and W. H. Martin, who did business under the name Black Distributing Agency, Nashville, Tenn., put on the market "Black's Pulmonic Syrup" which was alleged to contain 20 per cent. alcohol and to be "Compounded by W. F. Black, M.D., Birmingham, Alabama." It was sold as "The New Remedy for Tuberculosis and Bronchitis." Government chemists reported that it was a water-alcohol solution of ichthyol, glycerin and sugar. Government officials declared, naturally, that the claim that this stuff was an effective remedy for tuberculosis was false and fraudulent and applied knowingly, recklessly and wantonly. Both defendants pleaded guilty and Black was fined $200; Martin, $100, and the costs assessed on both.—[*Notice of Judgment No. 4357*].

Walker's Pain Destroyer.—This stuff was made and sold by Sarah Ann McDonald, who conducted her nostrum business under the name of Walker Medicine Co., St. Paul, Minn. It was sold as "a sure cure for Diphtheria and all Throat Diseases, Summer Complaint, Felons, Chilblains, Frost Bites, Neuralgia, and is remarkable in Rheumatism." The government chemists reported that analysis "showed that the product was an alcoholic solution of oil of mustard, chloroform, opium and collodion." The therapeutic claims were declared by the government to be false and fraudulent and made knowingly and in reckless and wanton disregard of their truth or falsity. The further claim made for the stuff that it was "invaluable in the household and nursery and no danger whatever can ensue from an overdose, as there are no poisonous ingredients in the compound" was declared false and misleading in view of the fact that the stuff contained chloroform and opium. The defendant pleaded guilty and was fined $5.—[*Notice of Judgment No. 4353.*]


OUCH! LUMBAGO?

Try Musterole See How Quickly It Relieves.

You just rub MUSTEROLE in briskly, and usually the pain is gone—a delicious, soothing comfort comes to take its place

MUSTEROLE is a clean, white ointment, made with oil of mustard Use it instead of mustard plaster Will not blister

Doctors and nurses use MUSTEROLE and recommend it to their patients

They will gladly tell you what relief it gives from Sore Throat, Bronchitis, Croup, Stiff Neck, Asthma, Neuralgia, Congestion, Pleurisy, Rheumatism, Lumbago Pains and Aches of the Back or Joints, Sprains, Sore Muscles, Bruises, Chilblains, Frosted Feet, Colds of the Chest (it often prevents Pneumonia).

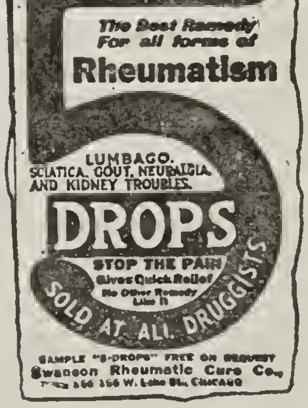
At your druggist's, in 25c and 50c jars, and a special large hospital size for $2.50.

Be sure you get the genuine MUSTEROLE. Refuse imitations—get what you ask for The Musterole Company, Cleveland, O.

Musterole.—This product, marketed by the Musterole Co., Cleveland, Ohio, was analyzed by the government chemists who reported that it was essentially a mixture of lard or some similar material with oil of mustard, menthol and camphor. Claims made for the preparation were to the effect that it would cure pneumonia, asthma, bronchitis, croup, rheumatism and pleurisy and would prevent pneumonia. These claims were declared false and fraudulent and applied knowingly, recklessly and wantonly. The company would neither affirm nor deny the charge but was found guilty and fined $25 and costs.—[*Notice of Judgment No. 4358.*]

Snyder's Bitters.—The J. H. Snyder Medicine Co., Jonesboro, Ark., sold Snyder's Bitters under the claims that it contained 20 per cent. alcohol, and would eradicate "Scrofula, Scrofulous Humors, . . . Syphilitic Affections, Cancerous Humors, Ringworms, Salt Rheum . . . Catarrh . . . and all diseases arising from an impure state or low condition of the blood." It was also said to be an "Unfailing Relief for Indigestion and all Diseases of the Liver and Kidneys" as well as a cure for malaria, to say nothing of being "an absolute panacea for all diseases and disorders of the female genital organs." These claims were declared false and fraudulent and applied knowingly, recklessly and wantonly. The company pleaded guilty and was fined $10 and costs.—[*Notice of Judgment No. 4359*].

5 Drops.—"5 Drops" was put on the market by the Swanson Rheumatic Cure Co., Chicago, Ill. It was sold as a remedy for rheumatism, sciatica, asthma, hay fever, croup, la grippe, catarrh and malaria; as a preventive of germ diseases and as a cure for blood diseases, eczema, scrofula and gastric ulcer as well as a preventive of gallstones. The government chemists reported that analysis showed the stuff to consist of "a mixture of eucalyptol (or a eucalyptol-containing oil), camphor, safrol, terpineol and eugenol (or an oil containing those ingredients, such as camphor oil)." The government declared the curative claims to be false and fraudulent and applied knowingly, recklessly and wantonly. The company pleaded guilty and was fined $200 and costs.—[*Notice of Judgment No. 4372*].


RHEUMATIC SUFFERERS SHOULD USE

5 DROPS

The Best Remedy For all forms of Rheumatism

LUMBAGO. SCIATICA, GOUT, NEURALGIA AND KIDNEY TROUBLES.

DROPS

STOP THE PAIN Gives Quick Relief No Other Remedy Like It

SOLD AT ALL DRUGGISTS

SAMPLE "5-DROPS" FREE ON REQUEST

Swanson Rheumatic Cure Co.,

[illegible] 166 164 W. Lake St., Chicago

Dr. Stuart's Specific Drops.—Joseph W. and Anna B. House sold "Dr. Stuart's Specific Drops" under the name Stuart Remedy Co., Detroit, Mich. Claims made for the nostrum were that it was a cure for rheumatism and a positive specific for eczema and salt rheum and would drive all impurities out of the blood. The government chemists reported that the preparation was essentially a mixture of camphor, alcohol, mercuric iodid and turpentine. The curative claims were declared false and fraudulent and applied knowingly, recklessly and wantonly. The defendants pleaded guilty and were fined $50.—[*Notice of Judgment No. 4368*].

Correspondence

Secret Remedies and Professional Responsibility

To the Editor:—A man of great wealth and of social and business prominence in this community recently returned from an eastern visit during which he had occasion to consult a physician. The physician, be it remarked, is a prominent educator, being dean of one of the most important medical schools of the country, a man of nation wide reputation, and of undoubted skill and ability as a practitioner of medicine. He is also well known in the Americal Medical Association, of which he has long been a prominent and important Fellow, and is a vigorous enemy of secret remedies and a strong supporter of the Council on Pharmacy and Chemistry. The above mentioned gentleman brought home with him a new and marvelous remedy which his physician had prescribed for him and which in an incredibly short time had cured his influenza and which, as grip was quite epidemic at home among his friends, he immediately recommended to several of them. There is no greater joy to the average nonmedical person than to be able to advise a new remedy for one's friends' ailments, especially one so highly recommended, and as a result there was an immediate and large demand for this preparation, greatly to the profit of the local drug stores as well as of the manufacturer. The remedy, a secret proprietary which has not been accepted by the Council and cannot be advertised in The Journal, is a preparation which has long been on the market, is freely sampled to physicians in an attractive container and accompanied by the usual extravagant claims to cure many of the common diseases, and is recommended both for internal and external use. This incident is related to show how sometimes our most ethical brethren help to boost the secret remedy.

Burnside Foster, M.D., St. Paul.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEMATOXYLIN STAIN—DIAGNOSTIC VALUE OF VON PIRQUET REACTION

To the Editor:—In the April, 1916, issue of the *Comptes rendus des séances et mémoires de la Société de biologie*, Paris, Triboneau, Fichet and Dubriel describe a new hematoxylin stain—silver hemateinate. The abstract I have gives no details as to its preparation. 1. Please publish the detailed method of preparing this stain.

2. Please give briefly the exact diagnostic value of the von Pirquet test.

Robert Kilduffe, M.D., Chester, Pa.

Answer.—1. (*a*) Preparation of Silver Oxid: In a carefully cleaned stoppered bottle dissolve 1 gm. of silver nitrate in 100 c.c. cold distilled water. Add to this quickly 50 c.c. of a 10 per cent. aqueous solution of pure potassium hydroxid. Shake well. Let stand for one minute; decant from the heavy precipitate of silver oxid. Wash this by decantation with four lots of 150 c.c. of distilled water, each. (*b*) Preparation of Silver Hemateinate: Dissolve 2.5 gm. of French hematoxylin in 50 c.c. of absolute alcohol. Pour this on the silver oxid. Place the mixture in a long-necked flask, and heat on the water bath with occasional shaking until the alcohol boils. The liquid should be of a deep orange color. Filter. (*c*) Preparation of Silver Hemalum Staining Solution: To one part of the silver hemateinate solution add twenty parts of a 5 per cent. solution of potassium alum.

2. It is not possible within the limits of a short answer to discuss satisfactorily the diagnostic value of von Pirquet's reaction. The following is a partial list of the literature on the subject published within the last two years:

Brown, E. M.: Diagnostic Value of Cutaneous Tuberculin Test in Recruiting, *U. S. Naval Med. Bull.*, July, 1914.

Kinghorn, H. M.: Comparative Value of von Pirquet and Subcutaneous Tuberculin Tests in Diagnosis of Tuberculosis in Adult, abstr., The Journal, July 25, 1914, p. 349.

Frehn, W.: Sensitization Index with Tuberculin Skin Reaction, *Beitr. z. Klin. d. Tuberk.*, July 30, 1914; abstr., The Journal, Jan. 2, 1915, p. 90.

Rogers, O. F., Jr.: Study of Children with Positive Skin Tuberculin Reactions, *Boston Med. and Surg. Jour.*, Feb. 4, 1915; abstr., The Journal, Feb. 20, 1916, p. 695.

Cattermole, G. H.: Tuberculin Tests in Children of Colorado, The Journal, Aug. 28, 1915, p. 782.

Von Litzner, M.: Detection of Focal Reaction after Tuberculin Test, *München. med. Wchnschr.*, Aug. 10, 1916; abstr., The Journal, Sept. 25, 1915, p. 1148.

Clovis, E. E.: Use of Tuberculin Reaction in Diagnosis of Pulmonary Tuberculosis, *West Virginia Med. Jour.*, February, 1916.

Shelter, H.: Intradermal Tuberculin Reaction in Diagnosis of Tuberculosis in Guinea-Pigs, *Deutsch. med. Wchnschr.*, Jan. 20, 1916; abstr., The Journal, March 11, 1916, p. 845.

Zitronblatt, A. Y.: Skin Tuberculin Test in Surgical Practice, *Russk. Vrach*, 1915, **14**, No. 30, abstr., The Journal, March 11, 1916, p. 850.

REMOVAL OF BURNT POWDER FROM THE SKIN

To the Editor:—Please give me the best treatment for removing burnt powder from the skin, the result of a pistol shot.

W. H. Smith, M.D., Goldsboro, N. C.

Answer.—A reply to this question appeared in Queries and Minor Notes, The Journal, Nov. 14, 1908, p. 1716. In brief, it was stated that if the patient is seen shortly after the accident, the gunpowder grains can be picked out readily. Much of the powder can be removed by the same process later on, although this is tedious and difficult. Watson and Keyes advocated the use of a cutaneous punch or trephine similar to that used for removing comedones. The punch is placed over the powder mark and pressed down firmly. Care should be taken not to enter the skin too deeply. The small portion of skin which projects from the trephine can be snipped off and a soothing ointment applied. Hydrogen peroxid is sometimes used, either full strength or three parts to one of glycerin. Crile applies hydrogen peroxid until it has penetrated under the powder grains, the effervescence forcing them out of their bed.

In case the powder marks are old, they may be removed in the same manner as tattoo marks. Methods of doing this are described by W. A. Pusey, "Principles and Practice of Dermatology," in the chapter on "Tattoo Marks and Powder Stains," p. 814, and also in Queries and Minor Notes, The Journal, July 22, 1911, p. 310; Sept. 12, 1912, p. 895, and Jan. 24, 1914, p. 315.

TREATMENT OF SEBORRHEA OF SCALP

To the Editor:—In my books on skin diseases I find no lotions for seborrhea of the scalp, except those containing resorcin. This is so scarce and high priced that I cannot use it. Could you give one or more formulas containing drugs that may be substituted for resorcin?

George G. Smith, M.D., Chagrin Falls, Ohio.

Answer.—A good lotion for seborrhea of the scalp is the following:

	gm. or c.c.	
Mercuric chlorid	|5	gr. vii
Chloral hydrate	15|	℥ ss
Perfumed spirit, N. F.	30|	℥ i
Water, sufficient to make	500|	O i

This can be used on the scalp and hair daily or every other day. It is fully as effective as the resorcin solution, and much more agreeable to use. In conjunction with such a lotion, either in case of oily hair or of dandruff, it is well to use on the scalp occasionally an ointment like the following:

	gm. or c.c.	
Salicylic acid	1 to 2|	gr. xx to xxx
Benzoic acid	3 to 4|	gr. xl to lx
Precipitated sulphur	3 to 4|	gr. xl to lx
Petrolatum	30|	℥ i

This is applied occasionally—once in four or five days to once in eight or ten days—and is followed by shampoo in from thirty-six to forty-eight hours.

REQUIREMENTS TO PRACTICE IN THE HAWAIIAN ISLANDS

To the Editor:—Please inform me as to the requirements for license to practice in the Hawaiian Islands.

Jois Morita, Baltimore.

Answer.—To obtain a license in Hawaii, the applicant must be a graduate of a reputable medical college having not less than four years of study, and must pass an examination in all the branches of the medical curriculum. There is no reciprocity. Examinations are held by appointment between the board and candidates. The examination fee is $10. Address Dr. W. L. Moore, secretary, Board of Medical Examiners, Boston Building, Honolulu.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Illinois: Chicago, Jan. 24-26. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

Iowa: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Kansas: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

New York: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.

Vermont: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

District of Columbia October Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, Oct. 10-12, 1916. The total number of subjects examined in was 16; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 15, of whom 10 passed and 5 failed. Three candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University	(1916)	77, 79.1, 79.4, 79.4, 80.1, 86.4, 86.6.
University of Maryland	(1915)	78.6, 87
Temple University	(1915)	79.2
FAILED		
George Washington University	(1916)	71.4
Howard University	(1911)	66
College of Phys. and Surgs., Boston	(1916)	68
Temple University	(1915)	74
Meharry Medical College	(1916)	71.2

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Georgetown University	(1908)	Maryland
Johns Hopkins University	(1911)	Penna.
Barnes Medical College	(1903)	W. Virginia

Colorado October Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, Oct. 3, 1916. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 12, of whom 8 passed, including 1 osteopath, and four failed, including 1 osteopath. Eighteen candidates were licensed through reciprocity, and one osteopath was granted a reregistration certificate. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
University of Colorado	(1911)	88.3
Chicago College of Medicine and Surgery	(1916)	82.5
Northwestern University	(1916)	87.4
Rush Medical College	(1915) 83.6; (1916)	85.4
Jefferson Medical College of Philadelphia	(1914)	84.3
University of Pennsylvania	(1915)	81.5
FAILED		
St. Louis College of Physicians and Surgeons	(1915)	63.7
John A. Creighton Medical College	(1907)	71.7
Lincoln Medical College	(1916)	67.9

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Hering Medical College	(1904)	Illinois
College of Physicians and Surgeons, Chicago	(1901)	Iowa
Baltimore Medical College	(1906)	Georgia
Homeopathic Medical College of Missouri	(1895)	Missouri
University Medical College of Kansas City	(1908)	Kansas
Washington University	(1906) (1907)	Illinois
John A. Creighton Medical College	(1905)	Nebraska
Bellevue Hospital Medical College	(1875)	New York
New York Homeo. Med. Coll. and Flower Hospital	(1910)	New Yokr
University of Buffalo	(1915)	New York
Miami Medical College	(1894)	Minnesota
Medico-Chirurgical College of Philadelphia	(1902)	Penna.
University of Pennsylvania	(1912)	Penna.
Western Pennsylvania Medical College	(1895)	Penna.
University of Tennessee	(1915)	Tennessee
Vanderbilt University (1908) Alabama	(1913)	Tennessec

Idaho October Report

Dr. Charles A. Dettman, secretary of the Idaho State Board of Medical Examiners, reports the written examination held at Wallace, Oct. 3, 1916. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 12, all of whom passed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1913)	83
University of Illinois	(1916)	88
Kentucky School of Medicine	(1879)	78
Tufts College	(1907)	82
Detroit College of Medicine	(1912)	81
Barnes Medical College	(1910)	83
Columbia University, Coll. of Physicians and Surgeons	(1903)	86
University of Oregon	(1906)	87
Jefferson Medical College of Philadelphia	(1915)	86
University of Vermont	(1914)	83
Marquette University	(1913)	85
McGill University	(1902)	88

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University	(1906)	Utah
Chicago Medical College	(1876)	Utah
Rush Medical College	(1915)	Utah
University of Illinois	(1914)	Utah

Iowa October Report

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Oct. 17-19, 1916. The total number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, all of whom passed. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1916)	84
Atlanta Medical College	(1916)	82.9
Chicago College of Medicine and Surgery	(1911)	84.4
Northwestern University	(1906) 77.5; (1916)	93
Rush Medical College	(1914)	92.5
University of Illinois	(1914) 94; (1916)	88.2
Indiana Medical College, Purdue University	(1907)	94
State University of Iowa, College of Medicine	(1916)	81.4
Tulane University of Louisiana	(1915)	83.9
Harvard University	(1916)	84.6, 88.2
Homeopathic Medical College of Missouri	(1903)	77
University of Pennsylvania	(1904) 82; (1916)	91.5
Woman's Medical College of Pennsylvania	(1916)	87.9
Vanderbilt University	(1915)	88.7

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Atlanta Medical College	(1915)	Georgia
Chicago College of Medicine and Surgery	(1910)	Kentucky
	(1913)	Wisconsin
Illinois Medical College	(1905)	Ohio
Keokuk Med. Coll., Coll. of Phys. and Surgs.	(1908)	Kansas
University of Minnesota	(1896) (1914)	Minnesota
Barnes Medical College	(1909)	Missouri
National University of Arts and Sciences	(1914)	Missouri
St. Louis College of Phys. and Surgs.	(1908)	Wisconsin
St. Louis University	(1915)	Missouri
Washington University	(1915)	Missouri
John A. Creighton Medical College	(1912)	Nebraska
Marquette University	(1914)	Wisconsin

Minnesota October Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, Oct. 3-6, 1916. The total number of subjects examined in was 18; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 8, all of whom passed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1916)	84, 85, 85
Johns Hopkins University	(1915)	87, 90
University of Michigan	(1884)	78
University of Minnesota	(1916)	85
Columbia University	(1914)	89

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University	(1901) (1911)	Illinois
Rush Medical College	(1911) (1915)	Illinois
University of Illinois	(1915, 2)	Illinois
State University of Iowa, Coll. of Homeo. Med.	(1915)	Iowa
State University of Iowa, College of Medicine	(1901)	Iowa
University of Michigan	(1912)	Michigan
Marquette University	(1913) (1916)	Wisconsin

Book Notices

Focal Infection. The Lane Medical Lectures. By Frank Billings, Sc.D., M.D. Delivered, Sept. 20, 21, 22, 23 and 24, 1915, Stanford University Medical School, San Francisco, Calif. Cloth. Price, $2. Pp. 166. New York: D. Appleton & Co., 1916.

This volume contains the Lane lectures delivered by Dr. Billings at the Stanford University Medical School in September, 1915.

In the introduction Dr. Billings traces in brief the history of the development of our knowledge of focal infections, noting especially the cooperative spirit between the clinicians and laboratory workers—the team work in which even nurses and patients took part—which made these investigations possible. He shows how numerous research institutions were gradually drawn into the work, and with characteristic modesty disclaims the larger share of the credit for the investigations, naming himself as spokesman of those who took part in the work. Those who know will say that he was the leader.

In his first lecture, which is devoted to a general consideration of the subject, Dr. Billings rapidly traces the growth of bacteriology and antiseptic and aseptic surgery. He then takes up the etiology of focal infections, paying special attention to work on pyorrhea alveolaris. It is interesting to note his position as to the importance of the endameba. He says (p. 6):

> Doubtless the endamebas play an important part in the occurrence of pyorrhea alveolaris and permit infection with the pyogenic bacteria. The bacteria present in the infected areas are the important factors, however, in the causation of general infection from the focus.

He then takes up other infections occurring in the mouth, throat, larynx and pharynx, naming the various organisms which usually inhabit these regions and produce diseases in them. He considers also focal infections in the gastro-intestinal tract and its appendages, showing the relation of the popular idea of autointoxication to those infections. He names, too, the organisms from the throat, nose and teeth producing lesions in the gastro-intestinal tract. He considers the genito-urinary tract and then the general systemic effects of focal infections, the diagnosis of focal infection, the various methods of dissemination of the organisms from the focus to the rest of the body, and finally the relation of infection to anaphylaxis.

The second lecture concerns the streptococcus-pneumococcus group and the various transmutations which the members of this group undergo. In this work the laboratory study was carried out chiefly by Dr. Rosenow working under the direction of Dr. Hektoen, and obtaining his clinical material largely from Dr. Billings. The work represents perhaps one of the most important studies of the last decade. In this chapter are illustrations showing the transmutation of a hemolytic streptococcus from a case of scarlet fever into a *Streptococcus viridans* and into a pneumococcus. Here Dr. Billings quotes extensively from Rosenow's work on the elective localization of streptococci (The Journal, Nov. 13, 1915, p. 1687), and gives in detail the technic by which Dr. Rosenow obtained his results.

The third lecture concerns the acute diseases related to focal infection. These diseases have always constituted one of the most puzzling problems of medicine. Acute rheumatic fever, rheumatic endocarditis, myocarditis and pericarditis, chorea, the various gonococcal infections, malignant endocarditis, nephritis, appendicitis, cholecystitis, gastric ulcer, pancreatitis, erythema nodosum, herpes, myelitis, thyroiditis and iridocyclitis are all shown to be frequently related to a focus of infection elsewhere in the body. Credit is given to Poynton and Paine, the English investigators, whose early observations have been so brilliantly confirmed by American investigators. When one contemplates the list of appalling diseases which have been taken from obscurity and made susceptible to scientific treatment, one begins to realize the greatness of the achievement. In this chapter, too, are fifty-four illustrations showing the pathologic effects of the organisms, as well as the various phases of the organisms themselves.

Naturally, the next lecture is devoted to the chronic diseases related to foci of infection, and every physician who has attempted to analyze and treat a chronic infectious arthritis, a chronic peptic ulcer or a chronic endocarditis will realize the great value of the investigations relating to these conditions. The following statement is a short summary of one of the important findings (p. 125):

> The focus of infection which undoubtedly causes the *Streptococcus viridans* bacteremia and chronic malignant endocarditis is often alveolar abscess. Of this we have had numerous clinical examples. Coincident cultures from the alveolar abscess and from the blood have yielded strains of *Streptococcus viridans*. When these nascent cultures were intravenously injected into animals, typical endocardial lesions resulted. Doubtless a focus containing this streptococcus may be located in the tonsil or nasal sinus or elsewhere which may be the source of the cardiac infection.

To many physicians the final lecture headed "Treatment" will be the most important. The first part of the lecture is devoted to the prevention of focal infections. The author then takes up the treatment of the resulting diseases, and in concise statements points out the necessary procedures. The lecture concludes with a discussion of serum and vaccine therapy and the use of nonspecific protein injections.

Many readers will, of course, be especially interested in Dr. Billings' view on the use of vaccines in these conditions. He states that it soon became apparent that estimations of the opsonic indexes were not an adequate guide to the effects of the vaccines. Patients were then studied in two groups, one with vaccine and one without, and it was found that (p. 154):

> The final result was quite as satisfactory without as with vaccine, in patients suffering with chronic infectious arthritis and acute rheumatism.
>
> Patients suffering with chronic *Streptococcus viridans* endocarditis were not benefited by autogenous vaccines. Indeed, I believe some of them were made distinctly worse when moderately large doses of vaccines were used.

Dr. Billings' concluding statement as to the therapeutic use of vaccines is a classic admonition which deserves a prominent place on the desk of every physician—in fact it might well be framed and pointed out to the ubiquitous detail man who foists his ultra-unscientific preparations on the unwilling physician (p. 154):

> Based upon the work of Wright, but disregardful of the principles developed by him, therapeutic vaccination has progressed in this country into an irrational fad which is intensified and made degrading to the medical profession and harmful to the patients by commercial greed.
>
> We are forgetful of the principles of medical practice of our fathers. They recognized the influence of old age, exposure to extreme cold, poverty and poor nutrition, physical and mental exhaustion, faulty personal hygiene and other debility-producing factors in the causation and also in the prolongation of infectious and other diseases. They also recognized the necessity of the removal as far as possible of all these contributory etiologic factors in the management of the patient. The modern vaccinationist pins his faith on the advertised specific virtues of stock vaccines, which he may employ in polyvalent form to insure a sure-shot effect. He believes vaccines will arouse specific defenses in the tissues of the patient in spite of all contributory etiologic factors of disease. Therefore, the rational diet, proper baths, passive and active exercise, correction of personal uncleanliness and alcohol misuse are neglected. The practitioner usually is ignorant of all laws of immunology. It is this want of knowledge which makes him believe the ridiculous statements made by the manufacturers of vaccines.
>
> Modern experimental investigation of the physiologic action of drugs has done much to restrict the abuse of drug therapy of the past. So, too, must the practitioner be made acquainted with what we know and do not know of immunology. We must restrict the therapeutic use of bacterial antigens to those conditions which the known laws of immunity and scientific clinical experience have proved to be safe and of value.

The final statement (p. 157) is:

> The mode of action of the nonspecific albumose antigens, injected intravenously, is not well understood. Their use in acute and chronic infectious diseases affords a fruitful field of combined research by the immunologist and clinician.

As readers of The Journal know, many new studies in this field are beginning to appear in medical literature.

The book is slightly marred by a few minor typographical errors, but these, of course, will be caught in the next impression.

The American Encyclopedia and Dictionary of Ophthalmology. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology and Head of Department, College of Medicine, University of Illinois. Volume 9—Institutions for the Blind to Lemotes. Cloth. Price, $6. Pp. 6419 to 7190, with illustrations. Chicago: Cleveland Press, 1916.

This volume maintains the high standard of its predecessors. There are so many articles of merit that it is impossible to enumerate them. There is one, however, of such transcendent excellence as to demand special mention. This is Dr. Shastid's masterly monograph on the "Legal Relations of Ophthalmology." The interest of this article is by no means confined to the special branch of medicine with which it purports to deal. In the introductory part the general question of technical evidence in this and other countries is treated, and the judicial organization is briefly but sufficiently explained. This part of the article should be read by every medical man and every person interested in the question of expert testimony.

The Medical Record Visiting List, or Physicians' Diary for 1917. Leather. Price, $1.50 (for 60 Patients a Week). New York: William Wood & Co., 1916.

The Physician's Visiting List (Lindsay & Blakiston's) for 1917. Leather. Price, $1.25. Philadelphia: P. Blakiston's Son & Co.

These lists have been issued for 1917 with revised tables of dosages in apothecary and metric systems, based on the new pharmacopeia. They contain the usual ruled pages for entering daily calls and visits, memorandums, consultations, obstetric engagements, vaccinations, deaths, addresses, and cash account. Extra pages are devoted to tables of weights and measures, duration of pregnancy, treatment of poisoning, etc. The books are nicely prepared in leather covers with a pocket for extra papers and a pencil in each. Perhaps three fourths of the general practitioners of the country use these books as the first step in daily bookkeeping. They are a valuable accessory to businesslike practice.

Social Medicine, Medical Economics and Miscellany

NOTES ON ONE THOUSAND, THREE HUNDRED AMBULANCE CALLS IN NEW YORK

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The character of work and the methods employed in an emergency ambulance service are of interest not only to the general practitioner, but perhaps more particularly to those who are contemplating engaging in such a service. The fact that there has been no description of this type of work in recent years prompted the writing of the following brief account of a six months' service in New York.

New York is divided into ambulance zones, the ambulance calls of each zone being answered by a given hospital, which acts in cooperation with the police department. Each of these hospitals maintains from two to four ambulances, and in case these are all out when a call comes in, it is referred to the hospital in an adjoining district.

Any citizen who is sick or injured is entitled to the ambulance service. An ambulance may be summoned (*a*) by asking a policeman, who is expected to satisfy himself that it is really needed before calling in from the signal box, or (*b*) by calling either police headquarters or the hospital directly, giving one's own name and address and the nature of the case. When a call is received in the latter way, a patrolman is dispatched at once from the nearest police station to the scene of the call. Prisoners in the police stations are also treated by the nearest "ambulance surgeon."

The district of the New York Hospital includes the territory bounded by Forty-Second Street, Fourth Avenue, Fourteenth Street and the Hudson River. The service is so arranged that on alternate days the second assistant house surgeon answers all first calls of the ambulance, and is on first call for patients coming to the accident room from 6 a. m. until the following 6 a. m. The second assistant house physician answers the second calls of the ambulance, and the third calls are taken by the other second assistant house surgeon who was on first call the preceding day, except during the six or nine hours he is off duty. During the twenty-four hours on first call, the ambulance man averages about fifteen calls (twenty-three being a maximum). He is on duty for six months, and answers in this time from 1,200 to 1,400 calls.

TABLE 1.—CHARACTER OF CASES

Condition	Number
Lacerated wounds	269
Contusions and abrasions	171
Fractures, 71, and possible fractures, 34	105
Alcoholism, acute and chronic	90
Gastro-enteritis, etc.	66
Syncope ("fainting spells")	46
Hysteria	45
Dead on arrival	44
Epilepsy	35
Cardiac and cardiorenal cases	25
Tuberculosis	24
Diagnosis uncertain	24
Psychopathic cases	24
Arthritis and allied disorders	20
Labor	19
Pneumonia, 11, and suspected pneumonia, 8	19
Sprains: ankle, 11, wrist, 2, back, 2	15
Incomplete abortion	14
Appendicitis, 12, and suspected appendicitis, 2	14
Hemiplegia 5, cerebral hemorrhage, 6, and cerebral neoplasm, 2	13
Dysmenorrhea	12
Burns	12
Gonorrhea, chiefly epididymitis	10
Poisoning: gas, 3, strychnin, 1, iodin, 1, phenol (carbolic acid), 1, smoke, 3	9
Heroinism	8
Salpingitis, 4, metrorrhagia, 2, endometritis, 1, vulvovaginal abscess, 1	8
Dislocations: shoulder, 4, thumb, 1, little toe, 1	6
Perforated gastric ulcer	5
Miscellaneous, including convulsions, 5, erysipelas, 5, gunshot wounds, 4, poliomyelitis, 4, asthma, 4, rectal abscess, 4, carcinoma, 3, cholelithiasis, 2, tonsillitis, 2, chorea, 2, nephrolithiasis, 1, large uterine fibroid, 1, measles, 1, influenza, 1, vomiting of pregnancy, etc.	155

The disposal of patients for whom the ambulance has been called is left to the discretion of the ambulance surgeon. Either he may (*a*) treat the patient outside the hospital (in his home, the police station or elsewhere) as in the case of small lacerated wounds, hysterical attacks, etc., or (*b*) he may bring the patient to his own hospital where either he may treat the patient himself, or, if the injury or disease is of a more serious nature, the patient is admitted to the ward and seen by the house surgeon or physician, who in turn consults the attending surgeon or physician. Patients with chronic conditions, including pulmonary tuberculosis, acute venereal diseases and alcoholism, are taken directly to Bellevue, the large city hospital.

The ambulance surgeon's bag contains a very practical outfit, including sterile instruments, gauze, needles, suture materials, and rubber tissue drains, razor, scalpel, mouth gag, stomach tube, sterile catheter, tracheotomy tube, aromatic spirits of ammonia, usually administered by inhalation, tincture of iodin, soap solution, collodion, whisky, chloroform, alcohol and ether, ergot, baby cord, argyrol, nasal tampons, amyl nitrite pearls, and a hypodermic outfit with solutions of the commoner drugs in rubber-capped vials. In the ambulance are kept padded splints of various sizes, bandages, boric ointment and sodium bicarbonate solution.

The character of the cases is quite variable, and may best be understood by reference to Table 1, which shows the diagnoses made, some of which, however, proved to be incorrect. The ambulance man is expected to make a diagnosis in the minimum of time, his chief concern being, "Is the patient's condition serious enough to warrant his being taken to the hospital?"

The lacerated wounds were chiefly of the scalp, and the majority of these patients were alcoholic, the injuries being sustained principally in falls or in fights, although there were many exceptional cases, as one of a patient who was struck on the head by a bolt which fell several stories from a structural steel work. Street accidents, particularly those due to automobiles, accounted for a large number. Fourteen of the 269 cases were stab wounds of varying extent, from a wound which laid wide the cheek, to multiple futile hacks with a penknife. The severest lacerated wounds seen were in the cases of a longshoreman whose chest was torn through to the pleura and of a boy of 9 who had been run over by a heavy motor truck. The smaller wounds were treated by tincture of iodin, a few horsehair sutures and a sterile dressing, and the patients were referred to a hospital for further treatment. The more severely injured were brought directly to the hospital.

In the class of cases under the heading "contusions and abrasions," the chief interest lay in the responsibility of excluding fractures or possible fractures.

The fractures and possible fractures comprised an interesting group whose variety is indicated by Table 2.

In the cases of fractures of the long bones, the clothing was rarely cut away, but a splint of adequate length (from foot to axilla in cases of fractured femur) was carefully bandaged on outside the clothing before the patient was moved. A considerable number of the fractures were set and put up in molded plaster-of-Paris splints at the hospital by the ambulance surgeon himself. In compound fractures an attempt was always made to place sterile gauze over the wound before applying the splint. Two of the severest cases of this class were an attempted suicide in front of a subway train in which the patient sustained a compound fracture of the leg, and the other a "jitney-bus" crash in which the two patients sustained a compound fracture at the shoulder and a compound fracture of the leg, respectively. The cases classed as "possible fractures" included those in which the possibility of fracture could not be excluded. In these first-aid treatment should be identical with that of actual fractures.

The alcoholics presented an interesting but uninspiring group. Most of them were chronic alcoholics, the classical "bum" of common parlance, worthless derelicts with shaking hands, without jobs, whose beds were the park benches and whose blankets were newspapers. Those with delirium tremens varied from the harmless "rat hunter" to those violent ones whom only the policeman's "nippers" could subdue. The acute alcoholic coma, which caused the friends or bystanders to think the patient on the verge of death, was treated by having the extremities firmly held by the strongest persons around (the policemen) and by holding a large piece of gauze saturated with aromatic spirit of ammonia tightly over the nose and mouth. The result was generally startling, and after a few emphatic remarks the patient would get up and walk home. An ambulance service tends to give one an alcoholic point of view, and the temptation to forget that the alcoholic may suffer from other diseases as much as any one else is the ever-present danger of the ambulance surgeon. I shall not forget one case of a bedraggled woman found in the street at 3 a. m., whom I thought drunk, and took to the police station. I attempted to revive her by compelling her to inhale the usual aromatic spirit of ammonia, but she died within ten minutes after her arrival. This was a lesson not to be forgotten.

TABLE 2.—FRACTURES AND POSSIBLE FRACTURES

(*a*) Fractures	Number
Humerus	3
Clavicle	2
Skull	9
Colles'	5
Patella	2
Nose	4
Fibula	3
Femur	3
Tibia	6
Radius and ulna	1
Jaw	3
Vertebra	1
Sacrum	1
Small bones of foot	4
Ankle	3
Compound, including arms, legs, fingers, etc.	17
Miscellaneous	4
	71
(*b*) Possible Fractures:	
Skull	14
Ribs	8
Small bones of foot	5
Vertebra	4
Ankle, etc.	3
	34

The group classed as hysteria comprised patients who best were calculated to try one's patience and whose treatment, moreover, was the most difficult of any of the ambulance patients. The subjects were chiefly young and emotional girls engaged in the intensive painstaking work of clothing manufacture, in which they seem constantly to be subjected to a high pressure to increase their output of work and not uncommonly are antagonized by the hectoring of selfish supervisors. The patient is generally found surrounded by a group of excited girls whose often frantic efforts to revive or to quiet her generally aggravate her condition. She may be almost rigid and anesthetic, or may be crying wildly. Tact, a few comforting words or the suggestion of a new train of ideas occasionally suffice to bring the patient back to normal condition. More commonly the best results seem to be obtained by refraining from sympathy, of which the patient probably has had generous measure before the physician has arrived, and by employing harsh, vigorous words, or, as a last resort, forcibly compelling the patient to inhale aromatic spirit of ammonia. This rarely fails to bring about indignation—and a cure.

In the forty-four cases in which the patient was found dead on arrival, no attempt was made to assign a cause of death, this being a duty of the coroner's physician. The ambulance man has merely to pronounce the patient dead. The causes were often apparent, however—numerous cardiac failures, suicides, chiefly by means of illuminating gas, falls from high buildings, and in one case each revolver bullet, elevator accident, and a wagon wheel passing over the head of the patient (a boy).

Several desperate cases of pulmonary edema were seen. By the administration of atropin and morphin it was usually possible to get these patients to the hospital.

No deliveries were made on ambulance calls. Patients in labor were taken to a hospital as rapidly as possible. When, as was frequently the case, the baby was born by the time the physician arrived, the cord was cut, the placenta expressed if necessary, and the patient was invariably offered the opportunity of going with her baby to the hospital.

Though there are only eight cases of heroinism listed above, not a few of the other patients were drug habitués. These patients never told where they obtained the drugs, but almost invariably attributed the acquisition of their habit to "bad company."

There were a number of major surgical emergencies. Three perforated gastric ulcers were recognized. In one of four days' standing, with general peritonitis, the diagnosis was missed; while in another case in which the diagnosis of perforated gastric ulcer was made, necropsy a few days later showed an acute hemorrhagic pancreatitis. There were a number of cases of acute appendicitis, two cases of acute cholecystitis, two cases of ruptured ectopic gestation and one of intestinal obstruction.

The four dislocated shoulders were successfully reduced on the ambulance calls. The patients with erysipelas were taken to Bellevue Hospital, and the board of health was notified of the discovery of cases of contagious diseases.

The ambulance service brings the physician into all kinds of places, from the Eleventh Avenue saloon fights to the Waldorf, from accidents in the crowded shopping districts to the squalor of the most crowded tenements, into the holds of ships, up in the iron framework of new buildings, behind the scenes at the theaters, and sometimes to spectacular fires. On one occasion I was given rubber boots and lowered in an iron bucket down a concrete shaft to the great Catskills aqueduct nearly 300 feet below Broadway. For two hours I was in a wreck in the entrance to a Pennsylvania Railroad tunnel while a heroic conductor gamely kept his nerve until the steel wreckage which held his foot fast had been cut away by the oxyacetylene flame. I have seen a blind man who had bled to death from a ruptured varicose vein while his friends looked on helplessly, and the touching efforts of a Frenchman, stricken suddenly dumb by a cerebral hemorrhage, to write us of his condition. On one call an excited policeman rushed up saying, "Doc, this guy's taken iodin and gone mad." But energetic lavage and subsequent questioning revealed the fact that he had tried to frighten his mother-in-law by spilling the iodin on his shirt front. The most bizarre call occurred in the case of F. J. M., Oct. 30, 1916, who, while under the influence of alcohol, fell ten stories through an iron grating onto the upturned nozzle of an automatic sprinkler. The impact of his body not only turned on the sprinkler, but simultaneously sent in a call to the city fire department. The firemen rushed into the building with their fire hose and, finding no fire, turned the water on the unconscious man, thus reviving him, much to his astonished indignation. This man recovered in spite of fractures of a humerus, tibia and several ribs, and multiple lacerations.

A word of genuine praise must be said of the police with whom my duties have associated me during the last six months. Their willingness to be of any service to the physician, their good nature and patience under the most trying circumstances, and their unfailing courage and faithful performance of their duties have aroused my sincerest admiration.

In conclusion, two well-tried rules which are applicable to ambulance surgeons might be suggested: never lose your temper, and play safe.

8 West Sixteenth Street.

Medicolegal

Validity and Application of Law Against Deceptive Advertising

(State Board of Medical Examiners vs. Jordan (Wash.), 158 Pac. R. 982)

The Supreme Court of Washington reverses a judgment of the superior court which reversed an order of the board revoking the defendant's license. The complaint alleged: "That the defendant is a licensed practitioner of medicine and surgery under the laws of the state of Washington; that he advertised his medical business in the Seattle *Daily Times* of Wednesday, Oct. 1, 1913, and in sundry other editions of said Seattle *Daily Times* during the latter part of 1913 and the year 1914; that such advertising of his medical business was such as intended or has a tendency to deceive the public or impose upon credulous or ignorant persons and so be harmful or injurious to public morals or safety, in which respect defendant has been guilty of unprofessional conduct." The supreme court says that this complaint was sufficient. The statute has wisely allowed the defendant a first hearing before brothers in his own science. To say that such persons, unacquainted with the law, must conduct these examinations or invite them with legal nicety will not do. This court so held even on misdemeanor for practicing without a license. The courts uphold the less technical practice. The defendant's rights were easily protected either by demand for particulars or by motion to make more definite. The case was not criminal by its nature. The legislature had an undoubted right to classify this proceeding, and it did so by providing that appeals from the board should stand for trial "in all respects as ordinary civil actions, and like proceedings be had thereon."

The portion of the statute more particularly involved in this case was that part of the section defining unprofessional conduct which includes: "All advertising of medical business which is intended or has a tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful to public morals or safety." It was contended that there is an uncertainty in this subdivision, and that it furnishes no standard by which either board or court can determine what advertisement offends. But the statute enumerates seven things that constitute unprofessional conduct, and the one relating to advertisement could not well be made more specific. To describe in express terms a faulty advertisement is practically to instruct the defendant how to evade it, and as to the limitless variations in language, symbols and verbal or pictorial allurements, no human ingenuity could possibly anticipate and forestall them. To the court there seems a happy reply on any basis to arguments of this sort. Under the Washington statute the defendant is not tried on the advertisement alone, but on the advertisement and his capacity, qualifications or actions to fulfil it. The appeal to the superior court secures a trial de novo, or anew. In such trial a proper line of proof is not only the advertisement, but also the competence of the defendent to do what he advertises he can do. The issue then becomes like that in getting money by false pretenses, which no legislature has ever been required to define. The crime is determined not from the representations alone, but from all the actions and circumstances in which intent can be gathered. The Washington law has not prevented a practitioner from advertising cures or inviting the public to his healing, but only advertisements to beguile. It attacks not mere unethical conduct, but wrongful conduct. If from the testimony it appears that he either does not cure the diseases, never has cured them, cannot cure them, or does not know what they are, the law has then a right to say it is advertising to deceive. It is not merely unethical, but immoral, to get money from the poor, the simple or the ignorant by advertising the cure of what is incurable, and the courts will call that incurable which the present stage of knowledge so pronounces. Nor was it incumbent on the state to show whether actual harm had yet come to any one through this practitioner. That is not material. The state aims to protect the purse as well as the health from quacks, and the other burden, if cast on the board, would, through the many confusing and contributing influences on the health of patients, make proof exceptionally difficult. Neither was the court impressed by some twenty witnesses testifying to the defendant's cures, nearly all the patients being uncertain what their ailments really had been.

Illegal Practicing Without Charging Fees — Not Emergency Service

(People vs. Vermillion (Calif.), 158 Pac. R. 504)

The District Court of Appeal of California, Second District, affirms a conviction of the defendant of having practiced a system and mode of treating the sick and afflicted without possessing a certificate issued by the state board of medical examiners entitling him so to do. The court says that it was contended that he could not be properly convicted unless it were shown that he charged a fee for his services, but the court thinks that this contention must be decided against him. The statute under which the prosecution was had makes it unlawful for a person to practice any art of healing without having first obtained a certificate from the medical board, and the court thinks the act is intended to, and does, cover such practice whether the service is gratuitous or not. However, it was shown in evidence by the defendant's own testimony that he had engaged in the practice of a healing art, styling himself a "chiropractic," for a period of five years immediately preceding the date of his arrest. It was shown that he maintained a regular office in a business building in the city of San Diego, and there was testimony showing that he had treated in a professional way three different patients who were suffering from bodily ills. There was evidence also that in one case payment was offered and accepted by him in return for the services rendered. The defendant admitted the receipt of this money, but declined to state whether he regularly made a charge for his services. The fair inference from all the testimony, which the court thinks the jury was entitled to draw, was that he regularly practiced a healing art, and, furthermore, that he did so for remuneration. Some contention was made that the service which the defendant rendered to persons described in the evidence was in the nature of emergency service not prohibited by the medical act. There was no evidence tending to show that the services were of an emergency character, that is, services rendered by way of affording temporary relief until the services of a regular practitioner could be procured. The persons who were thus treated were shown to have previously had the attention of physicians, and their ailments were more or less of a chronic sort, and that the services of the defendant were sought, to some extent at least, as a last resort and after other practitioners had failed to afford relief. Treatment so rendered could not, in any sense, be classed under the head of "emergency service."

Society Proceedings

COMING MEETINGS

Congress on Medical Education, Public Health and Medical Licensure, Congress Hotel, Chicago, Feb. 5-6.

Western Roentgen Society, Hotel Sherman, Chicago, Feb. 16-17.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Twenty-Ninth Annual Meeting, held at White Sulphur Springs, W. Va., Dec. 11-13, 1916

The President, Dr. Thomas S. Cullen, Baltimore, in the Chair

Biochemistry of Topical Applications: Use of Boric Acid in Septic Infections

Dr. Edward H. Ochsner, Chicago: Osmosis is not dependent on the semipermeability of the membranes, but on the chemical affinity different substances have for each other. Concentration of the solution is also an important determining factor. Clinically, laboratory experiments can be duplicated by using solutions of boric acid and water as a wet dressing. A saturated solution of boric acid when applied to the skin will invariably appear in the urine in appreciable quantities within an hour, and if a wet dressing is kept in place for a considerable time, the amount of boric acid which appears in the urine may rise as high as 0.2 per cent. In order to be effective, boric acid must be used in saturated solution. While boric acid does not destroy pathogenic bacteria, it greatly reduces their virulence. Wet dressings of boric acid are much more effective in streptococcus, *Staphylococcus albus,* and *S. citreus* infections than in any other type of infection. In order, however, that boric acid may reach its maximum of efficiency, some other directions should be observed, such as: absolute rest in bed; proper attention to elimination; relief of pain, if possible without the use of opiates, by the addition to the solution of from 10 to 33 per cent. of 95 per cent. alcohol; painting the inflamed area with 95 per cent. phenol (carbolic acid) until it turns white, and then removing the excess of acid with alcohol; elevation of the extremity with the muscles surrounding the involved joint at equilibrium; incision only when there is macroscopic evidence of pus and after a certain degree of immunity has developed. If incision becomes necessary, an Esmarch bandage should first be applied whenever possible, and then the incised wound should be swabbed with tincture of iodin before the Esmarch bandage is removed and the part should be manipulated as little as possible.

Treatment of Fractures of the Femur, Especially in the Old

Dr. George Tully Vaughan, Washington, D. C.: I do not believe in operating in every case of fracture of the femur or in putting foreign material into the tissues, except when necessary. For neck fractures, with impaction and good position, plaster of Paris is applied, with the limb in normal extension; with displacement of fragments, Whitman's extreme abduction and plaster; if this should fail to effect reduction, I use the open operation, and the use of a screw or other means should be considered. For shaft fractures, when Buck's and other methods of extension are not indicated and open operation is decided on, several methods may be used, preferably exposure of the fragments and their coaptation in such a way as to maintain their position by an external splint. In oblique fractures this can be done by the interlocking method, that is, inserting one of the sharp ended fragments into the medullary cavity of the other; in transverse fractures, by an intramedullary splint taken from the fractured bone. If it is necessary to use metal, the plates and bands are preferred to wire, nails and screws. For transverse fractures, I use Lane's plates, and for oblique ones the steel bands of Parham and Martin. No weight should be borne for four months on a femur which has been fractured, and good functional results should not be expected sooner than from six to twelve months.

Open Treatment of Certain Fractures of the Long Bones

Dr. H. Horace Grant, Louisville, Ky.: The advantage of directing the adjustment and fixation of the fragments in most fractures of long bones under the eye is so positive as to need only a safe and simple method for general adoption. Badly apposed, as well as ununited fractures of the long bones demand undelayed treatment by the open method. Fixation by absorbable ligatures requires as much or more manipulation as putting in plates, and wiring of the fragments accomplishes poor fixation with the drawback of the retained foreign body. The Lane plate in skilled hands accomplishes, perhaps, the best fixation, but carries the serious objection to the inexperienced of infection, and even when all seems to go well, later removal is often required. If by a simple inexpensive and safe method of fixation, not even involving the broken surfaces, approximation can be maintained, it should become the ideal method.

DISCUSSION

Dr. W. P. Carr, Washington, D. C.: I protest against the recommendation for operating so freely, and against the idea of fixing a long bone in alinement by means of screws, plates or bands. There are very few cases of fracture of the femur that require any operation at all.

Dr. A. A. Law, Minneapolis: The Maxwell-Ruth method of treatment is particularly applicable to fractures of the neck of the femur in old persons.

Dr. Alexius McGlannan, Baltimore: The essential point in the treatment of fracture of the femur is to reduce the fracture. The manner in which we fix the limb is a matter of relative indifference, because the bad results in treating fractures of the neck of the femur are due to the fact that the fracture is not properly reduced. It can be reduced by abduction, traction and inward rotation.

Dr. J. M. Mason, Birmingham, Ala.: With the assistance of the fluoroscopic table we have been able to determine immediately what we are accomplishing in reducing fractures.

Dr. E. D. Martin, New Orleans: One of the most valuable adjuncts in the treatment of femur fractures in old persons is the use of the Hodgen splint. I can recall at least fifty cases in which we made use of this splint with gratifying results.

Substitution of the Anal for the Vesical Sphincter in Certain Cases of Inoperable Vesicovaginal Fistulas

Dr. Reuben Peterson, Ann Arbor, Mich.: The operative procedure of substituting the anal for the vesical sphincter was suggested by Jobert in 1836 and Bérard in 1845. It was performed first by Maisonneuve in 1851, but his patient died. There were seven such operations from 1871 to 1881, twenty-two from 1881 to 1891, seven from 1891 to 1901, and there have been three since. Childbirth was given as the cause of the defects causing the incontinence in thirty-three of the forty-one cases. In four cases, incontinence followed removal of the urethra and parts of the bladder for malignant disease. Sloughing following typhoid and diphtheria, and a gunshot wound was the cause in one case each. In ten cases there were vesicovaginorectal fistulas, while in thirteen cases the urethra was destroyed. In all the cases, almost without exception, plastic operations had been tried but had failed. The woman should have the privilege of choosing such an operation in place of repeated attempts at plastic repair with failure. The procedure never will be an ideal operation, but is preferable to allowing the woman to suffer from urinary incontinence, even if intercourse is interdicted. The primary mortality of the operation should be nil. In only one instance in the forty-one cases was there a primary death, the first patient in the series, who died of septic phlebitis, an avoidable accident today. In only two cases was there primary union of the colpocleisis wound, but the resulting fistulas heal readily under caustic applications. In not a single case of the forty-one was there rectal irritation. There was no diarrhea, some patients even being constipated. Usually the urine is held from one to five hours with one or more formed stools a day. In twelve cases the women menstruated through the rectum. In nine cases the menstruation ceased after the operation without apparent cause. Ascending renal infection did not take place in any of the cases. The only doubtful case is that of Rose, in which the patient died ten months after the operation from nephritis which necropsy showed was not due to the operative procedures.

Cure of a Double Femoral Aneurysm by Proximal Occlusions with an Autoplastic Fascial Flap

Drs. E. G. Jones and C. E. Waits, Atlanta, Ga.: We partially constricted the femoral with an autoplastic flap dissected up from Poupart's ligament for the purpose of treating two aneurysms in the thigh. Twenty-six months after the operation the patient remained well, and there were no signs of the aneurysms. Function in the leg remained normal, except for some numbness about the calf. In order to discover if such a band would be dangerous from the standpoint of erosion and hemorrhage, and if, when so applied, there would be material danger of gangrene or loss of function, we treated the femoral twenty-four times in dogs with uniformly satisfactory results. The partial occluding band results in gradual complete occlusion of the vessel. Histologic examination from twelve to fourteen weeks after operation shows the fibrous band grafted about the circumference of the vessel.

Traumatic Aneurysm of Temporal Artery

Dr. J. Shelton Horsley, Richmond, Va.: Since 1896, only five cases of traumatic aneurysm of the temporal artery and its branches have been reported, besides two of my own. In neither of my cases was there any evidence of syphilis or other disease of the arteries. One was in a youth, aged 19, who received an injury in the right temporal region while playing basket-ball. This was immediately followed by a large hematoma which was partially absorbed, but resulted in a small pulsating aneurysm about one-half inch in diameter. Operation was done seven months after the injury under local anesthesia, the sac being excised after the arteries were ligated. The second case was in a boy, aged 9 years; with a somewhat similar history, being injured while wrestling. This aneurysm formed in the temporal artery just above the zygoma. It was excised under local anesthesia. There was no recurrence in either case.

Some Problems of Ureteral Surgery

Dr. William R. Jackson, Mobile, Ala.: Injuries to the ureter during hysterectomy are more frequent than is perceived at the time of the operation. Discovery of the injury is more often made several days after operation than at the time it is performed. It often means the sacrifice of the kidney of that side, and sometimes the death of the patient. It is better not to attempt to repair the ureter, if there is serious doubt of its accomplishment. Even if the operator is an expert, attempts at repair frequently result disastrously. Removal of the kidney would be better under such circumstances. A kidney should not be removed to cure a leaking ureter until one is sure of the presence of a perfectly sound kidney on the opposite side. It is frequently better to ligate the ureter doubly than to attempt to do an anastomosis. Before ligating, it is well to ascertain if a kidney is present on the other side.

Ureter Stricture

Dr. Guy L. Hunner, Baltimore: By far the greatest source of ureter stricture is some distant focus of infection. The diagnosis is made on the history, the urine examination, and the physical findings. I take definite issue with the prevailing opinion that dilatation of the kidney pelvis and ureter are due to infection. While the experimental work of Barney and others may lead to the view that the infection per se results in dilatation, one must remember that an inflammatory ureter with its extremely narrow lumen is more than likely to become partially closed at one of its normally contracted points and thus cause back pressure. Many of my patients with sterile urine and no history of previous infection have the dilated ureter and pelvis. The ideal treatment for stricture of the ureter is by dilation from the vesicle approach. In cases in which dilation cannot be accomplished by the vesicle approach, I advise extraperitoneal exposure of the ureter and retrograde dilation. This was done in eight of my first fifty cases with excellent results in six. Two of my early patients failed to obtain complete relief, probably because of insufficient dilation. Two of my first fifty patients had resection of the ureter with implantation in the bladder.

Cholecystitis With and Without Gallstones

Dr. George A. Hendon, Louisville, Ky.: Of thirty cases stones were present in eighteen, or 60 per cent. A history of stomach trouble existed in twenty-five, or 83 plus per cent. Nine cases, or 30 per cent., were jaundiced at some period in the history of the complaint.

Recurrence of Gallstones

Dr. John B. Deaver, Philadelphia: The failure to remove all the gallstones at the primary operation is the most potent cause of recurrence of symptoms. This adds emphasis to the arguments which surgeons are continually bringing forth of the importance of early operation. Kehr does not hesitate to lay much of the blame for recurrent gallstones on the medical man. He points out that in long standing cases the gallducts become dilated, and stones are apt to lodge in the recesses, so that they cannot always be removed or even be detected at operation, and thus give rise to renewed attacks of cholelithiasis. My experience, comprising practically 1,200 operations in the last six years for affections of the biliary passages, convinces me that the appendix, in turn, is the focus of infection for nearly all upper abdominal diseases. It is hardly necessary to dwell on the importance of early removal of even a slightly troublesome appendix in order to avoid future trouble. Disease of the biliary passages is essentially a surgical and not a medical proposition.

Choice of Operative Procedure in Cancer of the Rectum and Pelvic Colon

Dr. Charles H. Mayo, Rochester, Minn.: In the five years preceding 1916, our total operability was 53 per cent., but in the last three years it has risen to 71.8 per cent., indicating that a chance for cure is now being given to a larger percentage of patients with this otherwise hopeless condition than formerly. Of 753 patients a radical operation was performed on 430, with a general operative mortality of 15.5 per cent. Before 1910 the operative mortality was 17.8 per cent. From 1910 to 1913 it was 17.7 per cent., the operability being 51 per cent. In this earlier period a higher percentage of patients were seen late. In 1913, 1914 and 1915 the mortality was reduced to 12.5 per cent., the operability was raised to 71.8 per cent., and the operative efforts were more radical. Of the number of patients operated on, none less than three years ago, one third lived three years or more, and 28.3 per cent. lived five years or more. The patient with no anal control and with the sigmoid loop eliminated is much better off with an abdominal than with a perineal anus. If with loss of the anus the sigmoid loop can be retained, the control will be fair, excepting in case of loose bowel movements. Gas, however, is not controlled. While the union of resected intestine within the abdomen is not followed by stricture, that affected outside of the peritoneal-lined abdomen is practically always followed by stricture, and will usually necessitate some form of colostomy after much effort to maintain the lumen. If by abdominal procedure the division of the bowel below the growth can be made at a point which will leave at least one-half inch or more of peritoneal covered rectum within the culdesac, and the area of the disease to be removed is not too great to prevent coaptation of the divided ends of the bowel, a tube resection can be done with preservation of the control of the anal outlet as a one stage procedure. Cancer of the rectum and rectosigmoid which cannot be removed radically with the preservation of the peritoneal-covered distal bowel is best treated by abdominal exploration, permanent abdominal colostomy and a Kraske removal of all of the rectum at a period one week later—a two stage operation. Cancer of the lower sigmoid extending nearly to the rectosigmoid is well treated by the Mikulicz method, separation of the mesentery and elevation of the diseased loop through the exploratory incision to a position above the abdomen.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

December, 1916, CLII, No. 6

1 *Comparative Value of Methods of Treating Tetanus. C. L. Gibson, New York.—p. 781.
2 *Pathologic Changes in Sympathetic System in Goiter. L. B. Wilson, Rochester, Minn.—p. 799.
3 *Etiology of Pellagra; Consideration of Vitamin Deficiency. E. J. Wood, Wilmington, N. C.—p. 813.
4 *Salvarsan in Treatment of Double Infections, Tuberculosis and Syphilis. N. B. Potter, New York.—p. 823.
5 *Clinical Investigations on Intestinal Autointoxication, Especially as Regards Question of Specificity of Toxin. T. R. Brown, Baltimore.—p. 845.
6 Stock-Brainedness, Causative Factor in So-Called "Crossed Aphasias." F. Kennedy, France.—p. 849.
7 Circumscribed Cysts of Leptomeninges; Report of Successful Operative Case. F. M. Hanes and A. M. Willis, Richmond, Va.—p. 859.
8 *Treatment of Fracture of Spine. N. Sharpe, New York.—p. 865.
9 *Etiology and Prevention of Tuberculosis from Sociologic Points of View. W. C. White, Pittsburgh.—p. 880.
10 Relation of Tuberculosis of Bronchial Lymph Nodes to Diagnosis and Treatment of Tuberculosis of Lungs. M. E. Lapham, Highlands, N. C.—p. 887.
11 *Case of Diabetes Insipidus with Peculiar Necropsy Finding in Posterior Lobe of Pituitary Body. F. P. Weber and H. Schmidt, London.—p. 892.

1. **Treatment of Tetanus.**—Gibson's personal experience in the treatment of tetanus is limited to eight cases; three patients died while five survived. Of these the first two fatal cases did not have the benefit of the more modern or radical methods, whereas the last six are characterized by having received antitoxin intraspinally. Of these six patients so treated since 1907 only one died, a mortality of 17 per cent. Gibson advises that antitoxin treatment be begun immediately on suspicion of tetanus developing rather than waiting for the classical symptoms. It should be given first into the wound or region of the wound, say 1,500 units; intraspinally, without an anesthetic, unless the treatment of the wound calls for the administration of a general anesthetic, 5,000 to 20,000 units. In the course of the first twenty-four hours, in addition to the above, 10,000 to 20,000 units should be administered intravenously in divided doses, say two or three. Antitoxin intravenously from 5,000 to 15,000 units should be given the next day no matter whether the symptoms remit or increase. On the third day if, notwithstanding the treatment, the patient's symptoms continue very severe or appear worse, the intraspinal treatment should be repeated. If after this treatment the patient holds his own or improves, the intraspinal injection need not be repeated but the daily injection of antitoxin intravenously should be given until obvious remission or cure results. One of Gibson's patients received a total of 169,000 units.

2 and 3. Abstracted in The Journal, June 17, 1916, pp. 2031 and 2032.

4. **Salvarsan in Tuberculosis and Syphilis.**—A review of the literature leads Potter to say that the prompt employment of salvarsan or neosalvarsan is indicated in latent, chronic and moderately active tuberculosis; (*a*) as soon as the nature of an added infection is diagnosed with reasonable probability to be syphilis; (*b*) whenever the history, signs, or symptoms strongly suggest a previous syphilitic infection, particularly if such a patient is not improving on the usually successful hygienic and climatic treatment for tuberculosis; but (*c*) active tuberculosis, acute tuberculosis and diffuse miliary tuberculosis are usually definite contraindications to the use of these new arsenic preparations, although in both the first two mentioned groups there will be found many syphilitic patients on whom a small dose of salvarsan may well be tried and, unless followed by untoward effects, cautiously repeated in gradually increasing doses. When tuberculosis infects or becomes active in a patient with secondary, tertiary or even latent syphilis, the careful employment of one of these drugs is also indicated. The more active the tuberculosis, the smaller should be the initial dose; the slower its increase, the less frequent the interval, and the greater care and watch-

fulness required. Tuberculin-like focal reactions may follow their administration, should be carefully watched for, and if present, the location, intensity and character will frequently guide in the selection of the next appropriate dose or interval.

5. **Intestinal Autointoxication.**—The specificity of toxin or bacteria in certain cases of so-called intestinal toxemia or bacteriemia was studied by Brown in three cases of chronic eczema and urticaria, one of pruritus, two of so-called bilious headache and one of choroiditis. This study suggested that in the intestine certain substances are produced which in some instances are possessed of specific action associated with a hypersensitiveness to certain proteins not in themselves toxic but possibly capable of producing a reaction because of an acquired hypersensibility, and that therapeutically a marked improvement in symptoms and even a complete cure may be brought about by the elimination of these substances from the dietary. It is also suggested to Brown by a study of these cases that by giving these foods in gradually increasing amounts a marked increase in resistance may be produced. That in certain cases at least the symptoms are better explained on the basis of a bacterial infection of intestinal origin rather than on that of a toxemia, and that in various cutaneous lesions, testing the cutaneous sensibility by intradermal injection of various proteins is of real value in determining whether or not the condition may be due to certain toxic bases of intestinal origin derived from the decomposition of certain protein foods. These reactions are apparently specific in character, and therefore these tests of cutaneous hypersensitiveness to various proteins probably cannot be used as criteria of other conditions best interpreted as protein intoxications with manifestations elsewhere than in the skin.

8. **Treatment of Fracture of Spine.**—In every case of fracture of the spine with damage to the cord, excepting only complete obliteration of the bony canal, Sharpe says, an early laminectomy is urgently indicated to relieve the cord of the damaging effects of bone pressure, hemorrhage and edema, and to give the nerve tissue the best possible chance for repair.

9. **Etiology and Prevention of Tuberculosis.**—For each 100,000 population White wants a hospital of 200 beds, a dispensary and an open air school. There should be fifteen nurses, of whom five are visiting social service nurses and four or five physicians. Such an equipment might easily expand and include all public activities, child welfare, pneumonia, syphilis and other health and public welfare problems. The expense should be borne as the educational expense is borne, and demand made mandatory by state law. Large centers of population would be looked on as but the multiplication of units of 100,000, and the equipment would be multiplied accordingly. Each unit would be self-governing, but centralized in some central governing board which would establish the uniformity of the work and the prevention of overlapping.

11. **Diabetes Insipidus and Pituitary Body.**—A tuberculous man suddenly developed diabetes insipidus about two years before his death, which was due to pulmonary and laryngeal tuberculosis. At the necropsy a peculiar change in the posterior lobe of the pituitary body was found. The pituitary fossa was not much, if at all, enlarged, but the posterior lobe (pars nervosa) was relatively enlarged in proportion to the anterior lobe (pars glandularis), in fact, almost completely enclosed the anterior lobe, and was of a yellowish-brownish color, the color appearing to spread right into the posterior wall of the pituitary fossa. The substance of the anterior lobe presented the normal glandular structure, but the posterior lobe contained large clumps of large granular cells with small nuclei, which stain deeply with hematoxylin. Their cytoplasm has a granular appearance and many of them take on the sudan III coloration well. In others of these cells, which stain less well with sudan III, the cytoplasm appears to be full of minute crystals, doubtless fatty acid crystals of some kind; and probably it was a transformation of the lipoid droplets into fatty acid crystals that caused these cells to take on the sudan III stain relatively badly. Weber and Schmidt think that these cells, which are possibly of neuroglial origin, may be regarded as one kind of "compound granular cells" (*Körnchenzellen*), the presence of which in considerable numbers forms a feature in various abnormal conditions of the central nervous system. Doubtless the lipoid-containing cells in question gave the posterior lobe substance of the pituitary body in the present case its decided yellowish-brownish pigmentation.

American Journal of Public Health, Boston

December, 1916, VI, No. 12

12 Psychiatric Clinics in Schools. J. T. MacCurdy, New York.—p. 1265.
13 Relation of Alcohol and Syphilis to Mental Hygiene. F. E. Williams, Boston.—p. 1272.
14 Relation of Social and Economic Factors to Mental Hygiene. C. M. Campbell, Baltimore.—p. 1278.
15 Registration of Mental Disorders. A. J. Rosanoff, Kings Park, N. Y.—p. 1283.
16 Malaria as Public Health and Economic Problem in United States. J. W. Trask.—p. 1290.
17 New United States Life Tables, Their Purpose and What They Show. J. W. Glover, Ann Arbor.—p. 1298.
18 Pathogenicity and Longevity in Diphtheria Bacilli. F. W. Schofield, Seoul, Korea.—p. 1303.
19 Refuse and Garbage Disposal; General Survey. L. L. Tribus, New York.—p. 1307.
20 Standard Methods of Bacteriologic Analysis of Milk. M. P. Ravennel.—p. 1315.
21 Bibliography of Tuberculosis in Its Relation to House Infection and Housing Betterment. J. Ford, Cambridge, Mass.—p. 1326.

Boston Medical and Surgical Journal

December 28, 1916, CLXXV, No. 26

22 *Diagnosis and Clinical Characteristics of Gout. J. H. Pratt, Boston. —p. 925.
23 *Anaphylactic Action of Cereal Grain on Respiratory Tract. J. A. Turnbull, Boston.—p. 931.
24 Routine Mental Tests as Proper Basis of Practical Measures in Social Service. H. M. Wright, Boston.—p. 934.
25 Multiple Primary Heterogeneous Tumors; Case of Two Primary Malignant Tumors, One of Kidney, Other of Stomach with Metastases from Each in Liver. S. Graves, Louisville, Ky.—p. 949.

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26 Abdominal Pain. H. Jackson, Boston.—p. 1.
27 Beneficial Results of Prenatal Work. M. M. Davis, Jr., Boston. —p. 5.
28 *Studies of Stomach in Syphilis. F. W. White, Boston.—p. 11.
29 Results Obtained by Class Method of Home Treatment in Pulmonary Tuberculosis During Period of Ten Years. J. H. Pratt, Boston.—p. 13.
30 Correlation Between Systolic Blood Pressure and Reflex Vasoconstriction of Skin (Anemic Dermography). E. A. Tracy, Boston.—p. 15.
31 Report of Dietary Study of St. Paul's School, Concord, New Hampshire. F. C. Gephart, New York.—p. 17.
32 Adenomyoma of Rectovaginal Septum; Report of Case. F. S. Kellogg, Boston.—p. 22.

22. **Diagnosis and Clinical Characteristics of Gout.**—One should always be suspicious, says Pratt, that an attack of acute febrile inflammation of the joints occurring after the age of 35, in a person who has never had a previous attack of rheumatic fever, is not rheumatism, but gout. Acute endocarditis, which is such a common complication of rheumatic fever, does not occur in gout. Another aid to differential diagnosis is the frequent association of gout and chronic interstitial nephritis, and the rarity of acute rheumatism and chronic Bright's disease in the same person. Some of the cases of polyarticular gout Pratt has studied have closely simulated rheumatism. In one case the correct diagnosis was not made by the eight or ten physicians who had treated the patient during the twenty-seven years that he had suffered from recurrent attacks of gout. All had regarded the disease as rheumatic fever. Pratt did not feel sure of the diagnosis until he saw the swelling on his elbow, which presented the typical picture of a chronic gouty olecranon bursitis. The prompt relief from pain produced by colchicum in gout is so striking that many have asserted that this drug is a specific in gout. It is certainly an aid in diagnosis, as colchicum does not have such a marked effect in relieving the pain in acute rheumatism or in other conditions which may be confounded with gout. Salicylates rarely have any marked effect in controlling the pain of acute gout. The relief from the severe pain of gout by atophan is even more striking than that produced by colchicum. Its value in diagnosis is probably less, as it often

is of considerable aid in checking the pains of nongouty arthritis.

23. **Anaphylactic Action of Grains on Respiratory Tract.**—Turnbull demonstrates the cutaneous reaction produced by proteins of wheat, barley, oats, corn and rice, and the anaphylactic action of the proteins of these grains, especially wheat, on the respiratory tract. He has taken wheat as a standard, on account of its frequent and common use in daily diet. He has obtained reactions to wheat in 100 cases. A series of cases giving wheat reactions were tested with yeast; in no case was the reaction obtained. One would thus form the conclusion that the yeast which enters in the making of bread has no anaphylactic action. A series of pollenosis cases showed skin reactions to grain as follows: wheat 100 per cent., barley 66 per cent., oats 64 per cent., rice 82 per cent., corn 90 per cent. On the other hand, not all grain cases showed skin reactions to pollen of trees and plants. Many pollenosis patients who avoided bread and boiled cereals, and used as substitutes those high, dry heated prepared cereals, to which they were not sensitive, found their symptoms diminished. Pollenosis cases were desensitized in less time when eating these prepared cereals to which they were not sensitive.

28. **Studies of Stomach in Syphilis.**—In a group of 600 cases of syphilis with strongly positive Wassermann reactions were found forty-four with prominent stomach symptoms, after excluding patients with hepatic cirrhosis, gumma of liver, nephritis and tabes. In thirty-five cases no definite lesion of the stomach was proved, in nine actual syphilitic or coincident lesions were found (ulcer, gumma or cancer). Two cases were proved cancer at necropsy, five patients had ulcer, syphilitic or coincident, two had syphilitic induration or gumma. The results of treatment are usually prompt and striking; the majority improve, even patients with severe complications like stenosis, perforation and hemorrhage. A good portion are cured, but a small group do badly in spite of thorough treatment. Gummas and induration melt away, but scar tissue does not dissolve and some deformity usually persists in the cases with gastric lesions. Gastric secretion may remain absent after symptoms have disappeared. In the thirty-seven cases without definite stomach lesion sixteen (43 per cent.) are well; eighteen (48 per cent.) improved and three (9 per cent.) no better. In seven cases with stomach lesions (omitting the two cancer cases) three (43 per cent.) are well, and four (57 per cent.) greatly improved.

Cleveland Medical Journal

November, 1916, XV, No. 11

33 Individuality of William Harvey. J. J. R. Macleod, Cleveland.—p. 687.
34 Drainage in Hydrocephalus; Report of Case. A. Peskind, Cleveland.—p. 693.
35 Encephalocele; Report of Case. A. Peskind, Cleveland.—p. 700.
36 Trauma as Factor in Cause of Hydronephrosis. F. C. Herrick, Cleveland.—p. 704.

Journal of Experimental Medicine, Baltimore

January, XXV, No. 1

37 *Details of Photographically Recorded Venous Pulse in Auricular Fibrillation. W. L. Niles and C. J. Wiggers, New York.—p. 1.
38 *Significance of Diastolic Waves of Venous Pulse in Auricular Fibrillation. C. J. Wiggers and W. L. Niles, New York.—p. 21.
39 Spirocheta Morsus Muris, N. Sp., Cause of Rat Bite Fever. K. Futaki, I. Takaki, T. Taniguchi and S. Osumi, Tokyo, Japan.—p. 33.
40 Experimental Rat Bite Fever. K. Ishiwara, T. Ohtawara and K. Tamura, Tokyo, Japan.—p. 45.
41 *Action of Digitalis in Pneumonia. A. E. Cohn and R. A. Jamieson, New York.—p. 65.
42 *Control of Strychnin Convulsions by Intraspinal Injections of Magnesium Sulphate. E. C. Cutler and B. H. Alton, Boston.—p. 83.
43 Metabolism of Cells in Vitro. Toxicity of a-Amino-Acids for Embryonic Chicken Cells. M. T. Burrows and C. A. Neymann, Baltimore.—p. 93.
44 *Production of Arteriosclerosis and Glomerulonephritis in Rabbit by Intravenous Injections of Diphtheria Toxin. C. H. Bailey, San Francisco.—p. 109.
45 *Extirpation of Thymus in Guinea-Pig. E. A. Park, Baltimore.—p. 129.
46 *Experimental Studies on Relation of Pituitary Body to Renal Function. K. Motzfeldt, Boston.—p. 153.
47 *Phagocytic Power of Connective Tissue Cells. F. S. Jones and P. Rous, New York.—p. 189.

37. **Venous Pulse in Auricular Fibrillation.**—The systolic and diastolic waves of the venous pulse of twenty-five clinical cases of auricular fibrillation, recorded by photographic methods, were studied by Niles and Wiggers. Six types of systolic waves were found: (1) an intensified impact wave, the most common and often the only characteristic feature, indicating vigorous ventricular action; (2) a peaked impact followed by a rapid systolic drop due to light pressure of the tambour; (3) the intra-auricular type of systolic variation, so-called from its resemblance to intra-auricular pressure curves found in animals, occurring in clinical cases only when ventricular systole is weak; (4) double systolic waves, attributed to a systolic tug of the ventricle on the auricles and large veins; (5) a systolic impact followed by a stasis wave, present when intravenous pressure is high; (6) a regurgitation wave composed of a steep rise continued into a systolic plateau with murmur vibrations superimposed. The study showed (1) that tricuspid regurgitation, as indicated by the presence of regurgitation waves, is a rare accompaniment of auricular fibrillation; and (2) that the contrary opinion, arrived at by the frequent presence in polygraph tracings of ventricular types of waves, is due to the fact that the contour of intensified impact waves is distorted by polygraph levers so that they simulate regurgitation waves. Recurrent diastolic waves were frequently present in the records. Their relative size depended, to a considerable extent, on the pressure of the tambour. There was no constant relation to similar waves in the recorded electrocardiogram, nor is it proved that they are indicative of a coarse type of fibrillation or an associated flutter.

38. **Diastolic Waves of Venous Pulse.**—The conviction has grown that finer and coarser types of auricular movement may be recognized by the amplitude of the diastolic waves of the electrocardiogram and venous pulse. The investigation into the cause of these waves made by Wiggers and Niles has shown that this is not possible. The large recurrent waves of the venous pulse, which may with more reason be regarded as related to the size of the auricular mechanical contractions on theoretical grounds, are also shown to be without differential value.

41. **Action of Digitalis in Pneumonia.**—In a series of 105 cases of pneumonia studied by Cohn and Jamieson they found that digitalis given by the mouth has an action on the heart, because changes occurred in the auriculoventricular conduction time and in form of the T wave of the electrocardiogram, just as they do in the nonfebrile heart. This conclusion is strengthened by finding that the pulse rate in fibrillating and fluttering cases fell in the presence of fever, exactly as it does in nonfebrile cases. The dose and the time required to produce these effects are given and are the same as in the nonfebrile cases. The authors conclude that digitalis acts during the febrile period of pneumonia. It produces a beneficial, possibly a life saving effect in cases of auricular irregularity (fibrillation and flutter).

42. **Control of Strychnin Convulsions.**—The results obtained by Cutler and Alton in a human case and in animal experiments lead them to believe that magnesium sulphate may be of use in controlling cases of poisoning by strychnin. The amount of magnesium sulphate to be used should follow the advice of Meltzer in tetanus cases; intraspinally 1 c.c. of a 25 per cent. solution to each 20 pounds of body weight in adults, and one half the dose in young children. Should this not control the convulsions, a small amount of ether may be used. In order to hasten the excretion of strychnin, 200 to 300 c.c. of salt solution should be given intravenously. In the event of the return of the convulsions, the intraspinal dose may be repeated, always taking precautions to keep the head elevated. Meltzer's apparatus for intrapharyngeal insufflation and a 2.5 per cent. solution of calcium chlorid should always be on hand in case of respiratory failure following an overdose of the magnesium salts.

44. **Arteriosclerosis and Glomerulonephritis.**—Diphtheria toxin, given in large doses intravenously, Bailey found produces in the kidneys of the rabbit a pronounced vascular and parenchymatous degeneration. The former consists of a swelling and desquamation of the endothelial cells of the

arterioles and small veins with the formation of fibrinous thrombi, a necrosis and thrombosis of the capillaries of the tufts with hemorrhage and the formation of fibrinous and hyaline masses, and in some of the affected glomeruli, considerable collections of polymorphonuclear leukocytes.

45. **Extirpation of Thymus in Guinea-Pig.**—Extirpation of the thymus in the guinea-pig produced no changes in Park's experiments because accessory lobes of thymus derived from the third pharyngeal pouch, occurring in close association with the parathyroids from the third pouch, were found in serial section of the cervical tissues of eleven out of fourteen guinea-pigs, and the author thinks that they probaby would have been found in all fourteen but for a technical error. The discovery of these accessory lobes makes it certain that the guinea-pig is unsuitable material for complete thymectomy, and probably complete extirpation of the thymus in this animal is rarely, if ever accomplished.

46. **Pituitary Body and Renal Function.**—Extracts of the pars intermedia and posterior lobe of the hypophysis, given by the mouth, subcutaneously, or intravenously, Motzfeldt says, are able definitely to check artificially induced polyuria. Extracts of the anterior lobe show a similar effect, but only to a slight degree. This antidiuretic effect is constant, and is independent of (*a*) changes in blood pressure, (*b*) intestinal absorption, and (*c*) the vagi. The effect is apparently prevented or delayed by division of the splanchnics, and is diminished by division of the renal nerves near the hilus. These facts tend to suggest that the antidiuretic action exerted by pituitary extracts on rabbits is caused by stimulation of the sympathetic nervous system, and that the renal vasomotor system in this respect is of chief importance. Clinically these conceptions bring the polyurias related to disorders of the nervous system and the polyurias of pituitary origin in closer contact.

47. **Connective Tissue Cells.**—By the tryptic digestion of cultures in vitro of avian and mammalian connective tissue, suspensions of individual, living cells have been obtained. Their ability to phagocyte carmin and bacteria has been tested. The great majority of them fail to take up either, but a few large cells are able to do so. They will ingest bacteria only when serum is present; that is, they require the interaction of opsonins. There is good reason to suppose that the phagocyte cells are endothelial in nature. Should they prove to be fibroblasts, like the other elements present, the fact will remain that the phagocytic power of fibroblasts is practically negligible. Their failure to ingest foreign matter in vivo is to be laid not to the obstacles offered by the solidity of the tissue they compose, but to an inherent lack of ability on their part. The phagocytosis of blood pigment, bacteria, etc., which takes place in granulation tissue in vivo is probably carried on wholly by endothelial cells and wandering cells.

Journal of Infectious Diseases, Chicago

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48 Comparison of Methods for Disinfecting Swimming Pools. W. A. Manheimer, New York.—p. 1.
49 Various Methods for Determining Trypanocidal Activity of Substances in Vitro and Their Relation to Chemotherapy of Experimental Trypanosomiasis. J. A. Kolmer, J. F. Schamberg and G. D. Raiziss, Philadelphia.—p. 10.
50 Adaptation of Parasitic Micro-Organisms to Lowered Oxygen Tension. W. B. Wherry and W. W. Oliver, Cincinnati.—p. 28.
51 Numeric Relationship of Infection to Chemotherapy of Experimental Trypanosomiasis. J. A. Kolmer, J. F. Schamberg and G. D. Raiziss, Philadelphia.—p. 35.
52 *Studies of Beta Hemolytic Streptococcus Septic Sore Throat (Smith and Brown). W. G. Smillie, Boston.—p. 45.
53 Bacteriology of Pemphigus Neonatorum. F. H. Falls, Chicago. —p. 86.
54 Studies on Immunity in Typhus Exanthematicus with Reference to Antibodies in Man and Guinea-Pig Demonstrable by Dale Method. B. S. Denzer and P. K. Olitsky, New York.—p. 99.
55 Small Contact Epidemic of Typhoid. M. F. Boyd, Iowa City, Iowa.—p. 109.
56 *Etiology of Acute Epidemic Poliomyelitis. G. Mathers, Chicago. —p. 113.

52. **Beta Hemolytic Streptococcus.**—The throats of individuals who have had tonsillitis, Smillie says, may harbor the beta hemolytic streptococcus for three or more months after acute symptoms of the disease have subsided. This streptococcus is found in large numbers in the throats of a certain proportion of patients with sporadic tonsillitis (five of twenty studied). Epidemic tonsillitis, or septic sore throat, is, therefore, not a disease due wholly to the drinking of contaminated milk. The disease may exist not only in the epidemic, but in the sporadic form. Tonsillitis, epidemic and sporadic, due to the streptococcus of the beta hemolytic type, may be severe or moderate, or even mild. The beta streptococcus is frequently found in the throats of patients ill with acute scarlet fever, and may remain for months in the purulent discharges in the cases complicated by otitis media, etc. These facts explain how the discharges from a scarlet fever patient may contaminate a milk supply and produce a milk-borne epidemic, not of scarlet fever, but of septic sore throat.

56. **Etiology of Acute Epidemic Poliomyelitis.**—In a bacteriologic examination of fresh material from ten cases of acute poliomyelitis a peculiar polymorphic streptococcus-like organism has been isolated in nine instances, in seven of which the growth has been pure. Similar organisms have been demonstrated microscopically in the tissues of the central nervous system of these patients. Cultures of this coccus injected into rabbits have produced paralysis of various groups of muscles, and characteristic lesions in the central nervous system, consisting of hyperemia and edema of the tissues, with hemorrhages, round cell perivascular infiltration and neurophagocytosis in the spinal cord, especially in the gray substance, similar in every detail to the changes considered characteristic of acute poliomyelitis in man. This micrococcus has been recovered from the lesions in the inoculated rabbits by both cultural and microscopic methods.

The artificial cultivation of the poliomyelitis coccus in an ascites fluid tissue medium under anaerobic conditions causes changes in the medium which cannot be differentiated from those previously described for cultures of the so-called virus of poliomyelitis. Morphologically, also, this bacterium when grown on the same mediums is similar to the virus, and in stained smears it appears in minute gram-positive coccus-like bodies arranged in pairs, groups and chains. These minute forms disappear when the organism is cultivated in other mediums under aerobic conditions. The morphologic, cultural and pathogenic characters of the poliomyelitis coccus thus far determined indicate that it is an important factor in the disease.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

December, 1916, IX, No. 3

57 Rôle of Liver in Acute Polycythemia. Effect of Shutting Off Arterial Blood Supply to Liver, Reaction of Normal Animal to Epinephrin and Removal of Liver from Circulation. P. D. Lamson, Baltimore.—p. 129.
58 Can Epinephrin Acquire Antineuritic Properties? C. Voegtlin and and G. F. White, Washington, D. C.—p. 155.
59 Action of Strychnin on Certain Invertebrates. A. R. Moore, Woods Hole, Mass.—p. 167.
60 Pharmacology of Uterus Masculinus. J. A. Waddell, Charlottesville, Va.—p. 171.
61 Pharmacology of Prostate. J. A. Waddell, Charlottesville, Va. —p. 179.
62 *Effects of Drugs on Ileocolic Sphincter. M. Kuróda, London. —p. 187.
63 *Pharmacology of Ureter. Action of Opium Alkaloids. D. I. Macht, Baltimore.—p. 197.

62. **Effects of Drugs on Ileocolic Sphincter.**—The effects of atropin, pilocarpin, nicotin and cocain on the sphincter are very similar to those on the intestine in general. Yet the innervation of the sphincter is entirely different from that of the intestine, in which the vagus is the augmentor, the splanchnic the depressor nerve, while in the sphincter the splanchnic is augmentor and no inhibitory nerve has been shown to exist. The correspondence in the action of these drugs on parts which are so different, suggests strongly that the seat of their activity is not the nervous apparatus, but the muscular. And this is strengthened by the fact that epinephrin has an action on the sphincter opposite from that in the intestine in general, thus changing along with the character of the nervous activity.

63. **Pharmacology of Ureter.**—Morphin and its allied alkaloids increase the contractions and produce a greater

tonicity of the ureter. Papaverin and its allied alkaloids produce a slowing or total inhibition of the contractions and a relaxation of the tonus. In pantopium (total opium alkaloids) and other combinations, the effect of the benzyl-isoquinolin alkaloids predominates. In spasmodic conditions of the ureter (renal colic), Macht says, the employment of papaverin or total opium alkaloids is more rational than that of morphin alone. The slight toxicity of papaverin, its tonus lowering power, and its local analgesic properties suggest its local application in spasmodic conditions of the ureter.

Kentucky Medical Journal, Bowling Green

January, XV, No. 1

64 Comprehensive Plan for Cooperation of State Tuberculosis Commission with Existing Health Agencies. W. L. Heizer, Bowling Green.—p. 5.
65 Training Physicians for Social Health Work. P. E. Blackerby, Erlanger.—p. 9.
66 Prostatectomy; Its Indications. P. H. Stewart, Paducah.—p. 12.
67 Simple Modification of Milk for Baby. D. H. McKinley, Winchester.—p. 17.
68 *Acute Bacterial Synovitis. J. G. Sherrill, Louisville.—p. 21.
69 Forceps Delivery. H. E. Prather, Hickman.—p. 24.
70 Present Treatment of Puerperal Infection. J. B. Lukins, Louisville.—p. 25.
71 Lessons from Life of Physician Incognito—Appeal to Young Men. J. W. Crenshaw, Cadiz.—p. 34.
72 *Significance of Abdominal Pain in Children. J. D. Trawick, Louisville.—p. 37.
73 Some of Duties We Owe to County Society. W. R. Burr, Auburn.—p. 40.
74 Unacknowledged and Uncanceled Debt of Obligation of Public to Medical Profession. G. Cowan, Danville.—p. 42.

68. and 72. Abstracted in The Journal, Dec. 2, 1916, pp. 1692 and 1693.

Maine Medical Association Journal, Portland

December, 1916, VII, No. 5

75 Medical Cult Absurdity. A. P. Leighton, Jr., Portland.—p. 141.
76 Some Medical Aspects of Naval Recruiting. J. H. Harris, Portland.—p. 149.
77 Adenoids as Factor in Amblyopia. C. T. Adams, Trenton, N. J.—p. 164.

Medical Record, New York

December 30, 1916, XC, No. 27

78 Sensitized Typhoid Bacteria. (Typhoid Serobacterins). A. L. Garbat, New York.—p. 1145.
79 Diathermia in Treatment of Trifacial Neuralgia; Report of Cases. H. F. Wolf, New York.—p. 1152.
80 Employment of Persons in Arrested Stage of Tuberculosis. J. S. Ford, Wallingford, Conn.—p. 1154.
81 Hematuria and Pyuria. S. W. Schapira, New York and J. Wittenberg, Brooklyn.—p. 1156.
82 Rhinal Premonstration of Tuberculosis. J. A. Hagemann, Pittsburgh.—p. 1157.

Missouri State Medical Association Journal, St. Louis

January, XIV, No. 1

83 Chronic Induration of Penis; Report of Cases. A. E. Hertzler, Kansas City.—p. 1.
84 Relationship of Laceration of Mouth of Uterus to Cancer of Uterus. R. M. Funkhouser, St. Louis.—p. 4.
85 Nongonorrheal Type of Ophthalmia Neonatorum. J. H. Thompson, Kansas City.—p. 7.
86 Primary Acute Glaucoma. H. Bailey, Springfield.—p. 8.
87 Experimental Measurement of Bones of Foot as Aid to Better Diagnosis and More Rational Treatment. B. Belove, Kansas City.—p. 13.
88 Result of Physical Examination of Five Hundred Young Men. H. T. Price, St. Louis.—p. 20.
89 Case of Perinephritic Abscess with Spontaneous Recovery. T. M. Paul, St. Joseph.—p. 21.
90 Development of Fecal Concretion in Stump Left After Ligating Appendix. L. A. Todd, St. Joseph.—p. 23.
91 Indications and Methods for Removal of Faucial Tonsils. W. D. Black, St. Louis.—p. 24.

Modern Hospital, St. Louis

January, VIII, No. 1

92 Complete Suburban Hospital—Muhlenberg. F. J. Hubbard, Plainfield, N. J.—p. 1.
93 Successful Medical Treatment in Chronic Alcoholism. C. B. Towns, New York.—p. 6.
94 St. Joseph's Hospital, Kansas City, Mo. J. D. Griffith, Kansas City, Mo.—p. 10.
95 Some Facts and Fallacies of Sterilization. A. W. Clark, New Brunswick, N. J.—p. 13.
96 United States Naval Hospital on Island of Guam. L. W. Johnson, U. S. Navy.—p. 16.
97 Cost of Operating Motor Ambulance. W. Fawcett, Washington, D. C.—p. 21.
98 Story of New England County Hospital. J. M. French, Milford, Mass.—p. 26.
99 Small Community Hospital—Equipment. J. A. Hornsby, Chicago.—p. 29.
100 Necropsies—Their Value, Methods of Obtaining and Protection of Hospital. M. C. Winternitz, Baltimore.—p. 36.
101 What the Intern Should Contribute to Team Work. E. H. Beckman, Rochester, Minn.—p. 43.

New Mexico Medical Journal, Las Cruces

December, 1916, XVII, No. 3

102 Early Symptoms of Upper Abdominal Disease. H. A. Black, Pueblo, Colo.—p. 66.
103 Parotitis Secondary to Suppurative Appendicitis. F. W. Noble, Tucumcari.—p. 73.
104 Country Surgeon. J. W. Wroth, Albuquerque.—p. 80.

New York Medical Journal

December 30, 1916, CIV, No. 27

105 Dental Infections in Systemic Disorders. S. Tousey, New York.—p. 1269.
106 Eczema in Children. G. W. Crary, New York.—p. 1274.
107 Infections of Bones and Joints. P. W. Roberts, New York.—p. 1275.
108 Diathermia. H. Wolf, New York.—p. 1276.
109 Eye-Strain. I. Hartshorne, New York.—p. 1279.
110 New Method for Intraspinous Treatment of Neural Syphilis with Mercury. M. F. Lautman, Hot Springs, Ark.—p. 1281.
111 Fallacy of Fallacies About Tuberculosis. A. Robin, Wilmington, Del.—p. 1284.
112 Rôle of Syphilis in Insane Negro. L. Wender, Washington, D. C.—p. 1286.

Oklahoma State Medical Association Journal, Muskogee

January, X, No. 1

113 Intestinal Stasis. V. C. Tisdal, Elk City.—p. 1.
114 Varicose Veins, Their Results and Treatment. R. M. Howard, Oklahoma City.—p. 3.
115 Abdominal Drainage from Anatomic Standpoint. C. von Wedel, Jr., Oklahoma City.—p. 7.
116 Rachiocentesis. L. Riely, Oklahoma City.—p. 10.
117 Perforation in Typhoid. L. Long, Oklahoma City.—p. 12.
118 Study of Teratology, with Presentation of Specimen. W. W. Wells, Oklahoma City.—p. 16.
119 Laryngeal Diphtheria. H. M. Williams, Wellston.—p. 20.
120 Gonorrheal Ophthalmia. R. L. Mitchell, Vinita.—p. 23.

Ophthalmic Record, Chicago

January, XXVI, No. 1

121 Clinical and Pathologic Study of Two Cases of Miliary Tubercles of Choroid. R. L. Randolph and H. C. Schmeisser, Baltimore.—p. 1.
122 New Method of Treatment for Retinal Separation. F. H. Verhoeff, Boston.—p. 10.
123 Bicylindric Refraction. C. F. Prentice, New York.—p. 14.
124 Explosion of Snellen Eye in Orbit; Report of Case. W. B. Weidler, New York.—p. 19.
125 Treatment of Corneal Ulcers. S. G. Dabney, Louisville, Ky.—p. 21.
126 In Re Corneal Ulcers. H. B. Young, Burlington, Iowa.—p. 25.

Public Health Journal, Toronto

December, 1916, VII, No. 12

127 Feeblemindedness. H. L. Brittain.—p. 495.
128 Attitude of Educator toward Feebleminded. P. Sandiford.—p. 496.
129 Attitude of Neighborhood Worker. M. J. Clarke.—p. 498.
130 Problem of Feebleminded from Institutional Viewpoint. L. W. Brooking.—p. 500.
131 Psychiatric Clinic. C. M. Hincks.—p. 502.
132 General Considerations. C. K. Clarke.—p. 504.
133 Care of Feebleminded. F. J. Conboy.—p. 505.

Rhode Island Medical Journal, Providence

January, I, No. 1

134 Lateral Curvature of Spine (Scoliosis). F. E. Peckham, Providence.—p. 13.
135 Initial Experiences in Office of State Pathologist. H. S. Bernstein, Providence.—p. 5.
136 Pelvic Descent of Appendix into Pelvis. W. L. Harris, Providence.—p. 13.

Vermont Medicine, Rutland

December, 1916, I, No. 12

137 Treatment of Diabetes Mellitus. J. R. Williams, Rochester, N. Y.—p. 341.
138 What Shall We Feed the Sick? C. J. Rumrill, Randolph.—p. 348.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

December 16, 1916, II, No. 2920

1 Mechanical Treatment of Fractures Under War Conditions. R. Jones.—p. 829.
2 How to Use Crutches to Prevent Primary Contraction. Hagentorn.—p. 834.
3 *Pseudotuberculoma Silicoticum of Lip. C. R. Nitch.—p. 835.
4 *Second Primary Growths in Remaining Breast After Amputation of Other for Carcinoma. D. Drew.—p. 836.
5 *Organism Present in Blood of Patients Suffering from Trench Nephritis. R. L. Thornley.—p. 836.

3. **Pseudotuberculoma Silicoticum of Lip.**—A man fell off his bicycle when riding along a dusty country road, cutting the mucous membrane on the buccal aspect of his lower lip. Some road grit was ground into the wound. Healing took place in about fourteen days. The resulting scar was somewhat thickened, but underwent no further change until a swelling began to form in its center. Four months later the submental glands became enlarged and tender. The glandular enlargement combined with the deformity of the lip produced by the increasing size of the tumor, led the patient to consult his physician. Palpation of the tumor through the skin conveyed an impression similar to that given by a preputial chancre. A provisional diagnosis of an endothelioma or of a fibroma surrounding a foreign body was made. The tumor, together with the mucous membrane covering it and a quarter of an inch of the surrounding tissues, was excised from the buccal aspect of the lip, and the submental glands were removed. Healing was uneventful. Microscopic examination showed that the lesion consisted of a congeries or a mosaic of giant celled systems and huge giant cells, hardly to be distinguished from those of tuberculosis, although no caseation was present. No tubercle bacilli or other bacteria were discoverable in the lesion in microscopic sections. In practically all the giant cells, however, and elsewhere, there were particles of silica, which stood brilliantly out when the sections were polarized. That the material consisted chemically of silica was proved by its insolubility in boiling nitric acid.

4. **Second Primary Growths in Remaining Breast After Amputation of Other for Carcinoma.**—Drew says that in his experience it is extremely rare to find a second solitary growth developing in the remaining breast after the lapse of two or three years, the patient being in good health and careful examination failing to reveal any evidence of secondary deposits in any other region.

5. **Organism Present in Blood of Patients Suffering from Trench Nephritis.**—With one single exception, every one of twenty-seven cases of trench nephritis examined by Thornley has shown the presence of an identical coccus in the blood. Examined under the highest powers, the organism is seen to be an extremely minute diplococcus, with adjacent surfaces flattened against each other. It is usually seen singly or in groups, seldom in chains. They are nonmotile, have no capsules and do not stain. It grows readily, on ordinary agar, as a fine growth not unlike *Micrococcus melitensis*. It does not liquefy gelatin, on which it grows readily. It ferments glucose, lactose, mannite, sorbite and saccharose within forty-eight hours, but not dulcite. There is no formation of gas in any of the sugars. Agglutination tests performed against it with meningococcic and *M. melitensis* antiserums were negative in a dilution of 1 in 10.

Lancet, London

December 16, 1916, II, No. 4868

6 Injuries of War. A. M. Sheild.—p. 1003.
7 Electric Treatment of Wounded. W. J. Turrell.—p. 1005.
8 Fraud and Skin Eruptions. J. Collie.—p. 1008.
9 *Case of Meningococcal Infection without Involvement of Cerebrospinal System. W. M. Elliott.—p. 1010.
10 Method of Hydrogen-Ion Concentration Differentiation of Typhoid and Paratyphoid Bacilli A and B. S. W. Cole and H. Onslow.—p. 1011.
11 *Diffuse Myxochondroma of Long Bone. M. McIntyre.—p. 1013.
12 Ocular Vertigo. T. E. Harwood.—p. 1014.
13 Case of Aneurysm at Termination of External Carotid Artery. R. F. Bolt.—p. 1015.
14 *Rare Congenital Malformation. W. F. Stiell.—p. 1015.

9. **Meningococcal Infection.**—The case cited by Elliott presented the features of an acute febrile condition accompanied by a very definite exanthem, the acute symptoms ending by crisis on the sixth day of illness. In reviewing the facts obtainable, Elliott is convinced that the patient had suffered from an infection by the meningococcus without involvement of the cerebrospinal system and that the case falls into the so-called septicemia class of cerebrospinal fever. The patient had specific antibodies to the meningococcus in his serum. Attempts were made to obtain the organism in culture from the nasopharynx, but they were unsuccessful.

11. **Diffuse Myxochondroma of Long Bone.**—A female, aged 65 years, for seven and a half years complained of slight discomfort in the upper part of the right thigh without swelling, so far as she was aware, till shortly before her admission to the hospital. At that time there was a visible fullness of the upper third of the right thigh, which felt as if due to a hard nodular enlargement of the femur, in the neighborhood of the great trochanter. Passive movements at the hip joint were not impaired, the temperature was normal, the patient's past history was negative, there was no evident metastasis, and the general health was unaffected. Her single complaint was the increasing discomfort, amounting at times to actual pain, in the upper part of the right thigh. On the roentgenogram general enlargement of the upper third of the femur was evident, consisting of tissue less dense than the imperfect shell or case of compact bone. It appeared to be a central sarcoma, causing expansion with thining of the compact bone, for which the limb was disarticulated at the hip. In commencing the operation an incision was first made into the tumor, when a hemorrhagic friable tissue escaped, supporting the presumption that the condition being dealt with was as diagnosed.

14. **Rare Congenital Malformation.**—The condition is bilateral in Stiell's case. The total length of the upper extremity from the tip of the coracoid process to the tip of the longest digit is 7 inches. Muscular development is excellent. The elbow joint itself is entirely absent, but this is compensated by an abnormally efficient range of movement at the shoulder joint, while the mobility at both the wrist and interscapulothoracic joints is quite pathologic. The radius and the ulna are entirely absent and the carpus is represented solely by the unciform, os magnum, trapezoid, and one quite abnormal bone, probably a glorified scaphoid. The metacarpal bones of the thumb and index finger are absent, as also the corresponding digits to these bones. The three existing digits are held in the semiflexed position chiefly by contraction of the flexor tendons. There is no syndactylism. The humerus is represented by a short stout bone about 4 inches in length which articulates with a very abnormal scapula at its upper end and directly with the freak carpus at its lower. Notwithstanding the total absence of both the radius and ulna, there is a normal range of pronation and supination, provided apparently by an exaggerated rotatory movement of the head of the humerus in the glenoid fossa. With the exception of the upper extremities the remainder of the skeleton is normal. There is no trace of any mental impairment.

Practitioner, London

December, 1916, XCVII, No. 6

15 Venereal Diseases as We See Them Today. J. E. R. McDonagh.—p. 501.
16 Keratodermia Blenorrhagica; Report of Cases. E. G. Little.—p. 531.
17 Sanatorium Treatment of Industrial Patients. I. S. Stewart.—p. 554.
18 Placebo; Protest and Plea. S. Noble.—p. 568.
19 *Tendon Repair without Actual Suture. W. F. Stiell.—p. 574.
20 Case of Boric Acid Poisoning. G. C. Maguire.—p. 580.
21 *Sublingual Medication. A. P. Murtz.—p. 582.
22 *Pain Caused by Dilatation of Deep Veins of Thighs. J. R. Keith.—p. 584.

19. **Tendon Repair Without Actual Suture.**—In following the treatment for accidental division of tendon without actual suture, Stiell says, it is essential that four important details should all be present at one and the same time. 1. It is of the utmost importance that the injured finger should be maintained in a position of hyperextension for at least three

weeks. 2. It is necessary that the actual skin cut should have fairly close approximation of its edges, or, at least, the laceration must not be too extensive to render good apposition possible by means of skin stitches only. 3. It is inadvisable to employ any form of drainage whatever for two reasons: first, because it tends to remove the very necessary and beneficial blood clot from between the ends of the divided tendon, and second, that it only provides one more possible entrance for micro-organisms. 4. Absolute asepsis is essential, or at least asepsis as regards the tendon sheath itself. If these four important points in the method of technic are strictly observed, and the tendon sheath remains aseptic, primary union will invariably occur between the divided ends of the tendon without any actual tendon suture whatever.

21. **Sublingual Medication.**—The sublingual method of medication is endorsed by Murtz, who has used it for twenty years. He regards the sublingual space the place par excellence for the rapid transmission by absorption of crushed hypodermic tablets into the circulation.

22. **Pain Caused by Dilatation of Deep Veins of Thighs.**—A woman, 57 years of age, about two years ago, began to be troubled with pain and swelling in the thighs. These symptoms gradually increased, being produced by walking or standing and relieved by lying down. Always absent in the morning on rising; in about an hour afterward they invariably made their appearance. On examination, no objective signs were found to indicate the pathology of the condition, but, as speedy relief was afforded by the application of elastic support it was evident that the symptoms arose from dilatation of the deep veins of the thighs.

Annales de Gynécologie et d'Obstétrique, Paris

1916, XLII, No. 2, pp. 65-128

23 Welfare Work for Children in Paris District during the First Year of the War. A. Pinard.—p. 65.
24 After the Laparotomy. E. Forgue.—p. 79. Commenced in No. 1, p. 1.
25 Mechanism of Menstruation. H. Vignes.—p. 104. Commenced in No. 1, p. 25.

No. 4, pp. 193-256

26 *Abortive Gangrene of the Uterus. P. Mauclaire.—p. 193.
27 *Perforation of Uterus with Passage of Foreign Bodies into the Abdominal Cavity. V. B. Beckman.—p. 206.
28 *Obstetrics in France and in Germany. (Puériculture. Obstétricie française et obstétricie allemande.) A. Pinard.—p. 213. Commenced in No. 3, p. 129.
29 Case of True Hermaphroditism. C. Walther.—p. 230.

26. **Gangrene of the Uterus from Measures to Induce Abortion.**—Mauclaire remarks that induced abortion is becoming so common that it is astonishing that serious complications are not more frequently observed as the surgical services are so invaded by patients with febrile postabortion complications. He here describes with illustrations four already published cases of fatal gangrene from this cause, with necropsy. A number of other cases are briefly mentioned, his conclusion being that operative measures offer the only chance for saving the patient, although the conditions are decidedly unfavorable, whether the gangrene is in the fundus or in the cervix.

27. **Perforation of Uterus During Attempt to Induce Abortion.**—Beckman warns that if the physician does not know the circumstances of the case, he may fail to recognize that a foreign body has penetrated through the uterine wall into the abdominal cavity. It was a *laminaria* in one of the two cases described and a bougie in the other. In this latter case the supposed pregnancy was nonexistent; he remarks that this is the forty-sixth case of the kind on record. The prognosis depends in large measure on whether the woman confesses or conceals what she has been doing. At the same time we must remember that women may insist that a foreign body has penetrated the uterus wall when this did not occur. He has had such cases, suggestion and fear prompting the avowal. The surgeon must not take literally all that the patient relates. As a rule, the reverse circumstances prevail; the woman does not know what the midwife has done to her, or she dissembles. It is sometimes possible to palpate the foreign body through the walls of the abdomen, the rectum or the vagina. It may become encysted and feel like a tumor. In the two cases reported there were no signs of peritonitis until the fourth or fifth day, beyond a few vague symptoms. Beckman advises to leave the uterus if there are no signs of infection. Vasten removed a bougie from the abdominal cavity at the third month of a pregnancy which progressed to term. In one case on record the bougie was felt in the Douglas pouch four days after it had penetrated the wall of the six months' pregnant uterus; abortion followed twelve days later. The sixteenth day after this the woman consented to a laparotomy. The bougie then was found between the umbilicus and the costal arch.

28. **Obstetrics in France and Germany.**—This is mainly a historical sketch of the evolution of obstetrics in Europe and of the hygiene of gestation and of puericulture.

Archives de Médecine des Enfants, Paris

October, 1916, XIX, No. 10, pp. 505-560

30 Antitoxin in Treatment and Prevention of Diphtheria and Rarity of Accidents Therefrom. (Les accidents consécutifs aux réinjections de sérum et les injections préventives de sérum antidiphthérique.) A. Netter.—p. 505.
31 *Severe Aplastic Anemia in Two Boys of Six and Three. E. Gorter (Leyden).—p. 525.
32 Myopathy with the Reaction of Myotony in Girl of Thirteen. L. Babonneix.—p. 532.
33 The Mongolian Blue Spot in Chili and Brazil. (La tache bleue mongolique à Santiago de Chili.) L. C. Mackenna.—p. 535; . . . à Sao-Paulo.) G. Ferreira.—p. 536.
34 Belgian Children. (Enfants belges victimes de la barbarie allemande.) J. Comby.—p. 537.

31. **Aplastic Anemia.**—In both the cases described there seemed to be some unknown cause slowly paralyzing the bone marrow. There was no hemolysis to speak of, as was evidenced by the lack of intense urobilinuria and of hemolytic substances. The bone marrow was yellow and there was fatty degeneration of various organs, especially of the liver and heart, but there were no signs of infection as responsible for the syndrome, no endocarditis, in the one case in which necropsy was possible. The family was healthy and the child had never had any serious illness but had always been pale. The pallor had increased suddenly about three weeks before death, and petechiae had developed with fever and vomiting.

Bulletin de l'Académie de Médecine, Paris

December 5, 1916, LXXVI, No. 48, pp. 437-452

35 Frequency of "Hippocrates Finger" among the Troops. (Sur les rapports du psoriasis avec la tuberculose.) Railliet.—p. 439.
36 Peculiar Gravity of d'Hérelle's Dysentery Bacillus. (Sur de nouveaux bacilles dysentériques.) Capitan.—p. 440.
37 Comparative Harmlessness of Surgical Pneumothorax. (Sur l'extraction des corps étrangers extrapulmonaires.) P. Bazy.—p. 441.
38 *Experimental Inversion of Impulse for the Heart Beat. (Production expérimentale d'extrasystoles ventriculaires rétrogrades et de rythme inverse, par inversion de la conduction de l'excitation dans le cœur.) J. P. Morat and Petzetakis.—p. 442.
39 Concretions in Bladder after War Wounds of the Bladder. (Des calculs vésicaux chez les blessés de la vessie.) F. Legueu.—p. 445.
40 Shrapnel Ball Loose in Spinal Canal Extracted through Cauda Equina. M. Auvray.—p. 447.

38. **Experimental Inversion of Impulse for Heart Beat.**—Electric stimulation of points on the surface of the auricle induces extrasystoles in the ventricle, and Morat and Petzetakis have succeeded in inducing extrasystoles in the auricle by electric stimulation of numerous points on the surface of the ventricle. They experimented on dogs that had had the spinal cord severed at about the seventh cervical vertebra, and succeeded in stimulating the ventricle until it contracted each time before the auricle, thus reversing the impulse. They explain that a nonreversible phenomenon may be composed of factors, which in themselves are reversible, and this is evidently the case here.

Paris Médical

December 2, 1916, VI, No. 49, pp. 469-512

41 *Reeducation of Disabled Soldiers. (Rééducations fonctionnelle et professionelle.) J. Camus.—p. 470. (Rééducation fonctionnelle des amputés du membre supérieur pour les travaux de cultivateurs.) Nové-Josserand and Bouget.—p. 479. (Méthodes de rééducation professionnelle des amputés.) Bourrillon.—p. 487. (Rééducation professionnelle d'après les variétés d'impotences.) A. Nyns.—p. 493. (La mécanothérapie agricole.) J. Belot and Privat.—p. 498. (Les écoles de rééducation professionnelle de l'Union des colonies étrangères.) J. Camus.—p. 504.

42 *Reeducation of the Blinded. (Remarques sur la rééducation des aveugles.) F. Terrien.—p. 490.
43 *Responsibility of the Training Schools for Disabled Soldiers in Case of Injury from Accident. (La responsabilité des œuvres de rééducation des mutilés de guerre au point de vue des accidents.) E. Fontane.—p. 496.
44 Roentgen Treatment of Muscular Retraction; Four Cases. M. Mercier.—p. 509.

41. **Reeducation of the Maimed.**—This entire number is devoted to the reeducation of mutilated soldiers. Camus discusses the rôle of the physician. It is to him that all look to decide when and in what the disabled workman should be trained. Camus discusses further the placing of the men after they are trained, perhaps placing together men crippled in legs and arms, their concerted work accomplishing more than either alone. Nové-Josserand and Bouget give an illustrated description of devices in use to facilitate work on farms, showing how the stump of the arm can be utilized.

42. **Reeducation of the Blinded.**—Terrien urges that the blinded should be sent to their homes as soon as possible, as they can get about much better in ways with which they are familiar. A number of blinded soldiers are now usefully at work on farms, attending to the milking of the cows, digging potatoes, beets, etc,; thrashing and making brushes on rainy days. It is indispensable for the blinded to learn to read and write the Braille characters; there are now 40,000 books or pamphlets with this type. A printing set is now available which has the Braille character on one end and the ordinary letter on the other end. The type is set up by any printer with the ordinary letters, but when the form is closed, the printing is done from the other side, thus printing the Braille letters. No other system for the blind has stood the test of time like the Braille characters.

43. **Legal Responsibility of Training Schools for Injury from Accidents.**—Fontane suggests that it might be well for the public and private organizations engaged in training the maimed and blinded to take out accident insurance policies to protect themselves in case of accidents to any of the men in their charge, as legally they are responsible for injury the same as the proprietor of a factory.

Presse Médicale, Paris

December 7, 1916, XXIV, No. 68, pp. 561-568

45 Bone Grafting in Treatment of Pseudarthrosis. (Cure des pseudarthroses par la greffe osseuse.) V. Pauchet.—p. 561.
46 Tuning-Fork Test for Simulated Deafness. (Epreuve des diapasons unissonants appliquée au diagnostic de la surdité unilatérale simulée.) E. Escat.—p. 562.
47 *Tests of Reserve Force of the Heart. (Epreuve d'aptitude cardiaque à l'effort.) C. Lian.—p. 563.

47. **Testing the Reserve Force of the Heart.**—Lian declares that the mere counting of the pulse after a given physical exercise will reveal whether the heart can be depended on for extra effort or not. His 250 tests, including fifty healthy persons, have amply confirmed that the pulse changes are a good index of the reserve force of the heart. He gives illustrations of the exercises he has found most convenient and instructive for the purpose. The first is gymnastic stepping in one place, bending the knees, two steps a second. This is kept up for a minute. Then the patient stands still without speaking, and the pulse is counted during the first quarter of each minute thereafter until the count is the same as before the exercise. In the healthy this occurs in the third minute; with a weak heart five to seven minutes may be required for it even to approach the previous figure. His second test is to have a weight of 11 pounds seized with both hands and carried above the head and then swung down between the parted and slightly flexed legs which are firmly planted. This is repeated five or six times in the course of a minute, and the pulse is then counted as before.

Progrès Médical, Paris

November 20, 1916, XXXI, No. 22, pp. 213-222

48 *Hemiplegia Following Scarlet Fever. L. Lortat-Jacob and R. Oppenheim.—p. 213.
49 *Traumatic Exophthalmic Goiter. Léniez.—p. 215.
50 Treatment of War Wounds of the Elbow. (Traitement des plaies articulaires du coude dans les traumatismes de guerre.) D. de Fortunet.—p. 217.
51 *Test for Picric Acid in the Blood in Factitious Jaundice. L. Tixier and A. Bernard.—p. 218.

December 5, No. 23, pp. 223-232

52 Symptoms from Contusion of Cervical Spine. (Le syndrome d'hypertension céphalo-rachidienne consécutif aux contusions de la région cervicale de la colonne vertébrale.) H. Claude and H. Meuriot.—p. 223.
53 Relapses in Amebic Dysentery. (Les reviviscences de la dysenterie amibienne.) J. Carles and Froussard.—p. 226.
54 Shrapnel Ball in Hernia. (Balle d'obus enrobée par le grand épiploon et mobile dans un sac herniaire.) L. C. Bailleul.—p. 228.

48. **Postscarlatinal Hemiplegia.**—The patient in the case described was a soldier who had had a seton wound in the neck three months before. Comparing the symptoms with other cases of postscarlatinal paresis confirms the assumption that cerebral arteritis is responsible for the chronic infectious hemiplegia in such conditions.

49. **Traumatic Exophthalmic Goiter.**—Léniez reports three cases of typical exophthalmic goiter developing in two army officers and a private after being thrown from a horse or falling from a wagon. Each had fallen on his head, and after intervals of one, two and three months symptoms of hyperthyroidism developed, more or less pronounced. Léniez has encountered also a number of other cases in which trauma had been followed by some symptoms suggesting a tendency to hyperthyroidism, consecutive to injury of the head. The exophthalmos was never pronounced in any of these cases, but the expression of the eyes was peculiar.

51. **Detection of Picric Acid in the Blood.**—Fifteen drops of the blood are received in a test tube containing 3 c.c. of 0.95 per cent. salt solution. The tube is agitated two or three times in the course of an hour, and set aside for twenty-four hours. Then 1 or 2 c.c. of the fluid surrounding the clot is taken up with a pipet and added to an equal volume of a 1: 50,000 solution of methylene blue. Shake vigorously and after an hour's contact add ten or fifteen drops of chloroform and agitate anew, then allow to settle. The chloroform becomes a deep green, a bottle green, if there is picric acid present; otherwise the chloroform does not change its color, or becomes only slightly blue.

Correspondenz-Blatt für Schweizer Aerzte, Basel

December 9, 1916, XLVI, No. 50, pp. 1665-1696

55 *The Present Problems in Roentgen Treatment of Cancer. M. Steiger.—p. 1665.
56 Preparation of Rice Pericarp as Influencing Growth from Its Vitamin Content. (Vitamin und Wachstum.) F. Stirnimann.—p. 1678.
57 *Exfoliating Dermatitis in the Newly Born in Its Relation to Pemphigus. A. Wirz.—p. 1685.

55. **Roentgen Treatment of Cancer.**—Steiger declares that in his experience the Roentgen rays have proved their usefulness in treatment of myomas, hemorrhagic climacteric uterine trouble, tuberculous glands in the neck—avoiding disfiguring scars—in tuberculous peritonitis and for vulvar and anal pruritus. For cancer he advocates surgical treatment, but makes a practice of Roentgen exposures after every operation for cancer, and also in the inoperable cases. Much progress will be realized, he remarks, when manufacturers provide us with Roentgen tubes that will stand a second's tension of 200,000 volts instead of only 120,000 as now available. Aluminum does not seem to be a heavy enough metal for filtering the rays. He is now using a zinc filter 0.5 mm. thick. This holds back the soft rays in much larger measure than even 3 mm. aluminum, while it yields much more of the hard rays. It has thus two great advantages over aluminum, it spares the skin better and penetrates better and deeper into the tissues than is possible with the aluminum filter. The cancer was favorably influenced in about 30 per cent. of his fifty malignant tumors, including twenty-six absolutely inoperable cases. Three patients in this latter group have kept in good health since for nearly a year to date. In thirty-four cases the Roentgen exposures were only for prophylactic purposes. In this category is the case of a woman who had required several operations for a sarcoma of the abdominal wall, but has been free from recurrence during

the two years since the last operation. In this interval she has passed through a twin pregnancy.

57. **Exfoliating Dermatitis in Relation to Pemphigus.**—Wirz cites literature showing an unmistakable connection between exfoliating dermatitis and pemphigus in infants, and reports an additional convincing experience. A 5-day old infant developed the exfoliating dermatitis and died. No other case was known in the foundlings' home or in the hospital to which it was brought. However, in both institutions several other infants and older children developed pemphigus not long afterward. It seems as if the germ causing the exfoliating dermatitis in the infants induced pemphigus in the older children.

Deutsche medizinische Wochenschrift, Berlin

November 23, XLII, No. 47, pp. 1437-1468

58 *The Relations between Tsetse Flies and Trypanosomes. (Glossinen und Trypanosomen.) E. Teichmann.—p. 1437.
59 Dysenteriform Intestinal Disease with Edema. T. Rumpel and A. V. Knack.—p. 1440. Concluded.
60 *Treatment of Bacillary Dysentery. (Zur Behandlung der Bazillenruhr.) O. Wiese.—p. 1443.
61 Typhoid Conjunctivitis. L. Jakovich.—p. 1443.
62 Small Epidemic of Typhus. (Eine kleine Fleckfieberepidemie unter russischen Landeseinwohnern.) E. Vieting.—p. 1444.
63 *Spondylitis of the Cervical Vertebrae. (Malum Rustii.) Hnatek. —p. 1445. To be concluded.
64 *Examination of the Urine of Sick and Wounded Soldiers. (Beitrag zur Untersuchung des Harns von Kriegsteilnehmern.) C. S. Engel.—p. 1448.
65 Indications for Operative Treatment of Abdominal Wounds.—(Chok—Blutung—Peritonitis.) O. Hirschberg.—p. 1451.
66 Hysteria and Fitness for Military Service. (Hysterie und Kriegsdienstbeschädigung.) F. Grünbaum.—p. 1452.
67 Treatment of Venereal Disease in the Army Hospitals. (Die Lazarettbehandlung der Geschlechtskrankheiten.) Zweig.—p. 1453.
68 History of the Medical Certificate System for Soldiers. (Geschichte der Medizin in Köln. Die Entwicklung des militärärztlichen Zeugniswesens.) Haberling.—p. 1456.

58. **Tsetse Flies and Trypanosomes.**—Teichmann presents the present status of our knowledge on this subject. He declares that it seems to be established that the trypanosomes in question are unable to pass through their whole cycle of development unless they have access to tsetse flies. If the latter could be exterminated, these trypanosomes would die off with them.

60. **Kaolin Fails in Treatment of Dysentery.**—This is Wiese's conclusion from his extensive experience. The men took the kaolin with extreme repugnance and complained afterward of sensations of oppression in stomach or bowel or both. He insisted on keeping up the kaolin treatment, notwithstanding these by-effects, until he found that it sometimes caked into hard lumps, and these lumps caused irritation and pain as they were passed along. Sometimes the lumps were as large as a hen's egg and hard as a stone. He then dropped the kaolin entirely, and obtained much better results with the ordinary treatment, thorough evacuation of the bowels, repeated moderate doses of simple tincture of opium, rinsing out the intestines with epinephrin enemas, supplemented by animal charcoal given by the mouth, sometimes associated with bismuth subgallate.

63. **Spondylitis of the Cervical Vertebrae.**—In one of the three cases of Rust's disease reported, the trouble was of rheumatic origin, in the others, syphilis or deposits of urates were responsible. The clinical picture was practically identical in all, and the diagnosis of tuberculous caries seemed certain until involvement of other joints in the first case suggested a subacute form of articular rheumatism, affecting at first exclusively the suboccipital vertebrae. The acute articular rheumatism cleared up the diagnosis in the first case, confirmed by the absence of evidences of an inflammatory process in the spine on roentgenoscopy. Hnatek could find only three analogous cases on record. In all there was considerable wasting and debility. A concomitant apical tuberculous process pointed further to tuberculosis. Careful watch over the other joints finally revealed further encroachment of the rheumarthritis. In Condray's case, differentiation was facilitated by the rheumatism in both parents and by the sudden onset in two days following exposure to cold, one bitter night, near a drafty window. The article is to be continued.

64. **Albuminuria in Troops on Active Service.**—Engel has had the urine examined of every patient admitted to the surgical hospital in his charge, a total of 3,210 men. Albumin was found in 13 per cent. but never in large proportions.

Medizinische Klinik, Berlin

November 5, 1916, XII, No. 45, pp. 1167-1196

69 *Acute Articular Rheumatism. (Zur Aetiologie des akuten Gelenkrheumatismus.) F. Rolly.—p. 1167.
70 Ligation of Veins for Infectious Thrombosis from War Wounds. (Vorbeugende und kurative Venenunterbindungen bei infektiösen Thrombosen im Felde.) Hosemann.—p. 1169.
71 Burns from Shell Scraps. (Ueber Verbrennungen durch das Geschoss.) G. Magnus.—p. 1172.
72 *Success of Parenteral Injections of Milk in Therapeutics. (Ueber den therapeutischen Wert parenteraler Milchzufuhr.) S. v. Dziembowski.—p. 1174.
73 *Treatment of Convalescents from Nephritis. (Zur Behandlung der Nierenkranken.) Robert.—p. 1175.
74 *Buds on Spirochetes Prove Plant Nature. (Spirochaeta pallida—Schaudinn—und Spirochaeta nodosa—Hübener-Reiter.) E. Meirowsky.—p. 1181.
75 *Treatment of Pneumonia in the Light of the History of Medicine. (Die Behandlung der Pneumonie im Lichte der Geschichte der Medizin.) T. Neubürger.—p. 1195.

69. **Etiology of Acute Articular Rheumatism Still a Mystery.**—Rolly here reports from Leipzig the results of extensive experience with large numbers of cases of acute articular rheumatism. In 118 cases at the acme of the febrile stage he found the blood always sterile, inoculating 20 c.c. or more of the venous blood on fluid and solid culture media. In 2 other cases the staphylococcus was found but this was presumably accidental contamination. In another case a streptococcus was isolated, but the case proved to be a viridans sepsis and not rheumatism. With *Streptococcus viridans* sepsis there is liable to be transient swelling of the joints. He does not venture to say that all previously published accounts of bacteria found in acute articular rheumatism are based on errors of technic, but queries whether mixed infection might not have been responsible for the positive findings. The presence of bacteria on the tonsils and not in the interior of the body is no evidence that these bacteria are responsible for the articular rheumatism. He found tonsillitis in 59 out of his 1,450 patients with acute articular rheumatism; 54 had sore throat; 54, pains in the throat; 10 of the patients had a history of recurring sore throat; 2 had had the tonsils operated on, and in 2 there was suppuration in the tonsils at the time. The tonsils were found enlarged and red in 88; in 58 only red; in 133 only enlarged; plugs were visible in the tonsils in 23, and the tonsils were coated in 23. Other parts of the throat were red or swollen or both in 283; there was conjunctivitis in 3 and the conjunctiva was red in 6; 4 had bronchitis, and 1 acute rhinitis. The patients also told that they had been subject to coryza (8); to cough (15); hoarseness (2); ear trouble (3); disturbances in swallowing (10); gastro-intestinal trouble (21), dryness in the throat (2), and 3 had had furuncles. These figures demonstrate that sore throat is the portal of entry for acute articular rheumatism in many cases, as it is of other diseases (nephritis, etc.). But it is evident that other affections of the throat and other organs must also be considered in this respect. In one of the patients acute articular rheumatism developed for the first time three weeks after an operation on the nose.

Rolly presents evidence further to disprove the assumption that acute articular rheumatism is an anaphylactic reaction. This assumption cannot be upheld, he says, so long as it is impossible to induce in animals the joint disturbances; the mere fact that fever can be induced is not adequate proof that this is the explanation of the disease. In this connection Rolly tabulates the serum sickness phenomena observed in 2,122 diphtheria cases at Leipzig; only 5.75 per cent. of all showed any disturbance from injection of antitoxin. A congenital or acquired special susceptibility to alien serum is thus quite exceptional. He also points out that only 57.5 per cent. of those showing any disturbance developed an exanthem, with or without fever, while 33.3 per cent. had merely a febrile reaction; only in 9.2 per cent. were there any disturbances in the joints, and these were limited to pains in over half. Thus in only 4.8 per cent. of the 122 who showed the slightest disturbance from the antitoxin, was there any tendency to swelling of joints. These figures show the rarity of joint trouble in serum sickness, and hence render it extremely improbable that acute articular rheumatism can be produced by anaphylactic phenomena. But anaphylactic phenomena may occur in its course the same as in any infectious disease.

72. **The Therapeutic Importance of Parenteral Injection of Milk.**—In this communication from the army hospital at Posen, Dziembowski reports encouraging experiences with what he calls "protein body therapy." He emphasizes that the field for therapeutic parenteral serum and albumin injections is being enlarged more and more as it has proved that in many specific parenteral methods of treating disease there is usually also a nonspecific factor. A colon bacillus or pyocyaneus vaccine may work in typhoid as well as a typhoid vaccine, deuteroalbumose in typhus, diphtheria and tetanus, and diphtheria antitoxin or simple horse serum in hemophilia, erysipelas and other dermatoses. The use of milk for the purpose seems particularly promising as this is a mixture of albumin which is derived from the organism itself and its composition is constant. He has treated about 100 patients with intramuscular injections of 5 c.c. of milk, boiled for ten minutes in a water bath. In a few hours afterward there is regularly a chill, of variable intensity, and a rise of temperature from 38 to 39 C. (102.2 F.). The fever may last for a few hours or into the next day, and sometimes there are palpitations, headache, lassitude and depression but these last only for a few hours. No injury of organs, heart or kidneys, was ever observed and except for a little painfulness at the point of the injection no other untoward by-effects. The number of leukocytes runs up to 15,000 or even higher, within a few hours; the increase is greatest in the neutrophils and then in the large mononuclears, while the lymphocytes show little increase or a decline.

His experiences with the method were decidedly favorable, especially with septic war wounds, in four cases of severe erysipelas, in tuberculous bone and joint disease, in three of actinomycosis, and in large numbers of fractures. In the surgical tuberculous cases, with one injection every four days, the process healed within a few weeks after it had been dragging along previously a most tedious course. In the fracture cases, consolidation occurred in certain cases in which there had been previously scant tendency thereto and a pseudarthrosis was feared or had already developed. Good effects were also realized when the milk was injected for its styptic power, aiding in arresting internal hemorrhage or bleeding from mucous membranes or from wounds. In psoriasis the effect was also highly satisfactory, reenforcing the local applications. In one case with extremely severe psoriasis the skin cleared up almost completely in a few weeks under the injection of 5 c.c. of milk, twice a week, supplemented by quartz-lamp exposures and tub baths.

73. **After-Treatment of Acute Kidney Disease.**—Robert describes the way in which he trained convalescents from nephritis so they could resume their duties at the front and stand the army fare and the weather vicissitudes, and the various tests with which he estimated the earliest moment when this was possible.

74. **Demonstration that Spirochetes are Plants.**—Meirowsky reproduces sixty illustrations of spirochetes as published by different authors, all showing bunches in the course of the spirils or actual buds on a stem. Hübener and Reiter regarded these bunches as characteristic merely of the spirochete they recently found as the causal agent of Weil's disease, and hence they named their spirochete the *Spirochaeta nodosa*. But Meirowsky declares that these are buds and that they demonstrate beyond question that spirochetes belong to the vegetable kingdom, as true lateral branches are never found on protozoa while they are characteristic of filamentous fungi. Meirowsky called attention in 1914 to these buds on spirochetes, but his findings were rejected or explained away by others. He insisted further that these buds, when detached from the parent stem, correspond to Much's granula with tubercle bacilli, and this seems now to be definitely established. The spirochetes of syphilis and of Weil's disease, and the bacilli of tuberculosis and leprosy all pass through a granular phase in the course of their existence. This explains the positive results obtained by Hübener and Reiter and also by the Japanese in infecting guinea-pigs with the filtered virus containing no spirochetes, confirming Neisser's and others' positive inoculation of monkeys with filtered syphilis virus. In the granular form the virus is able to pass through the filter. Be this as it may, the fact of the plant nature of the spirochetes now seems to be settled beyond question, he declares, as Koch, Metchnikoff and others have always maintained.

75. **Pneumonia.**—This work reviews the treatment of pneumonia during the last century or two. It states that Broussais regarded local and general withdrawals of blood as the best treatment, using 100,000 leeches in his service during the year of 1819, and during his own last illness having venesection done six times and sixty leeches applied. In 1827, 33,000,000 leeches are said to have been imported into France. Traube in Germany continued this use of venesection and leeches, and in 1849 a physician who had not bled a certain pneumonia patient had to answer in court for this neglect after the death of the patient, but was acquitted. Skoda was about the first to venture to teach that in most cases venesection was, if not harmful, at least superfluous. He advocated it only when a robust patient was suffering from much dyspnea with bloody sputum. In 1852, Neubürger's professor at Bonn advised him to go to Vienna to continue his studies, saying "They are not venesecting there in pneumonia."

One's own observation, he continues, teaches the more favorable course of pneumonia when nothing is done and the case is left entirely to Nature. The pulse may rise and fall, and the fever drop with or without the sweats of the crisis. We understand better the nature of the crisis since we know more of immunology. The outcome depends firstly, on the greater or less resisting power of the heart, hence the importance of the pulse in this disease, and the danger of the disease for infants and the elderly; secondly, on the height of the fever; thirdly, on the involvement of the nervous system, the so-called cerebral erethism of the elderly, and, fourthly, on the extent of exudation in the lung. The patient may recover with most extensive infiltration and may succumb with involvement of only one lobe. The regularity of the cyclic course surpasses that of other diseases, and the earlier the crisis appears the better, as this shows good production of antibodies.

Our task is to watch over the disease uninfluenced by drugs or other measures, keeping the patient in bed and avoiding needless effort till the last trace of infiltration and of fever has vanished. As pneumonia in hard drinkers does better under opium, this should be given to ward off delirium tremens. Any debilitating diarrhea must be corrected, and the heart action kept good with small doses of digitalis (0.5 gm. in twenty-four hours), caffein, sodium salicylate (0.2 gm. three times a day), and subcutaneous doses of camphor, the work of the heart facilitated by expectorants and the strain from coughing reduced with narcotics, keeping up the strength with liquid or solid food, and, if the fever is very high, two doses of phenacetin in the twenty-four hours, by the mouth or rectum, with ice to the head and cool compresses on the affected side of the chest, or, if this does not help, with packs. Adults do not bear well repeated cool or even tepid full baths; young children seem to bear them better. As the crisis approaches or passes, the nervous system may be involved, the tongue trembling, the tendons twitching and delirium sets in. If this is not a complication from arteriosclerosis of the cerebral arteries, stimulants are indicated, brandy, camphor, mellow wine. The longer the physician practices, so that he can get a bird's eye view of his experiences, the more distinctly he realizes that our medical measures are of incomparably small effect in comparison with the internal processes of the organism. Medical science seems to move in circles, but the circles are like the coils of a spiral, each one bringing us nearer to the truth.

Münchener medizinische Wochenschrift, Munich

November 21, 1916, LXIII, No. 47, pp. 1649-1684

76 *The Arsenic in Lead Projectiles and Its Possible Toxic Action. (Die toxische Rolle des in Bleigeschossen enthaltenen Arsens.) L. Lewin.—p. 1659.
77 *Absorption of Air through the Stomach Walls. (Ueber Magenatmung beim Menschen.) A. Ylppö.—p. 1650.
78 *The Crop of Newly Born Shows no Deterioration from the War. (Zur Frage der Kriegsneugeborenen.) A. Tschirch.—p. 1650.
79 *Syphilitic Partial Heart Block. (Herzsyphilis mit Adams-Stokesschem Symptomenkomplex, ausgezeichnet durch Tausende von epileptiformen Anfällen.) A. Holterdorf.—p. 1651.
80 *The T Peak in the Electrocardiogram. (Ueber die Finalschwankung des Elektrokardiograms.) H. Gerhartz.—p. 1655.
81 *Arrest of Hematemesis with Blood Platelet Extract. (Stillung einer schweren Magenblutung mittels Coagulen.) F. Bräutigam.—p. 1656.
82 Later Outcome of War Wounds of the Lungs. (Das spätere Schicksal der Lungenverletzten.) D. Gerhardt.—p. 1669.
83 *Endurance with Kidney Disease. (Kriegsverwendbarkeit der Nierenkranken.) Geigel.—p. 1671.
84 Treatment of Contractures. (Kontrakturenbehandlung.) J. Overgaard.—p. 1671.
85 Swinging a Weight in Treatment of Joints. (Pendeln unter gleichzeitiger Extension.) v. Baeyer.—p. 1674.
86 Spring Splint to Ward Off and Treat Talipes Equinus. (Eine Schiene zur Vorbeugung und Behandlung der Spitzfusskontrakturen.) Moeltgen.—p. 1675.
87 Stains in Pencil Form for Microscopic Sections. (Färbung mikroskopischer Präparate mit Farbstiften.) E. Friedberger.—p. 1675.
88 Various Uses for the Roller Couch. (Verschiedene Verwendungsmöglichkeiten des Prausnitzschen Rollagers.) W. Prausnitz.—p. 1676.
89 *Nerve Blocking in the Field. (Ueber Leitungsanästhesie im Felde.) H. H. Schmid.—p. 1677.
90 Difference between Gas Phlegmon and Gas Gangrene. (Worauf beruht der Unterschied in der Mortalität des Gasbrandes im Frieden und im Krieg?) L. Zindel.—p. 1678. (Zur Frage der Metastasenbildung bei Gasgangrän.) G. Ranft.—p. 1682.
91 Treatment of Fractured Jaw. (Zur Behandlung schlecht geheilter Kieferbrüche.) Walkhoff.—p. 1680.
92 Tardy Tetanus Relapse. (Fall von Tetanusrezidiv nach 5 Monaten.) Heichelheim.—p. 1681.
93 Roentgen Localization of Foreign Bodies. Baath.—p. 1682.
94 Chronic Rhinitis. Handkerchiefs as Source of Reinfection. W. Austerlitz.—p. 1683.
95 *Lice in Transmission of Relapsing Fever. Prüssian.—p. 1683.

76. **The Toxic Action of the Arsenic in Lead Projectiles.**—Lewin has found that the lead and antimony alloy used in making shrapnel balls is liable to contain from 1 to 3 per cent. arsenic, and he has been investigating the possible toxic action from a shrapnel ball in the tissues. An ordinary ball weighing 10 gm., containing 8 per cent. antimony with about 14 mg. arsenic, was chopped into 100 pieces and submitted to the action of hydrochloric acid or olive oil. The results showed that such balls in the stomach are not liable to prove toxic but, embedded in the tissues, the alkaline juices act on the projectile and release the arsenic. But even here the arsenic would be carried away and harmlessly eliminated. On the other hand, the danger from the lead is paramount and always serious. The lead is comparatively soluble in the body juices and fats, while it is retained and stored up in the nerves and brain and is liable to induce manifold symptoms.

77. **Absorption of Air in the Stomach.**—Ylppö experimented on himself, introducing given amounts of gas or air into his stomach. He found that it was evidently absorbed by the stomach walls, the alveolar air promptly showing the effect. Further tests established that carbon dioxid and oxygen diffused into the blood through the walls of the gastro-intestinal tract, while common air did not diffuse and was passed along as flatus.

78. **War Babies.**—Tschirch reports statistics from Jena which show that the infants that have been born during the war average as well in weight as during peace times. Also that lactation does not seem to be modified by the scarcity of fat and albumin in the food.

79. **Gummas in the Heart.**—The patient in the case described was a man of 44 and he presented the Adams-Stokes syndrome and also attacks like the petit mal of epilepsy, completely losing consciousness, these brief attacks occurring forty or fifty times an hour, day and night, so that in the five weeks the man was in the hospital he had nearly 25,000. Toward the end the intermissions grew so short that the attacks were practically continuous. No benefit was apparent from mercurial and iodid treatment and the condition was considered too precarious to attempt salvarsan. At necropsy several gummatous nodules were found in the heart but the auricular-ventricular bundle showed merely small-cell infiltration between the muscle fibers and no gummatous changes. The auricle beat three or four times to the ventricle's once, but the regular ratio was preserved, the heart block not being complete. The only case approaching this in respect to the frequency of the epileptiform seizures was one of Zong's with 200 in twenty-four hours, but in the present case there were 800. With the onset of the attack, the ventricle action seemed to be suspended completely for from five to forty-five seconds, indicating that the heart block had become total during this phase, but partial conduction was soon restored again. The arrest of the ventricle action suggests that a reflex from the heart, shutting off the blood from the brain, was responsible for the attack. Disturbances of this character might retrogress under specific treatment, but the condition is generally too far advanced when the case reaches the physician. If the assumption is correct that other fibers might vicariously conduct the impulse, even with actual heart block, then antisyphilitic measures might prove successful even in quite pronounced cases.

80. **The Ventricle-Systole Wave of Electrocardiogram.**—Gerhartz states that the final T peak occurs during the systolic phase of the heart action but does not necessarily end with it. Straub recently analyzed the electrocardiogram in a case of paroxysmal auricular tachycardia, and found that the normal interval of 0.39 was reduced to 0.25. He regarded it as impossible for this abnormal shortening of the interval to be due to a more rapid course of the systolic contraction, or even for it to parallel the latter. This view is confirmed by the findings in a normal man described by Gerhartz. In rest, the diagram shows a longer interval between the R and the T peaks but the T peak extends farther. Immediately after physiologic exercise, the T peak begins earlier and ends before the corresponding end of the T peak at rest, while the following interval is not much more than a third of the same interval in repose, and the P peak is only about two thirds as long. The systole is thus materially shortened under the influence of mild physiologic exercise. It seems thus to be established that the T peak can change independently of the R or ventricle peak, and not parallel the duration of the systole. The shortening of the systole with paroxysmal tachycardia is thus merely an exaggeration of normal relations.

81. **Arrest of Gastric Hemorrhage with Extract of Blood Platelets.**—After a gastro-enterostomy the patient had profuse hemorrhage from an old and supposedly healed ulcer. While the abdomen was open, the blood platelet extract was injected into the stomach, in a 10 per cent. solution; the hemorrhage ceased at once and there has been no return during the month to date. The danger of arousing an old healed ulcer should be borne in mind in operating on the stomach, and some of this extract might be injected or swallowed as a preventive.

83. **The Endurance in Kidney Disease.**—Geigel naturally discusses this subject from the standpoint of fitness for military service. The quite chronic forms of interstitial nephritis and true contracted kidney, which have developed insidiously, do not exclude army service unless there are acute attacks of parenchymatous inflammation. Prophylactic vaccinations should be avoided with kidney affections of all kinds unless an epidemic threatens. Not much endurance can be counted on when there has been pulmonary edema, uremia or cerebral hemorrhage at any time, as also when the fundus of the eye shows changes or the blood pressure is 180 or over. Garrison duties are permissible when the blood pressure is between 160 and 180. The rise in blood pressure under the influence of war conditions is not to be dreaded when the individual is young or middle aged, but arteriosclerotic contracted kidney excludes even light service.

89. **Nerve Blocking in the Field.**—Schmid has found local anesthesia of the greatest use for the wounded when the injured area is accessible, but when it is deep in the tissues

the nerve blocking technic is preferable and he is enthusiastic in his commendation of it. With the paravertebral technic it is possible to induce analgesia for the entire trunk and neck. For parasacral anesthesia he injects 2 c.c. of a 1 per cent. solution of novocain and epinephrin into the sacral nerve as it emerges and runs along the sacrum. The needle is introduced about 2 cm. to one side of the sacrococcygeal joint. This is repeated on each side. The second and fourth sacral nerves are injected under the guidance of the finger in the rectum, the needle feeling its way along the sacrum. If the phrenic nerve is carefully avoided, he thinks there is no danger from these nerve-blocking technics.

95. **Lice in Transmission of Relapsing Fever.**—The Journal mentioned on page 155 Töpfer's statements to the effect that while lice are an important agent in the transmission of relapsing fever yet it is not by their bites but only by their being crushed on the skin that the spirochetes find their way into erosions from scratching. Prüssian's experience has confirmed this assumption in every respect, and it offers an explanation for the previously inexplicable immunity to relapsing fever often displayed by attendants and others with cleanly, hygienic habits.

Wiener klinische Wochenschrift, Vienna

November 2, 1916, XXIX, No. 44, pp. 1385-1416

96 *Syphilitic Aorta Disease. L. v. Korczynski.—p. 1385. Continued.
97 Various Forms of Paratyphoid B. E. Sluka and R. Pollak.—p. 1390.
98 *Eosinophilia after Vaccination against Typhoid. (Zu den zytologischen Veränderungen nach der Typhusimpfung.) M. Labor.—p. 1393.
99 Changes in the Stomach with Paratyphoid. (Ueber gastritische Veränderungen bei Paratyphus.) T. Frankl and M. Benkovic.—p. 1394.
100 Lumbar Puncture "Cures" Certain Types of War Hysteria. T. v. Podmaniczky.—p. 1396.
101 *Typhus. (Zur Epidemiologie und Prophylaxe des Fleckfiebers.) J. Fonyo.—p. 1397. Concluded.
102 Atypical Variola; Two Cases. (Atypische Blatternfälle.) Wiener.—p. 1413.

96. **Syphilitic Aorta Disease.**—Korczynski reviews recent literature on this subject and reports data compiled in Bosnia and Herzegovina during the last two years. At the Sarajevo hospital there were during this period 251 cases of disease of the cardiovascular apparatus, exclusive of pericarditis, and in nearly 22 per cent. syphilis was present. Half of the fifty-four patients were between 40 and 50, but there was one of 15, one of 18, and two were between 20 and 30, with four between 60 and 65. Over 70 per cent. were from cities. The shortest interval between infection and the aorta affection was three years; from fifteen to thirty was the average. Grau has reported a case developing forty-one years after infection. The leukocyte picture was modified in nearly every case, the small lymphocytes being abnormally numerous. This in itself suggests the syphilitic nature of the trouble.

98. **Modification in the Blood After Vaccination Against Typhoid.**—Labor found abnormally high eosinophil count in a number of men during an epidemic of scurvy. Study of this eosinophilia demonstrated finally that it was a tardy phenomenon following vaccination against typhoid. In ninety healthy men and wounded vaccinated against typhoid but who had not been given antitetanus serum, he found no eosinophilia the first month; it was present in 20 per cent. the second month; in 57 per cent. in the third month; in 43 per cent. in the fourth, with the maximum eosinophilia of 21 per cent. in two of these cases. By the sixth month no eosinophilia was evident; in the seventh month slight eosinophilia was apparent in a few, and none after this. The lymphocytosis of the first period gives way to this eosinophilia which persists an astonishingly long time. No connection between it and the agglutinating property was evident. In two cases of typhoid occurring in the second and fifth month the eosinophils were much below the normal figure.

101. **Typhus.**—Fonyo's article was reviewed in these columns January 13, p. 156, abstr. 96.

Gazzetta degli Ospedali e delle Cliniche, Milan

November 23, 1916, XXXVII, No. 94, pp. 1473-1488

103 *Sweats in Meningitis not Connected with the Fever. (Gli accessi sudorali nella meningite della base.) G. A. Pari.—p. 1477.

November 26, No. 95, pp. 1489-1504

104 Localization of Foreign Body in Pleura by Percussion of Base of Thorax. S. Gangi.—p. 1492.
105 Treatment of War Fractures. (Sulla cura ed in specie sulla immobilizzazione delle fratture di guerra.) R. Mosti.—p. 1494.

November 30, No. 96, pp. 1505-1520

106 Typhoid plus Tetragenus Infection. C. B. Farmachidis.—p. 1508.

103. **Sweats in Meningitis.**—Pari calls attention to sudden universal sweats in basal meningitis, independent of the course of the fever. They seem to be connected with the motor phenomena, as is evident from the details of two typical cases related, the sweats coming on and subsiding with the symptoms from irritation of the cerebral nerves.

Policlinico, Rome

December 3, 1916, XXIII, No. 49, pp. 1417-1449

107 Mutilating Operations for War Wounds. (Le operazioni demolitive nei grandi traumatismi di guerra.) M. Francini.—p. 1417.
108 *Psoriasis after Emotional Stress and Trauma. (Sulla cosidetta psoriasis emotiva e traumatica.) C. Vignolo-Lutati.—p. 1422.
109 *Fever with Mastoiditis. (Il valore del sintoma febbre nella diagnosi e nelle indicazioni operative della mastoidite acuta e subacuta.) G. Bilancioni.—p. 1424.

December 10, No. 50, pp. 1453-1486

110 *Strangulated Femoral Hernia. (Di 5 casi di ernia crurale strozzata. Considerazioni intorno alla patogenesi dell'ernia crurale in uno di questi casi.) A. Miliani.—p. 1453.
111 *Emergency Hemostasis in War Wounds. (Emostasia provvisoria nelle ferite in prima linea di guerra.) R. Sacco.—p. 1458.
112 Technic for Vaccination against Typhoid. L. Tatarelli.—p. 1460.
113 Malaria among the Italian Soldiers. (La malaria fra i nostri soldati.) P. Timpano.—p. 1461.
114 *The Eye Affections of Scientists. (Intorno al mal d'occhi che rese cieco L. A. Muratori.) G. Bilancioni.—p. 1470.

108. **Psoriasis from Emotional Stress.**—Lutati has been impressed with the numbers of cases of psoriasis among the soldiers in Italy, the same as Gaucher in France. It seems to develop after a nervous shock, a violent emotion or trauma, but Lutati is convinced that this can occur only when there was already a possibly latent tendency to the disease.

109. **Fever in Mastoiditis.**—Bilancioni cites some typical cases to illustrate that fever is by no means a constant accompaniment of even very severe cases of mastoid disease, even in young children.

110. **Pathogenesis of Femoral Hernia.**—Miliani reports some cases of femoral hernia which sustain T. Turner's views as to the mechanism of the development of this form of hernia, as published in 1914.

111. **Emergency Hemostasis for War Wounds.**—Among the measures advocated, Sacco calls attention in particular to immediate suture of the skin as a means to control bleeding from a wound made by bullet or shrapnel ball, without wasting time in seeking for the exact source of the lesion. He found that the hemorrhage promptly stopped as soon as the skin wound was sutured. In the cases described the wounds had been dressed on the firing line, but the oozing of blood kept up until the skin was sutured.

114. **Ocular Anomalies that Lead to Blindness.**—Bilancioni cites a number of eminent scientists in different lands who lost their eyesight, saying that cataract does not seem to be more frequent among scientists and professional men than among other classes of the population, but glaucoma, detachment of the retina, sclerochoroiditis (especially in myopic eyes), retinal hemorrhages and other intra-ocular disturbances in circulation occur in far larger proportion among persons of a studious tendency than among others. He says that not a few professors in the universities of Italy have become blind from optic neuritis, retinal hemorrhage or detachment of the retina.

Siglo Medico, Madrid

October 28, 1916, LXIII, No. 3281, pp. 689-704

115 *Sarcoma of the Choroid. B. Castresana. Conclusion. p. 691.
116 Treatment of Urticaria. E. de Oyarzabal.—p. 694.
117 Phlebotomus Mosquitoes in Spain. Pittaluga.—p. 695.

115. **Sarcoma of the Choroid.**—The first part of this article was summarized in The Journal, Dec. 2, 1916, p. 1705.

Hospitalstidende, Copenhagen

November 29, 1916, LIX, No. 48, pp. 1157-1180

118 *Idiopathic Perirenal Hematoma. C. Tage-Hansen.—p. 1157.
119 *Experimental Research on Bile Peritonitis without Perforation of the Biliary Passages. (Studier over Galdeperitonit uden Perforation af Galdevejene.) A. Blad.—p. 1163. Commenced in No. 47, p. 1133.

118. **Idiopathic Perirenal Hematoma.**—In Hansen's patient, a secundipara of 35, the hematoma entirely encircled the kidney, but no cause for it could be detected on direct inspection of the kidney, pelvis or suprarenals. Recovery was soon complete after draining the blood away. In some of the twenty-three cases on record nephrectomy was done, in others the hematoma was merely drained. All died of the seven not given operative treatment, and four of the sixteen operated on. The diagnosis was made beforehand in only three cases.

119. **Experimental Bile Peritonitis without Perforation of Biliary Passages.**—Blad gives the details here of his work on rabbits and twenty dogs. He thus demonstrated that colloids are unable to pass through the gallbladder walls, but that crystalloids pass readily through them. Hence if the gallbladder contents become digested by ferments in connection with bacterial action, the bile can pass readily through the walls of the biliary apparatus without perforation. He explains that the ferments involved are probably derived from the pancreas.

Hygiea, Stockholm

1916, LXXVIII, No. 22, pp. 1681-1760

120 *Hemangiomas and Horn on Foot. (Ett fall av multipelt kavernöst hämangiom kombinerat med hudhorn.) A. Troell.—p. 1681.
121 Medical Experiences in Persia. (Några minnen och erfarenheter från Persien som läkare vid gendarmeriet.) C. Carlström.—p. 1692.

120. **Multiple Hemangiomas on the Foot.**—The patient was a girl of 8 and there were several tumors of the hemangioma cavernosus type at various points on the foot, and the whole leg was larger than its mate. The anomalies were evidently congenital, including a hornlike excrescence on the big toe. Under operative measures followed by radium exposures approximately clinical normal conditions were restored.

Norsk Magazin for Lægevidenskaben, Christiania

December, 1916, LXXVII, No. 12, pp. 1525-1660

122 *Drainage of the Peritoneum in Peritonitis. N. Barth.—p. 1525.
123 *Sacral Anesthesia to Relieve Pruritus. (Sakralinjektioner ved pruritus i genito-analregionen.) W. Holland.—p. 1557.
124 *Corneal Cyst with Secondary Glaucoma. (Korneoskleralcyste med epitelindvandring til camera anterior og sekundært glaukom.) S. Hagen.—p. 1567.
125 *Polypous Adenomas in Gastro-Intestinal Tract. (Polypøse adenomer i ventrikel og tarmkanal.) R. Ingebrigtsen.—p. 1578.
126 *Pathology and Treatment of Traumatic Aneurysm. C. Johannessen (Petrograd).—p. 1586.
127 *Herpes Zoster. (Motoriske og sensible forstyrrelser ved Herpes zoster.) V. Magnus.—p. 1612.

122. **Drainage with Peritonitis.**—Barth reviews the literature, 1912 to 1915, on the subject of draining the peritoneum in peritonitis. The cases of appendicitis in his own experience (Schilling's service, Christiania) accompanied by peritonitis are tabulated, the sixteen one-page tables thus giving an oversight of the outcome with and without drainage and with and without rinsing. Statistics from other clinics are cited, the length of stay in the hospital being also regarded. The summary conclusion from the whole is that the outcome is better when diffuse peritonitis is treated with drainage, but localized peritonitis does not seem to require it, the results being practically the same whether drains are used or not.

123. **Sacral Anesthesia for Genito-Anal Pruritus.**—Holland remarks that in cases of genital or anal pruritus rebellious to all other measures, great benefit can sometimes be obtained from temporary anesthetization of the region. The itching and the scratching keep up a vicious circle; let this be broken once and conditions may right themselves. As a comparatively simple and extremely effectual measure for the purpose, he commends sacral injection of a weak anesthetic solution. He describes six typical cases of pruritus of the genito-anal region in men between 30 and 66. The itching was alleviated by one injection and subsided entirely after a second or third. There was complicating eczema in some of the cases, and the pruritus was so intense in one case that sleep was impossible. This patient had obtained no relief from local applications and Roentgen exposures, but the pruritus was practically conquered with four sacral injections, the first two of 20 c.c. of 0.9 per cent. saline plus 0.1 and 0.15 gm. novocain; the last two of 48 c.c. of water with 0.4 gm. novocain. Once in a great while there is a little itching still, but it is mild and transient. In another case the itching showed no modification after sacral injection of 48 c.c. of 4.5 per cent. saline containing 0.24 gm. novocain. Eight days passed with no apparent improvement; then suddenly the pruritus ceased, and there has been no return of the itching during the ten months to date. This patient was a clerk of 30 and the pruritus had tormented him for two years, involving the entire genito-anal region, but he has been entirely free from it since the eighth day after the injection last February. Holland reiterates that the practical result harmonizes with the theoretical reasoning, the benefit being constant and striking, while the injection can do no harm at the time or later. The effect seemed better when water was the vehicle rather than saline, and when from 0.2 to 0.3 gm. novocain was used. In some of the cases the anesthesia in the region was not complete but the pruritus was relieved. At first he used but little fluid, but later injected more until he felt a resistance. With a little overpressure the fluid works its way into the nerves better. In three of the cases the pruritus might be regarded as of the senile type, the men being from 60 to 66; the others were in the thirties. The technic was that described by P. Bull and W. Enderlé (mentioned in The Journal, Aug. 14 and Sept. 25, 1915, pp. 658 and 1147. It is practically the same as Cathelin's epidural injection.)

124. **Corneal Cyst.**—The boy of 10 had a typical corneal-sclerotic cyst in the right eye. Epithelium cells had invaded the anterior chamber and secondary glaucoma developed. The microscopic findings in the enucleated eye are reproduced.

125. **Gastro-Intestinal Polyposis.**—Ingebrigtsen's report is based on sixteen cases of polypous adenoma in the stomach, the patients all over 40, and one case of intestinal polyposis in a man of 36. In two of the stomach cases there was also a cancer in the stomach, and in one case there was actual gastric polyposis.

126. **Traumatic Aneurysm.**—Johannessen reports practical experiences in the war and much experimental research on dogs to determine the effect on the venous circulation of ligation of the corresponding artery. The venous circulation dropped very low after ligation of an artery. The animals were all under the influence of a general anesthetic. Lying on the back the pressure in the femoral vein after ligation of the femoral artery was 7 mm. mercury; in the Trendelenburg position it was from 4 to 2 mm.; after compression of the femoral artery, it was 1.5 mm., and after compression of the abdominal aorta only from 0.5 to 0 mm. or below. This low pressure sucks the blood from the arterial collaterals directly into the veins. The larger the artery, the greater the drop in the venous pressure, and this hinders the development of good collateral arterial circulation. These and other experiments related teach the lesson that ligation of the vein, after ligating the corresponding artery, promotes the arterial collateral circulation.

127. **Herpes Zoster.**—Magnus has been investigating the sensory and motor disturbances accompanying or following herpes zoster, and reports here seven cases in which there were motor disturbances. In the eight other acute cases and twenty-three convalescents there were no motor symptoms. He and others have published a few necropsy reports showing disseminated foci of myelitis following herpes zoster, and in one case of herpes zoster he found diplococci in a round cell infiltrate in the anterior grey cornu. The eight cases with motor disturbances are described in detail, with illustrations. The weak muscles corresponded to the region innervated by the nerve involved in the herpes zoster. The region that had been involved in the herpes zoster was often left also with sensory anomalies for a few months.

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SUBACUTE AND LATENT INFANTILE SCURVY

THE CARDIORESPIRATORY SYNDROME
(A NEW SIGN)

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In previous papers on this subject[1] it has been established, I believe, that infantile scurvy may be brought about by a diet of pasteurized milk. An investigation of this question seemed not only indicated but also urgent in view of the increasingly widespread use of pasteurized milk, and of the fact that the National Commission on Milk Standards, a committee of the highest authority, has expressed the opinion that the heating of milk, as carried out in the course of pasteurization, does not destroy its enzymes or other chemical constituents.[2] As stated, my experience did not coincide with this opinion. On the contrary, I found that when the use of orange juice was discontinued in the dietary of a group of infants who were being fed on milk which had been subjected to a temperature of 140 F. for thirty minutes, some of them in the course of from two to four months showed signs of mild scurvy. That these manifestations were in reality scorbutic, and furthermore that they were attributable to the pasteurized milk, was proved by their rapid disappearance when orange juice was again added to the dietary, or when raw milk was substituted for the heated milk. The practical deduction from these observations is not, however, that pasteurization should be discouraged, or that milk treated in this way is objectionable, but merely that the important fact should be recognized that it is not a complete food for infants and that it is imperative to give an antiscorbutic substance in addition.[3] When this prophylactic measure is observed, fresh pasteurized milk becomes a most valuable food for infants, and is to be highly recommended on account of the security which it affords. It should be understood that my position in regard to the effect of pasteurized milk is not based on mere refinements of diagnosis, or on rare and exceptional cases, such as are of interest only to the specialist. On the contrary, I believe that scurvy brought about in this way is not at all infrequent, that it is indeed the most common cause of scurvy, and that it induces a type of the disorder which generally passes unrecognized. If we are to diagnose scurvy promptly, and not overlook its more subtle manifestations, the classic textbook description of this disturbance must be supplanted by one which is less crude and more faithful to true clinical conditions.

The stereotyped picture of infantile scurvy, and the one which this term commonly suggests, is that of a poorly nourished infant, lying with one or both thighs flexed on the abdomen, who, on closer examination, is found to have bleeding, spongy gums, and enlargement of the lower end of the femur, associated with exquisite tenderness. This is the syndrome which the medical student carries away to guide him in his everyday practice. It is the florid type, encountered only occasionally, and requiring merely a routine physical examination for recognition. The commoner form, which may be termed "subacute infantile scurvy," is composed of a large number of symptoms which are inconclusive individually, and may well escape a correct interpretation. The affected baby is usually in the second half of the first year of life, and does not gain or gains but slightly for weeks. It may be fairly well nourished, but is pale, with perhaps slight edema of the eyelids. The mother or nurse complains that the child is irritable and peevish, and that the appetite has diminished. The gums may show merely a lividity or slight peridental hemorrhage, which on subsequent examination is no longer visible, and may have consisted merely of a rim of crimson edging the borders of the upper gum, or perhaps have been situated behind the upper incisor, as Still[4] pointed out. On closer examination it may be observed that the papillae of the tip of the tongue are markedly congested, and that a petechial spot is to be seen on its frenum, on the palpebral conjunctiva, or here and there on the surface of the body, more especially where there are erosions, eczema or other skin lesions.[5] Attention may be called to tenderness of the lower thighs, which in some instances is definite, in others so ill defined and fleeting that it is impossible to feel convinced of its significance or even reality. There may be slight edema over the crests of the tibia, of the kind which does not pit on pressure. The knee jerks are almost always markedly exaggerated. The urine is found to be normal or to contain some albumin and red and white blood cells.

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[1] Hess, A. F., and Fish, Mildred: Infantile Scurvy: The Blood, the Blood Vessels and the Diet, Am. Jour. Dis. Child, December, 1914, p. 386. Hess, A. F.: Infantile Scurvy, II, A New Aspect of the Symptomatology, Pathology and Diet, The Journal A. M. A., September 18, 1915, p. 1003; Infantile Scurvy, III, Its Influence on Growth (Length and Weight), Am. Jour. Dis. Child, August, 1916, p. 152; Infantile Scurvy, IV, The Therapeutic Value of Yeast and of Wheat Embryo, Am. Jour. Dis. Child., January 1917, p. 98.

[2] Report of the Commission on Milk Standards, appointed by the New York Milk Committee, Pub. Health Rep., May 10, 1912.

[3] In referring to pasteurized milk as inducing scurvy, I do not wish to state that the heating is necessarily altogether responsible for this result. There may well be other contributory factors, such as the staleness of the milk.

[4] Still, G. E.: Common Disorders and Diseases of Childhood, London, 1909, p. 105.

[5] The extent of the petechiae and other hemorrhages in infantile scurvy depends on the individual predisposition of the child in this regard. As has been pointed out, this sign is due mainly to a weakness of the vessel wall, and not to an alteration in the coagulability of the blood. In infants who show an instability of the capillaries, as manifested by the "capillary resistance test," the disorder is apt to be characterized clinically by the various typical signs of hemorrhage.

These symptoms do not constitute a rigid entity, but are subject to manifold variations. The syndrome may be rendered less typical and more difficult by the fact that the infant has gained steadily rather than lost in weight, as is sometimes the case, particularly if the food has been insufficient in quantity during the first few months of life. There are other symptoms worthy of note, especially those which have been disclosed by the aid of the Roentgen ray. As described and portrayed elsewhere, the heart may be involved in infantile scurvy; this may be evident to ordinary physical examination, as enlargement, especially to the right, and may be accompanied by dulness and diminished breathing posteriorly at the bases of the lungs. This type of enlargement is often well shown in roentgenograms, as well as a marked broadening at the base of the heart, at the site of the large vessels (Figs. 1 and 2). As far as I know, attention has never been called to the latter phenomenon, and it will be referred to below in another connection. Roentgenograms of the bones may show the "white line" at the epiphyses first described by Fraenkel, or a thickening of the periosteum. However, too great reliance should not be placed on these signs in making an early diagnosis of this disorder, as neither are invariably present.

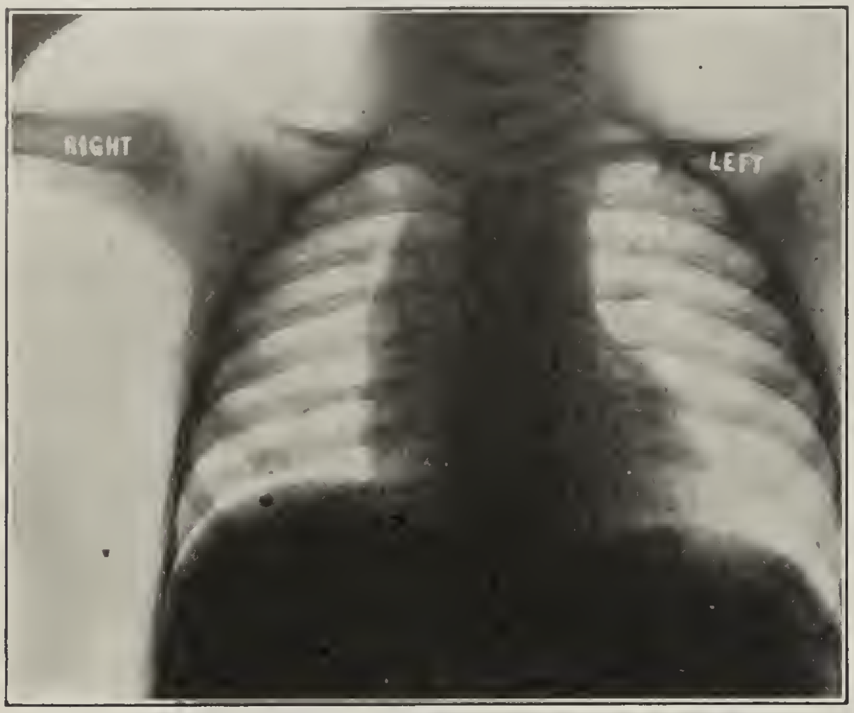

Fig. 1.—Enlargement of heart, especially to the right, and broad shadow at the site of the large vessels.

An example of a case of subacute scurvy, which in many respects is typical, is the following:

Case 1.—I. F., girl, was admitted when 3 months old, weighing somewhat over 8 pounds. She was given Schloss milk, 4 ounces and then 5 ounces every three hours, and did well, weighing 11¼ pounds two months later. As she failed to gain for some weeks, although 6 ounces of food were given, it was thought that this might be due to the fact that she was getting pasteurized milk and that she had never received an antiscorbutic. Autolyzed yeast was tried as a prophylactic antiscorbutic, as has been described elsewhere[1] in detail. This failed to cause a gain. When, however, orange juice was substituted for the yeast, a prompt growth reaction resulted, a gain of 1¼ pounds in four weeks. Accompanying this lack of gain in weight there were many of the other symptoms enumerated above: irritability, pallor, slight tenderness of the lower ends of the femora, albumin and a few red and white cells in the urine. The pulse or heart beat was frequently over 150, and the respirations 60 (Fig. 3). The diagnosis of subacute scurvy was substantiated by the prompt subsidence of all symptoms when orange juice was given.

Among the symptoms mentioned in this case are a pulse of over 150 and respirations of 60 a minute. These phenomena were noted in several instances before their significance and intimate relationship with infantile scurvy was realized. They were then made the subject of closer observation and were found to occur frequently as early signs of this disorder. In one instance of subacute scurvy the pulse could not be counted, and the heart beat was found to be 200 to the minute. It should not be thought that this must have been a severe case; on the contrary, the baby was in good condition, did not appear ill, and merely showed some tenderness of the thighs, and red blood cells in the urine as other evidences of its ailment. When given orange juice there was a remarkable response in gain in weight and a disappearance of the other symptoms. The rapidity of respirations is perhaps a more delicate indicator of this disturbance than the pulse, and has been found to be markedly affected when the latter was merely slightly increased in rate. For example, in one instance the respirations were 64, 60 and 64 on three successive days, while the pulse was 124, 141 and 136: in other words, there was a 2:1 instead of the normal 4:1 pulse-respiration ratio. The accompanying charts (Figs. 3 and 4) illustrate the phenomenon in all its details better than a verbal description. There are several points in connection with them to which I wish to call especial attention. First and foremost is a reaction which is evident from a glance at either chart, the sharp drop in the pulse and in the respiration rate when orange juice was given. This is the essence of the phenomenon; a response which proves that it is dependent on and the result of the scorbutic condition. In Figure 4 it will be noted that after orange juice had brought about this reaction, potato was substituted and was able to enhance the effect still further. It did this not only as regards the pulse-respiration syndrome, but also as regards the other scorbutic manifestations. This is the case which was cited recently[1] to raise the question as to possible differences between the various antiscorbutics, and from which the inference was drawn that they are not all exactly alike in their chemical nature or therapeutic action. My previous opinion on this question is further

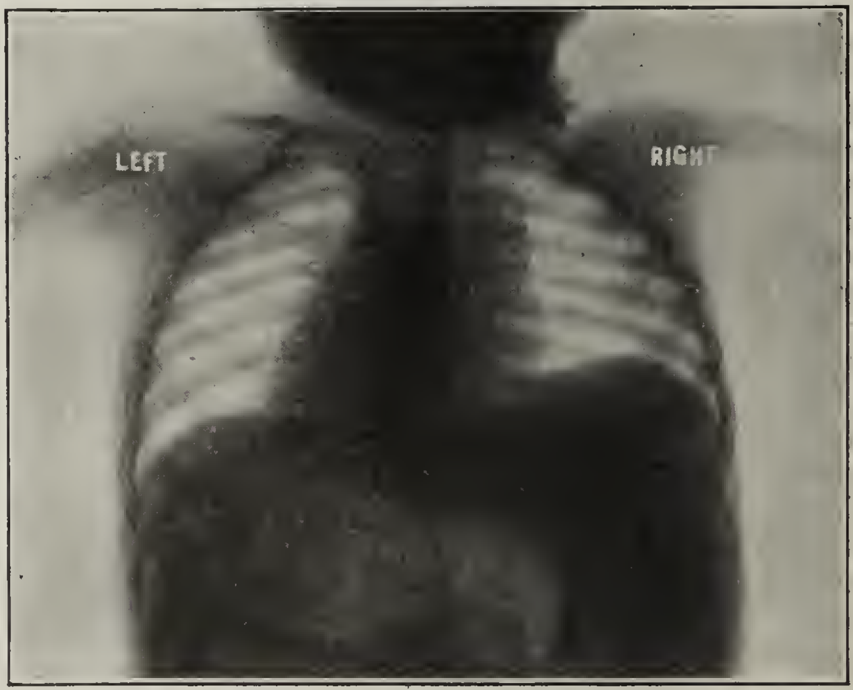

Fig. 2.—Broad shadow at the site of the large vessels.

strengthened by the secondary beneficial results which may follow the administration of vegetables in cases of scurvy in which orange juice has been taken for some weeks (Fig. 5). Returning to a study of Figures 3 and 4, we note that on giving orange juice, not only were the pulse and the respiration affected, but the temperature as well. It would seem as if this disorder incited a mild febrile reaction, which yielded promptly to antiscorbutic treatment and should therefore be regarded as scorbutic in nature, in other words, as a *scorbutic fever.*

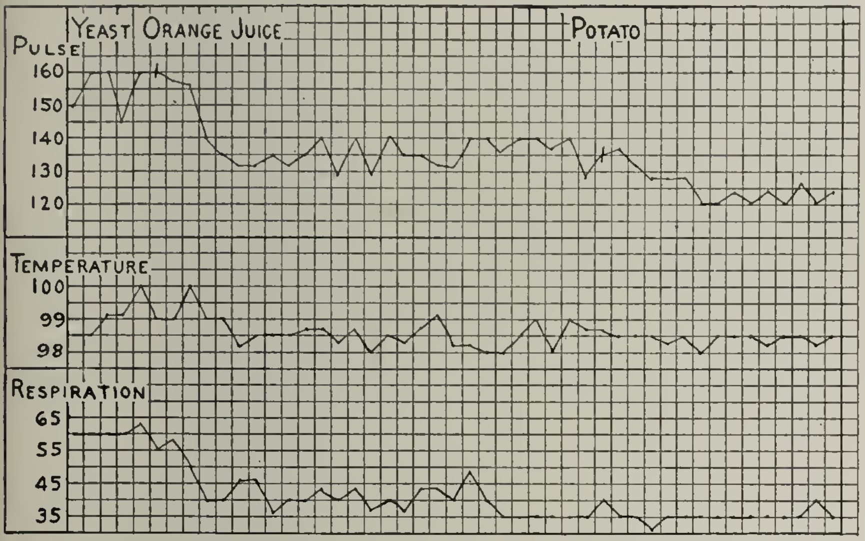

Fig. 3 (Case 1).—Chart of I. F., aged 7 months, showing prompt effect on pulse, respiration and temperature of substitution of orange juice (30 c.c.) for autolyzed yeast (30 c.c.) and a further response when the former was replaced by potato (15 gm.).

There is little to be stated in addition concerning the type of the tachycardia. The pulse is regular and moderately strong, and its rapidity is heightened unduly by the incidence of minor intercurrent infections. Cardiographic tracings, which were kindly carried out by Dr. B. S. Oppenheimer, showed a simple tachycardia, such as is common to exophthalmic goiter, with the T-wave exceptionally tall in some tracings (Fig. 6).

The increase in respirations is a polypnea rather than a dyspnea. The baby lies apparently in comfort while the respirations number 60 a minute. It is probably due to this lack of visible disturbance, this superficial appearance of normal cardiac and respiratory functioning, that these signs have escaped observation. In the comprehensive report of the American Pediatric Society,[6] there is no reference to involvement of heart or lungs.

Without doubt this cardiorespiratory syndrome is occasioned by a disturbance of the nervous mechanism controlling this dual system. In view of the fact that the action of the lungs as well as that of the heart is affected, there can be no question of the symptoms being attributable to a primary muscular alteration. Nor can they be ascribed to anemia. In the first paper of this series by Hess and Fish,[1] it was shown that infantile scurvy is generally accompanied by only a mild grade of secondary anemia. Furthermore, observations carried out to control this point have demonstrated that poorly nourished infants with more marked anemia have approximately a normal cardiac and respiratory rate. Moreover, the fact that these symptoms yield precipitously in forty-eight hours to antiscorbutic diet does away with all questions of their dependence on malnutrition or anemia. The phenomenon is clearly neurotic in nature and probably due to an involvement of the pneumogastric nerves. We have here, therefore, one more link of evidence that the nervous system is involved in infantile scurvy, and that this disorder should no longer be regarded as affecting only the bones and the blood vessels, or as one characterized clinically by subperiosteal swellings and hemorrhages in various parts of the body. Elsewhere[1] I have laid stress on the fact that the optic nerve may show changes, and that it is quite common to find the knee reflexes exaggerated. The significance of showing that infantile scurvy possesses an aspect which requires it to be regarded as a disease of the nervous system is interesting in itself, but gains far greater importance when we consider that this association brings it into closer relationship with beriberi, adult scurvy, pellagra and the ever increasing group of disorders which are classed as "deficiency diseases," or, according to Funk, "avitaminosen." In beriberi, as well as in infantile scurvy, there is enlargement of the heart, especially of the right heart,[7] and there are tachycardia, polypnea, and generally increased knee jerks. In adult scurvy we find dyspnea, palpitation and hyperesthesia frequently described. Attention has been drawn, from time to time, to the close clinical relationship between adult scurvy and beriberi by various observers who have noted cases of these disorders manifesting themselves under apparently identical conditions. Only recently this was once more reported by a military surgeon in relation to the troops in Mesopotamia and the Dardanelles.[8] In tracing relationship with pellagra, we are treading on disputed ground. I would draw attention to the fact, however, that in this disease the pulse is frequently rapid,[9] and also that pathologic and even clinical changes have been found in the central nervous system.[10] As is well known, skin lesions are also one of the characteristic signs of pellagra. It is therefore worthy of comment that in infantile scurvy, redness of the skin is not infrequently associated with edema over the tibia; this was the case in sixty-nine of the 190 instances of edema

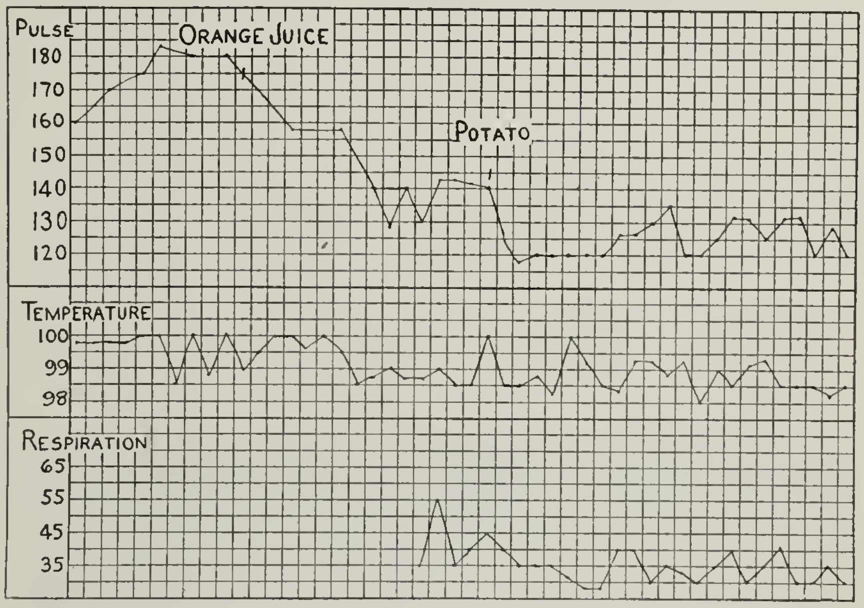

Fig. 4.—Chart of J. G., aged 9 months, showing marked effect of orange juice (30 c.c.) on the polypnea, and accessory effect of potato (15 gm.). The respirations were not recorded in the early stage of this case.

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[6] American Pediatric Society Committee: Arch. Pediat., 1898, **15**, 481.

[7] In a recent report of Roentgen-ray examinations of Russian captives, suffering from beriberi and disorders resembling beriberi, P. Reinhard (Arch. f. Schiffs- u. Tropen-Hyg., 1916, No. 1, p. 20), states that he found primary dilatation of the shadow of the large vessels, especially of the pulmonary region. This is similar to the roentgenographic picture which I have described above occurring in infantile scurvy.

[8] Willcox, W. H.: Beriberi, with Special Reference to Prophylaxis and Treatment, Lancet, London, 1916, **1**, 553.

[9] Ridlon, J. R.: Pellagra: The Value of the Dietary Treatment of the Disease, Pub. Health Rep., 1916, **31**, 1979.

[10] Koch, M. L., and Voegtlin, C.: Bull. 103, Hyg. Lab., U. S. P. H. S., February, 1916.

collected by the American Pediatric Society.[6] It is also of interest in this connection, that, as has been pointed out,[1] there is an eczema which develops in infants in the course of scurvy which yields promptly to antiscorbutic treatment.

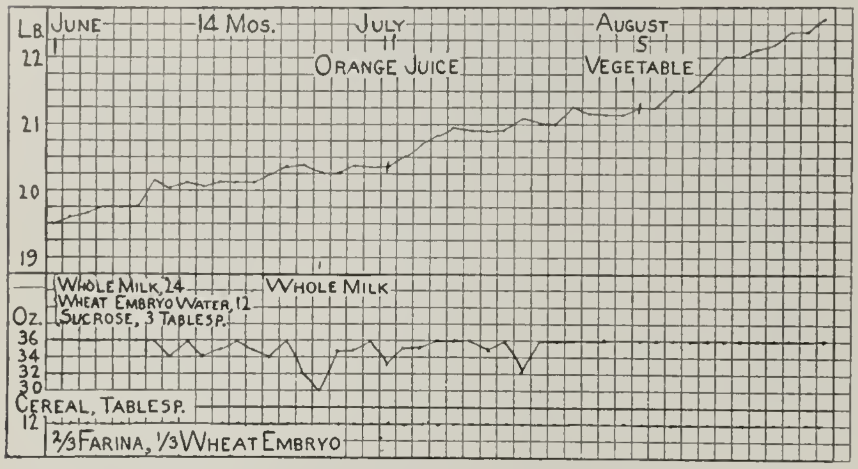

Fig. 5 (Case 3).—Latent scurvy in older infant disclosed by therapeutic test; child had received both wheat embryo and watery extract of the embryo.

It is evident that previous to the onset of scurvy there must be a period during which the equilibrium of the essential substance or "vitamin" is no longer being maintained, but, on the contrary, a negative balance is in progress. Although at the onset this abnormal state of metabolism is of no clinical moment, if it continues it gradually brings about a condition of "latent scurvy." This nutritional state may constitute merely an introductory phase to the occurrence of subacute or of florid scurvy. It may, however, advance no further; the negative balance may be slight, and the supply of "vitamin" sufficiently great to maintain the body in the latent scorbutic condition for months, until, quite unintentionally, it is brought into equilibrium by the addition of some antiscorbutic food stuff to the dietary. Figure 7 is reproduced to illustrate how latent scurvy may remain latent; how it may gradually merge into subacute scurvy and develop no further, and, finally, how the typical gradation may ensue, of latent, subacute and florid infantile scurvy.

The diagnosis of latent scurvy is based mainly on the reaction to specific therapy, and on the marked improvement when orange juice, potato or other antiscorbutic food is taken. The symptoms themselves are suggestive but do not permit a definite diagnosis. In my experience the course has been as follows: The infant generally has been from 6 to 9 months of age, and has been fed for a considerable period on pasteurized milk; this may or may not have been prepared with cereal decoction, nor did it seem material whether or not gruels also had been given. When about 6 months of age, the baby ceased to thrive, to gain satisfactorily, to look strong and to eat as we should desire. The most careful physical examination has failed to solve the difficulty. On the other hand, the history of a diet of heated milk and lack of antiscorbutic food, considered in conjunction with the pallor and lack of appetite, the increased knee jerks, and perhaps the cardiorespiratory syndrome, has awakened suspicion and led us to prescribe orange juice, with a view to diagnosis as well as treatment. The result frequently has been magical. The following case, the weight chart of which is reproduced (Fig. 8), is fairly typical of this abnormal nutritional state:

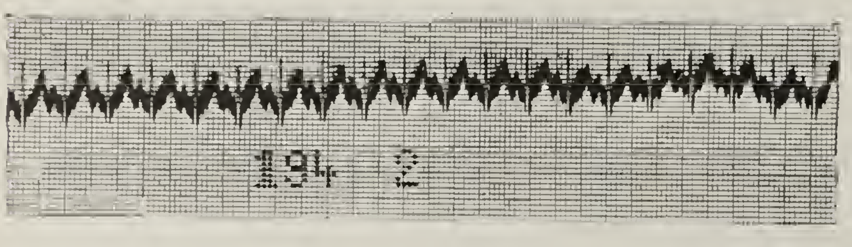

Fig. 6.—Electrocardiogram in case showing cardiorespiratory syndrome.

Case 2.—H. C., boy, born Dec. 15, 1915, was artificially fed until admitted to the institution, Jan. 4, 1916, when he weighed 6½ pounds. He was given 28 ounces of Schloss milk a day. (This was prepared from pasteurized milk which was not heated a second time. It contains per liter [quart] 140 c.c. of whole milk, 140 c.c. of 20 per cent. cream, 50 gm. of dextrimaltose, 5 gm. of plasmon, 0.2 gm. of potassium chlorate, and 700 c.c. of water.) By March 1 he weighed 9 pounds, and gained three quarters of a pound more in the course of this month. During April he gained only 4 ounces. As will be seen from the chart, there was almost a cessation of gain from April 10 to May 3, although yeast was added to the diet. May 2, orange juice was given. The weight advanced at once, the general appearance quickly improved, and an eczematous condition of the face rapidly healed. It will be noted from the chart that all this occurred, although the intake of food remained the same.

Epicrisis: a baby 4 months old with latent scurvy, which had existed since or even before it was 3 months of age.

This disorder may occur in older infants, under similar dietary conditions. The following case relates to a well nourished, active, contented baby over a year old. A diagnosis was impossible from the signs and symptoms, but was suggested by previous experience with the results of a prolonged diet of heated milk (Fig. 5).

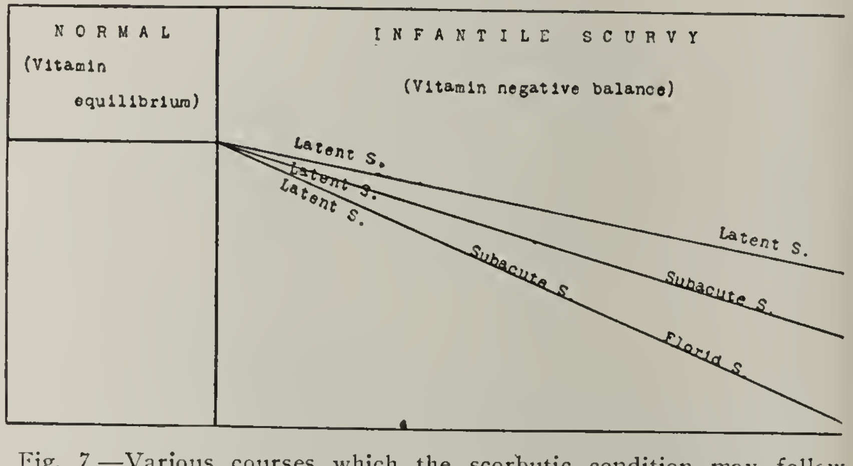

Fig. 7.—Various courses which the scorbutic condition may follow, according to the degree of negative balance of vitamins.

Case 3.—E. F., girl, admitted when 4 months old, weighing 9½ pounds, had never been nursed. She gained on a mixture of two-thirds milk, and was given orange juice when 6 months of age, and vegetable a month later. Feb. 1, 1916, when she was 9½ months old and weighed 16½ pounds, orange juice and vegetable were discontinued, and a cereal containing wheat embryo (germ meal) substituted. She had grip, associated with otitis and adenitis, during the latter part of February and again in March and the early part of April. By May 14, however, she weighed 19 pounds and showed no scorbutic signs whatever. About this time the watery extract of the germ meal was added to the diet in place of barley water (12 ounces a day). During June the gain fell off markedly, but the baby appeared well otherwise. Whole milk was ordered to offset this in the beginning of July, but did not bring about a gain. Then orange juice was added. Figure 5 shows the prompt response, which unfortunately was soon interrupted by another grip attack. Later vegetable was substituted for orange juice, and occassioned an increase in weight which lasted for many weeks.

This condition of latent scurvy is probably the commonest type of the disorder, especiallly in the larger cities where almost the entire milk supply for infants is pasteurized, and it is frequently passed over unrecognized. Most infants happily are given orange juice by the time they are 6 months of age, and may receive a small amount of vegetable or potato before they are much older, so that they are protected from serious harm in this way. But there is no doubt a considerable number, including those who are peculiarly susceptible, who pass through the state of latent scurvy.

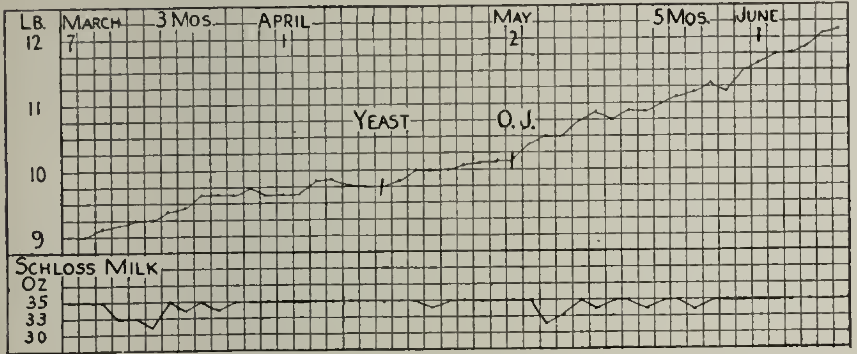

Fig. 8 (Case 2).—Latent Scurvy: Infant under 4 months of age responding promptly to orange juice (previous failure of autolyzed yeast); quantity and composition of food unchanged throughout.

If these cases were included in the computations, we should not class infantile scurvy as a disorder which very rarely occurs during the first six months of life, nor would an experienced observer, such as Still,[4] state that "in no case did scurvy begin before the age of 5 months." An instance has just been cited occuring considerably before this age. The lesson taught by these observations is not that fresh milk for infant feeding should not be pasteurized, but that the administration of antiscorbutics should be begun earlier. There is no reason based on clinical experience which contraindicates the giving of a teaspoonful of orange juice at 1 month to bottle fed babies, and of gradually increasing this amount to a tablespoonful at the age of 3 months. As has been repeatedly shown, there is, on the contrary, a valid reason for urging the adoption of a prophylactic measure of this kind for infants fed on the pasteurized milk as supplied at present.

CONCLUSIONS

An exclusive diet of pasteurized milk will frequently induce scurvy in infants. It should be well understood, however, that this danger can readily be averted by the mere addition of an antiscorbutic food to the dietary.

Probably a large proportion of infantile scurvy is occasioned at present by our pasteurized milk. This scurvy is usually not of the classic, florid type. It is less pronounced and obvious, and is consequently the form which is least often recognized. This type may be termed "subacute infantile scurvy" and is distinguished by a group of incompletely developed symptoms which disappear quickly when orange juice or other specific therapy is given.

Another type found to be occasioned by this milk is "latent scurvy." This constitutes a state of malnutrition which develops slowly as the result of a negative balance of "vitamins," It can rarely be definitely diagnosed, except by the sharp recession of symptoms —stationary weight, pallor, poor appetite, etc—following the administration of an antiscorbutic.

We should no longer regard infantile scurvy, from either a pathologic or a clinical point of view, as a disorder affecting merely the blood vessels and the bones. Roentgenograms show that the heart, especially the right heart, is frequently enlarged, and that there is a broadening of the shadow at the base of the heart, at the site of the great vessels. Furthermore, this disorder is associated frequently, even in the mild forms, with a cardiorespiratory disturbance characterized by a very rapid pulse, and respirations which may rise as high as 60 a minute (polypnea). Both of these signs disappear promptly when orange juice or potato is given. This cardiorespiratory syndrome is due to an involvement of the nerves. Considered in conjunction with the changes of the optic disk, previously described, and the increasing of the knee reflexes, it is evident that the nervous system is extensively involved in infantile scurvy. This fact gains added interest in view of the marked involvement of the nervous tissue in other so-called "deficiency diseases," such as adult scurvy, beriberi and pellagra.

16 West Eighty-Sixth Street.

ASTRAGALECTOMY (WHITMAN OPERATION) IN INFANTILE PARALYSIS *

W. R. MacAUSLAND, M.D.
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It is not my object to discuss more than in a general way the various operative procedures in the paralyzed foot, but rather to emphasize the value of an operation which has stood the test of time; and unlike tendon transplantation, silk ligaments, etc., has been found practical, efficient and permanent in combating the instability so frequently seen in the paralyzed foot. It seems to the writer that except for one or two possible conditions in the paralyzed foot, transplantation should be discarded in favor of a procedure giving permanent results in the hands of the surgeon. As one compares the results in a series of cases some years after operation, it seems quite remarkable that transplantation of tendons and the use of silk ligaments still persist.

Infantile paralysis most frequently leaves its mark in the muscles of the foot where varying degrees of paralysis persist from a mild weakness of one group or a paralysis of one group to a total paralysis of the entire muscle strength below the knee. The extent of the disability, however, only rarely coincides with the extent of the paralysis.

Weakness, instability of the foot and deformities follow paralysis of one group as frequently as they follow paralysis of all the muscles. It is the failure to recognize this fact that tempts the surgeon to use such insufficient means as transplantation and silk ligaments in order to combat deformity in those cases with slight loss of muscle power. The normal foot is balanced by muscles working in perfect coordination, assisted by

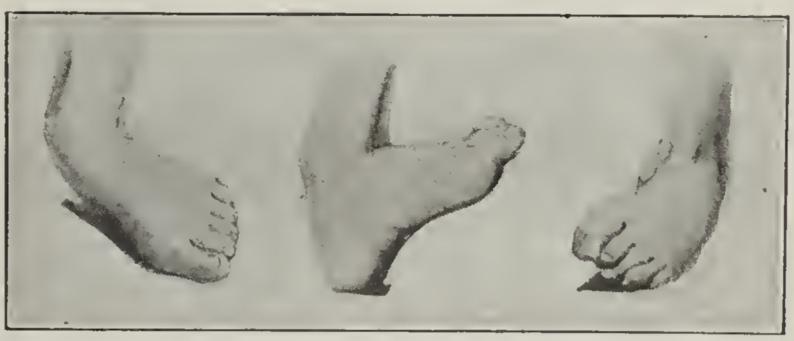

Fig. 1.—Three of the more common deformities in the partly paralyzed foot.

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

ligaments which check extremes of motion. To expect sufficient restoration of balance following transplantation is illogical from a mechanical and physiologic point of view, and in the experience of the writer not based on careful and prolonged clinical observation.

Our first duty, of course, is to foresee and prevent structural deformity, thereby favoring regeneration and recovery of power.

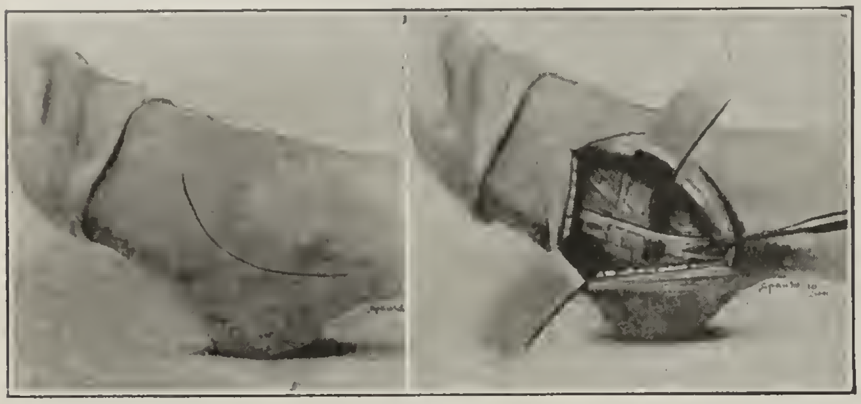

Fig. 2.—Astragalectomy — the Whitman operation: On left, line of incision. On right, tendon of peroneus longus exposed; tendon of peroneus brevis being exposed.

If this recovery does not take place, then we arrive at the point where operative interference must be considered or the patient condemned to a brace for permanent support. Here the question arises as to the class of cases in which surgical interference is indicated. We must all believe that operative interference should be delayed as long as there is a possibility of a return of power, e. g., about one and a half to two years following the initial attack. In children, in whom deformity may usually be prevented, my experience leads me to wait longer if the age of 6 or 7 has not been reached. In the presence of deformity not easily correctable by manipulation, this age limit may be lowered a year to hasten good locomotion.

What operation shall we choose? During the past six years I have used astragalectomy as devised by Dr. Royal Whitman[1] in almost all of the deficiencies following infantile paralysis affecting the leg. Altogether my series comprises 135 cases, a sufficient number to warrant the formation of definite opinions concerning its value as an operation. In short, I may state that it has come to replace the commoner operations of transplantation, silk ligaments and allied operations. Astragalectomy gives stability, which is not in my experience obtained by the other procedures, and in addition preserves sufficient motion for good function of the ankle. Arthrodesis when successful stiffens the joint and an awkward gait results.

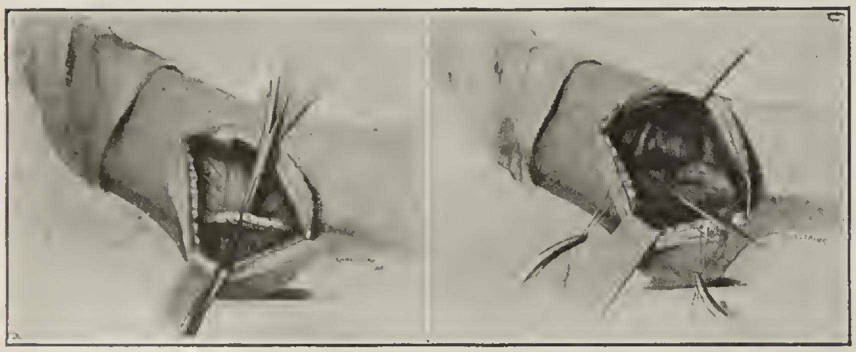

Fig. 3.—Astragalectomy — the Whitman operation: On left, peroneal tendons sutured and divided. On right, external lateral ligament divided: tibio-astragaloid ligament divided; interosseus and external talocalcaneal ligaments being divided.

Age.—Astragalectomy can be done at any age following a period of two years after the original paralysis, but if possible should be reserved until the child is 6 or 8 years old. If, however, deformity is not being prevented by apparatus and if the limp is more than the extent of the paralysis warrants, then I should not wait for this age; for atrophy and shortening go hand in hand with the severity of the deformity and the limp, not with the extent of the paralysis. In the period between 6 and 16 years of age the most satisfactory results are obtainable. We have done the operation later but find that more sensitiveness and pain are liable to follow, and the results, in spite of good stability, motion and a good posture, are not quite as satisfactory as when done early.

Indications.—The conditions in the foot for which this operation may be done with benefit are many. Probably the most striking results follow its use in the deformity of calcaneovalgus, for which it was originally planned (Fig. 1). Here with the shifting of the tibial weight forward, and the transplantation of the peronei into the Achilles, a most striking functional result is obtained. But its use cannot be limited to this alone. It gives excellent and standard results in all foot conditions — even where only one muscle is paralyzed.

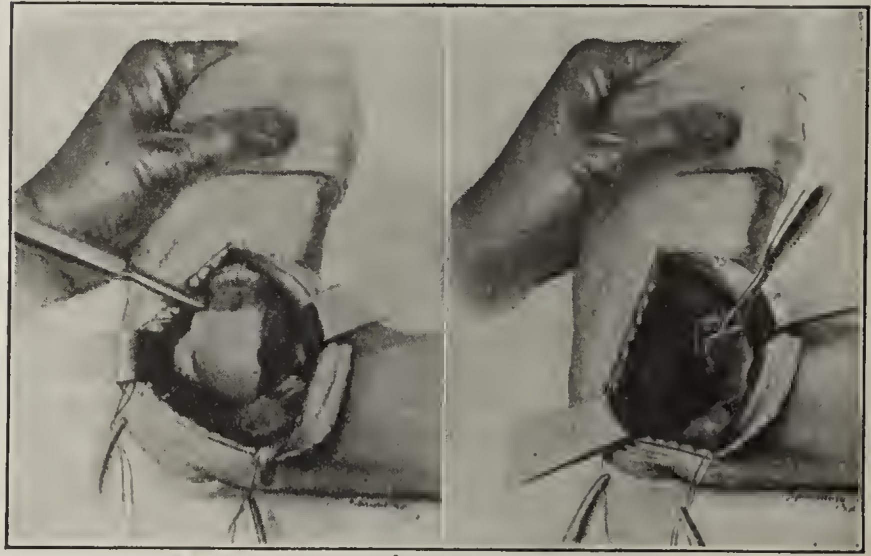

Fig. 4.—Astragalectomy — the Whitman operation: On left, dislocation of astragalus by strong inversion of foot. Note heavy dissector under neck by which astragalus is pried loose head first. On right, widening tibia-fibular articulation by removal of thin slice of cartilage from internal malleolus.

Operative Technic (Figs. 2-10).—Here as in other joint operations the asepsis should be guarded carefully and manipulation should be gentle. A curved or L-shaped incision is made around the external malleolus, tending forward over the head of the astragalus. The upper flap is then dissected upward, exposing the tendons of the peroneus longus and brevis, which are then dissected free and severed just at the fibular tip. The ends are caught in No. 2 catgut sutures and retracted.

An incision is then made through the external ligaments around the astragalus, using especial care about the head of the astragalus. The foot is strongly inverted. Then by placing a blunt dissector under the neck of the astragalus, the bone is pried out of position head first, and removed. At once the ease of displacing the foot backward will be noticed, but in order to insure a good joint a certain amount of modeling must be done.

The internal lateral ligament is dissected upward from the internal malleolus; if necessary, a strip of cartilage is removed from both tips to span the scaphoid and cuboid; a small piece is excised from the side of the scaphoid and cuboid to form pockets for the malleoli. The foot is then displaced backward and held carefully in this position to insure the proper relations in the new joint. A moderate equinovalgus gives stability while holding. The peronei are disposed of by suture to the Achilles tendon, by tendon fixation or by resuture to the distal ends of the tendons of the peronei, as indicated in the given case. The skin is closed with catgut and plaster applied from the toes to midthigh with the knee flexed and the foot in equinovalgus. The leg is kept elevated for a period of ten days, after which crutches may be used. The first change of cast takes place in three or four weeks, at which time the equinus is corrected to a right angle in cases of quadriceps paralysis or left in 5 to 8 degrees equinus where the quadriceps is present. Valgus should persist throughout the treatment.

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[1] Whitman: Am. Jour. Med. Sc., 1901, **122**, 593; Am. Jour. Orthop. Surg., 1910-1911, **13**, 137; Am. Surg., 1911, **54**, 860.

A leather shoe (Fig. 11) is then put over the plaster and the child allowed to walk, changing the plaster as necessary for five to six months. Following its removal a shoe with a lift on the outer side of the sole is used. A one-half or three-quarter inch cork lift under the heel will compensate for the shortening of the leg and improve the gait. Circulation improves rapidly with the return of good function and loss of growth ceases, the paralyzed leg beginning to grow at a rate equal to that of the well side.

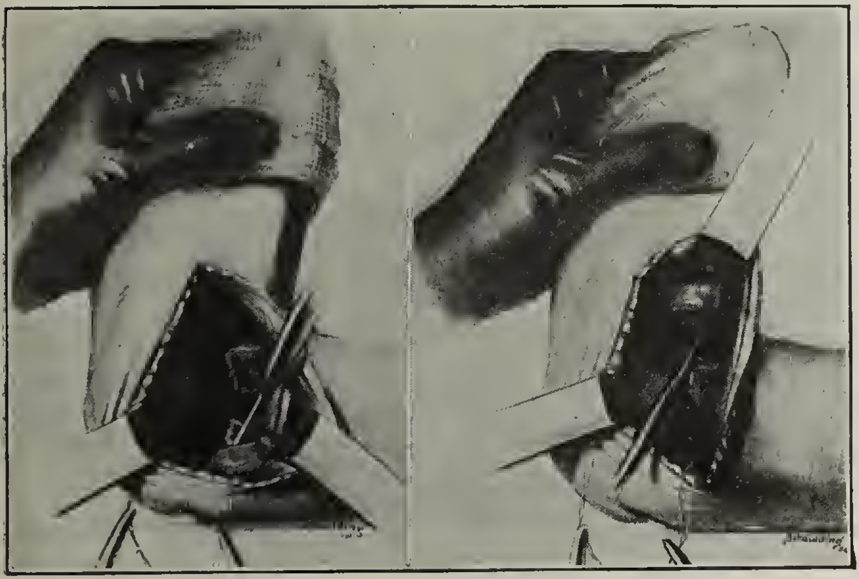

Fig. 5.—Astragalectomy — the Whitman operation: On left, widening the tibia-fibula articulation by removal of thin slice of cartilage from one or both; the internal lateral ligament has been dissected up to sharpen the malleolus. On right, the new articulation for internal malleolus. Note removal of inner one fourth to one sixth from inner side of scaphoid, thus forming pocket for sharpened internal malleolus.

Conclusion.—The results obtained with astragalectomy have led me to discard, except in the rare cases, all other procedures.

LITERATURE

Various methods for remedying the condition have been devised. Amputation of the foot in cases of severe deformity is advocated by Watson.[2] I know of no other report on this operation. Lange's silk ligaments are advocated by many authors, among whom are Allison,[3] Bradford,[4] Barton and Plummer,[5] and Lovett.[6] Rich[7] says that they are of use in joints where there is no external irritation, as there is in the ankles from shoes. Here he advocates capsule tucking. Nerve grafting is advocated by Spitzi and others. The general opinion has been summed up by Feiss,[8] who says there is no experimental evidence to justify its use in paralytic cases. Tendon transplantation has its chief advocate in Vulpius.[9] Soule[10] advocates arthrodesis of the astragaloscaphoid joint, with the use of a bone peg to aid ankylosis.

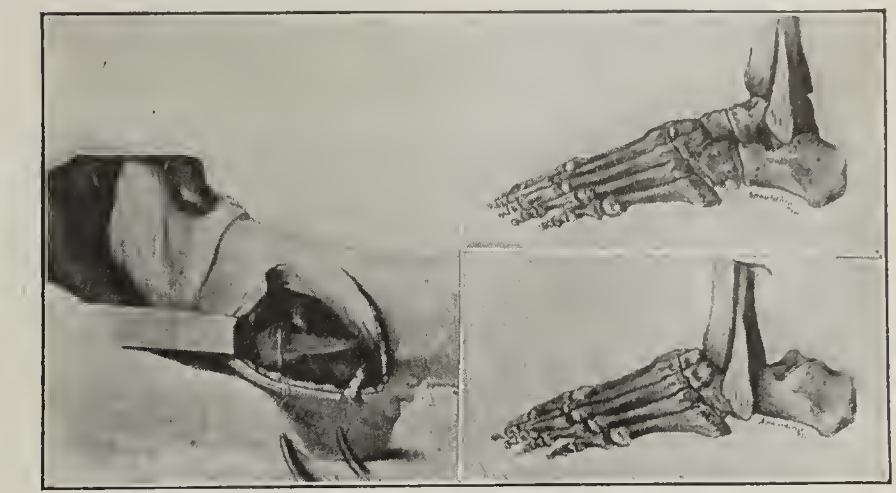

Fig. 6.—Astragalectomy — the Whitman operation: On left, the external malleolus rests in a similar socket over calcaneocuboid joint. Note backward displacement of foot, and fibula carried well forward. On right, above, normal relation of tarsal bones; below, relations following the properly done astragalectomy.

The operation of astragalectomy was first performed in 1842 by Lund[11] of London for the correction of a very severe talipes, and its use has since been reported by numerous authors, usually in traumatic and infectious cases. Willens[12] reports in 1911 its use in cases of clubfoot in an operation devised by him. Peraire[13] used it with goods results in a case of traumatic paralytic equinovarus. In none of these was the foot displaced backward. Its use in paralytic talipes was first advocated by Dr. Whitman in 1901. The operation briefly consists of the enucleation of the astragalus, fibro-arthrodesis of the joint, transplantation of the tendons, and the backward dislocation of the foot. The cases in which it is serviceable have since been much extended by Whitman. Favorable results from the operation have been reported by Dane and Townsend[14] in a series of cases from the Childrens' Hospital, Boston, and also by Lord[15] and others.

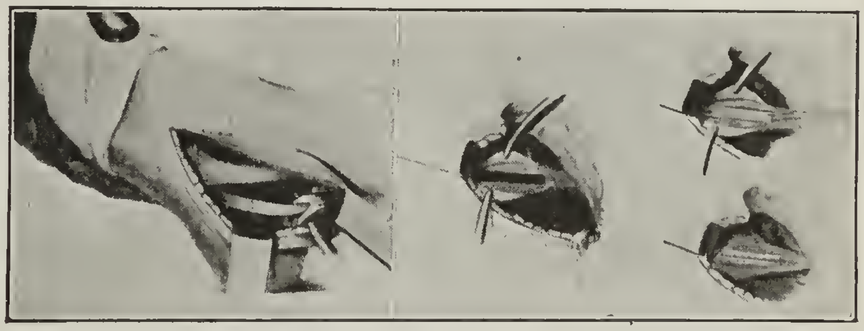

Fig. 7.—Astragalectomy — the Whitman operation: Disposition of tendons of peronei into the Achilles tendon and resuture, and tendon fixation (Galli operation).

The operation has been modified by Robert Jones,[16] who divides it into a two part procedure. His method is not much used in this country. Tubby[17] modifies the operation by using Lange's silk ligaments to strengthen the Achilles tendon after division.

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[2] Watson: Brit. Jour. Surg., 1914-1915, p. 390.

[3] Allison: Am. Jour. Orthop. Surg., 1912-1913, p. 519.

[4] Bradford and Soulter: Boston Med. and Surg. Jour., 1907, **157**, 655.

[5] Barton and Plummer: Am. Jour. Orthop. Surg., 1912-1913, p. 499.

[6] Lovett: Am. Jour. Orthop. Surg., 1905, **12**, 405.

[7] Rich, E. A.: Limitations of Lange's Silk Ligaments in Paralytic Surgery and Substitutes Therefor, The Journal A. M. A., Nov. 1, 1913, p. 1597.

[8] Feiss: Rev. neurol. and psychiat., **11**, 307.

[9] Vulpius: Am. Jour. Orthop. Surg., 1912-1913, **10**, 272.

[10] Soule: Tr. Am. Orthop. Assn., Philadelphia, 1914.

[11] Lund: London, 1872.

[12] Willens: Brit. Med. Jour., **2**, 984.

[13] Peraire: Paris chir., 1912, **4**, 294.

[14] Dane and Townsend: Am. Jour. Orthop. Surg., 1904, **11**, 38.

[15] Lord, J. L.: The Whitman Operation for Talipes Calcaneus Paralyticus, The Journal A. M. A., Oct. 11, 1913, p. 1374.

[16] Jones, Robert: Lancet, London, 1914, **1**, 1786.

Tendon fixation separately or as an adjunct to astragalectomy has been used by the author in several of his later cases with good results.

ABSTRACT OF DISCUSSION

Dr. Frederick C. Kidner, Detroit: I can agree with Dr. MacAusland in the use of the Whitman operation, in selected cases, but I cannot feel that so mutilating an operation is necessary in a large portion of paralyzed cases. He has spoken of the rapid growth of the foot following the operation because of the restoration of function. We know that growth can be stimulated to a great degree by ordinary massage, heat applications and other therapeutic measures. Therefore, this argument for the operation is not very strong. As to the function, there is no doubt that the strong, firm foot resulting from astragalectomy is a very useful one, but so are many feet which wear light braces or are in moderate valgus or varus. To my mind, astragalectomy should be limited to severe cases of paralysis in well grown feet.

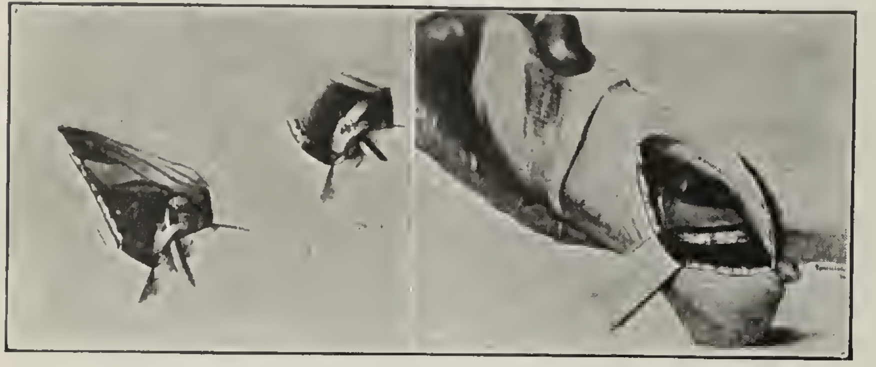

Fig. 8.—Astragalectomy — the Whitman operation: Disposition of tendons of peronei, into Achilles tendon, and resuture of ends.

Dr. J. D. Griffith, Kansas City, Mo.: It seems to me that we have discarded transplantation of tendons, and that if we are discarding the silk ligaments, we have to come to the Whitman operation. Dr. Whitman has shown before, and Dr. MacAusland is now showing, that this surgical interference is not interfering with growth in length, size or the function of the foot to any great extent. In these cases of equinovalgus and equinovarus, particularly valgus with calcaneus, there is nothing left to do but this operation.

Dr. Albert H. Freiberg, Cincinnati: A few years ago, Dr. Whitman felt that the profession was somewhat tardy in recognizing the value of his operation; and I think that events have fully justified him in his attitude. I feel, however, that if he were here today, he would have just as much objection to the trend of events, now that the pendulum has swung too far the other way. There is no question in my mind that his operation has great advantage in suitable cases. I have used it, and shall use it, I hope, very often. On the other hand, it seems to me that there is something wrong with the tendon transplantations of the man who says that tendon transplantations must be given up, to have their place taken by a mutilating operation such as this is, even under most favorable conditions. We have learned that we had expected too much of tendon transplantation. We have also learned that the complicated procedures had to be abandoned, and that it was not possible to convert a flexor into an extensor, or an extensor into a flexor, ad libitum; because the muscles would fail to respond to unreasonable demands made on them. There are certain psychologic problems to which the brain will not respond. It seems to me, however, that many of us—evidently not all of us—must have cases of tendon transplantation, done under more or less ideal conditions, which have stood the test long enough to make it impossible to deny the considerable advantages that the patients have received from the operation. It is further understood by men of experience that we cannot switch muscles around as we please and sew them down in an insecure way and have the tendons move freely in the proper direction. We have learned that in cases in which there is fairly isolated paralysis of the tendons about the foot, we may be able to pass tendon under the annular ligament, the tibialis anticus, for instance; and in that way get an excellent result which will stand the test of time, and produce a foot of a degree of functional perfection that is not at all to be compared with the most delightful result after the Whitman operation, useful as that procedure may be in extensive paralysis.

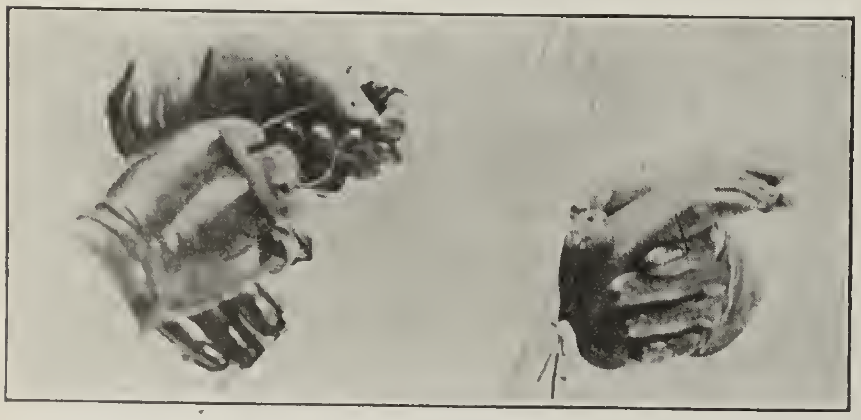

Fig. 9.—Astragalectomy — the Whitman operation: Note the posterior displacement and the position in which the foot is being held during suture and the application of plaster with the knee flexed and the foot in slight equinovalgus.

Dr. C. M. Jacobs, Chicago: I want to ask Dr. MacAusland what is his average shortening of the limb in his series of cases following this operation. I would also like to ask him whether he has done any other operation—say the Galli—for a calcaneus condition. I was always in favor of the Whitman operation until I tried Galli's method of inserting the Achilles tendon into a groove on the posterior portion of the tibia. My first case, which was done a year ago, gave such excellent result that it led me to discard the Whitman operation for paralytic calcaneus.

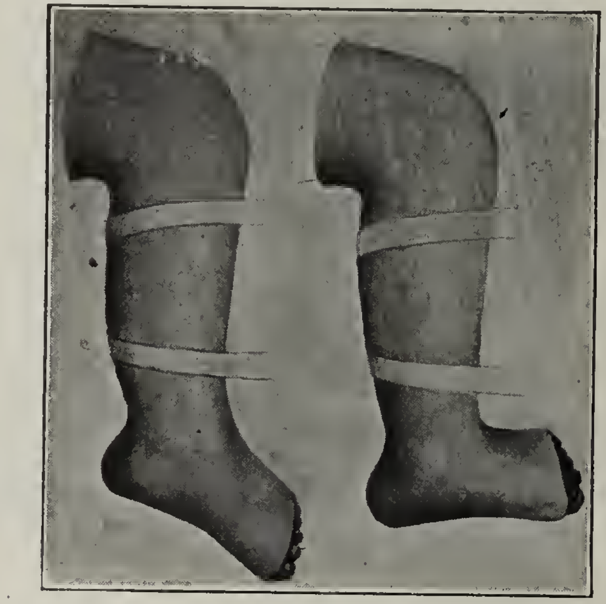

Fig. 10.—Astragalectomy — the Whitman operation: In plaster, following operation.

Dr. Edwin W. Ryerson, Chicago: The Whitman operation is a very valuable one, but it is not applicable to every type of paralyzed foot. Dr. MacAusland goes just a bit too far in this. The Whitman operation should not be performed in cases in which there remains strength in the calf muscles. The tibia should not be displaced forward on the foot, because a very undesirable degree of equinus is likely to result. I have seen this in some cases. In cases in which these muscles are strong, one should do astragalectomy, if it is indicated, and should not displace the foot backward on the tibia. I consider that tendon transplantation is by no means obsolete, no matter what you may have gathered from the statements that have been made. It remains today an extremely valuable, and the only proper, operation for certain forms of paralysis. The fact that a foot has simply weakness or infantile paralysis is no more reason for doing a Whitman operation than for extracting the patient's teeth. The cases must be considered carefully and individually. The Whitman operation is not applicable to certain cases, and should not be done in them. The cases in which it is especially desirable are cases in which there is great lateral mobility of the foot, where the foot rests on a very freely movable astragalus and is not stable. In cases of dangle-foot, the Whitman operation, as performed by Dr. MacAusland, is very valuable, and is the best procedure devised; but in cases in which tendon transplantation can be done—and there are many such cases—do not remove an astragalus unless it is necessary. I have dozens and dozens of cases in which the results of tendon transplantation are satisfactory to both the patients and myself; and I have other cases in which they are not satisfactory, because we hoped for too much from the operation in the past. We cannot cure a foot that is very badly paralyzed by tendon transplantation, but it has a wide field of application in cases of moderate or isolated paralysis. Such cases can be treated beautifully in this way, and we should not discard the operation of tendon transplantation, which is a therapeutic resource of the greatest possible value in properly selected cases.

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[17] Tubby: Clin. Jour., 1912-1913, **40**, 163.

Dr. W. C. Campbell, Memphis, Tenn.: I have operated in this way in thirty cases with excellent results, but my cases have been selected cases. The type of case in which I found the procedure most satisfactory was calcaneovalgus in which there was considerable power remaining in the peroneal muscles. Out of these thirty cases, or over, I have had two that have had some inversion afterward. The inversion has not been severe and has been correctible by tilting the shoe. I now always tilt the shoe in such cases. I have also employed the method of tendon fixation to the external malleolus and fibula to prevent inversion. It is very important to maintain the right position in putting the foot in plaster. It should be placed in an overcorrected valgus position as well as in moderate equinus with backward dislocations.

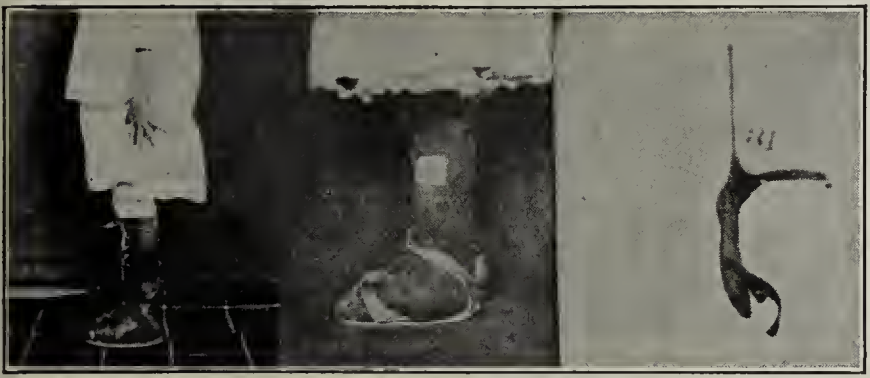
Fig. 11.—Shoes to be worn after Whitman astragalectomy.

Dr. J. T. Rugh, Philadelphia: Some of those present saw an operation in Philadelphia about two years ago that combined exactly the same principles as the Whitman operation. It has not received the attention it deserves. It is the Davis operation and he has chosen to call it "the transverse horizontal section." I have always felt that the Whitman operation was essentially indicated in cases of the calcaneus type of paralysis; and the Davis operation combines the same principles as the Whitman but does not remove the astragalus. The disadvantages of the Whitman operation is the increase of shortening, which must be compensated for by tilting of the foot, with slight resulting equinus. In the Davis operation a transverse osteotomy is done below the astragalus, that is, between the astragalus and the calcaneus. The posterior calcaneo-astragaloid articulation is separated, and the foot is displaced backward and put in the position of slight equinus. A tendon transplantation can also be done; or where there is no power in the peroneus and where there is a total loss of the Achilles tendon, I have been doing the Putti operation, cutting off the tendon from the muscle and transplanting the tendon into the tibia a little differently from the way in which it is done in the so-called Galli operation, with excellent results—making an absolute ligament of the tendon.

Dr. R. L. Hull, Oklahoma City: I have done the Whitman operation in from fifty to seventy-five cases. This operation was originally devised for cases of calcaneus and calcaneovalgus, and it is better for them than any other operation. I have done it in a patient 3 years old, and I have done it in adults of 21 and 24 years. In every case in which the patient is from 3 to 6 years old, I approach the operation with a great deal of enthusiasm, because I know that I can give the patient the best possible functional result—better than from any other operation or series of operations. Recently I have been a little more radical, and have been doing it in a few cases of varus and equinus. It is impossible to know yet what the end-results will be; but at present it has seemed to meet the indications better than any other operation with which I am familiar.

Dr. C. B. Francisco, Kansas City, Mo.: In 1907 I assisted Dr. Whitman in adding fifteen or sixteen cases to his original report. Naturally, I have been very much interested in his operation ever since. I think that if we had an operation that met the requirements in every case of deformity of the foot as well as the Whitman meets those of the calcaneovalgus deformity, we should be glad to adopt it. I know what the result will be when I do this operation. You can tell absolutely what you will get—what motion. You will get from one third to two thirds of the normal range of motion in children under 10 years. You also know pretty definitely what the foot will look like. In the badly paralyzed cases, you know that there will be a little cavus; and it will take a while for the foot to flatten out, but you have no hesitancy about recommending it. When you get into the varus type, that, to me is the hardest deformity that I know of to cure and have stay cured. One of the most distressing things is to manipulate and resect and do everything you know how to, and get good position and then turn the patient out and lose track of the case, only to have the child return, a year or so later, with the deformity as bad as ever, so that you feel that you have done harm, instead of good. I have not, so far, used the Whitman operation in the varus type, as I am now trying out the Galli method of fixation of the peronei. I believe that there are certain cases of varus in which the Whitman operation will prove satisfactory, as indicated by Dr. Ryerson; the lateral movement type. The operation does away with that. I think that Dr. MacAusland is to be congratulated on having brought the subject before us.

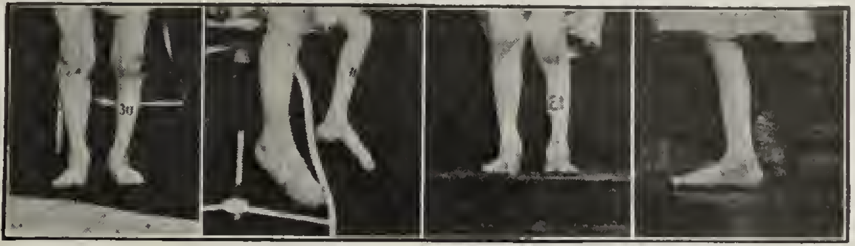
Fig. 12.—Infantile paralysis, valgus deformity: From left to right, anterior view before operation, lateral view before operation, anterior view twenty months after astragalectomy, and lateral view twenty-two months after astragalectomy.

Dr. W. Russell MacAusland, Boston: The proof of the pudding is in the eating. I have not heard any one advocating the value of tendon transplantation without saying, "In almost every case," or a similar qualifying remark. I can say what my results have been in astragalectomy. In one hundred and thirty-five cases, there have been only three cases of varus. This is a very difficult deformity to overcome when it does occur; and it should be guarded against carefully. These cases of varus all occurred in patients living out of town, some of the postoperative treatment being left to assistants. The important thing is to put the foot up in valgus and slight equinus. I keep the valgus during the entire treatment;

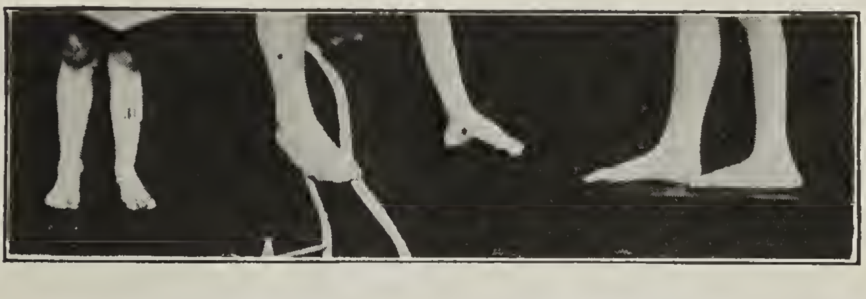
Fig. 13.—Infantile paralysis, calcaneovalgus deformity: Anterior view before operation, lateral view before operation, and lateral view twenty months after astragalectomy (Whitman).

correct the equinus when the quadriceps is gone, and retain plantar flexion of five to eight degrees when the quadriceps is present. Dr. Freiberg's remarks carry considerable weight. His results from tendon transplantations and those of many others which have come under my observation in Boston are not satisfactory. I have also looked up the results of arthrodesis in young children, and found that in 90 per cent. of the cases the old deformities recur or new ones appear. If tendon transplantation does not add to the stability of the foot and increase its function, it is not the best operation. When we take a tendon from one place and put it in another, we weaken the tendon and also weaken the side that it came from, and put it where it never can act to its full strength. I did not say that I used the Whitman operation in every case. If by tendon transplantation any of the surgeons here can obtain correction of the deformity, universally, increase function and secure stability, then it is certainly an operation for them on a par with astragalectomy. Dr. Jacobs asked about the average shortening that I obtain. Astragalectomy does not shorten the leg. The shortening in my cases was about ½ inch to 1½ inch. In cases with the os calcis vertical the malleoli naturally lie nearer the ground following astragalectomy. The Galli operation has undoubtedly a prominent place in the treatment of infantile paralysis. Up to the present, however, my experience has not been such that I care to make any statements about it. I shall not do so until I have formed definite conclusions. Dr. Ryerson says that the pendulum has started to swing too strongly in the direction of astragalectomy. Dr. Whitman has tried to impress the value of astragalectomy as compared with tendon transplantation before, and failed. With regard to this operation, it is on a similar plane with all the other surgical procedures that he has advanced. Nothing has been found as a substitute for them. Dr. Campbell spoke of inversion. I had that happen in three cases. These inversions are very objectionable deformities. I was able to correct them by placing the fibula further forward, holding it there by means of the Galli operation; suturing the peroneal tendons into the fibula. These patients are all right now.

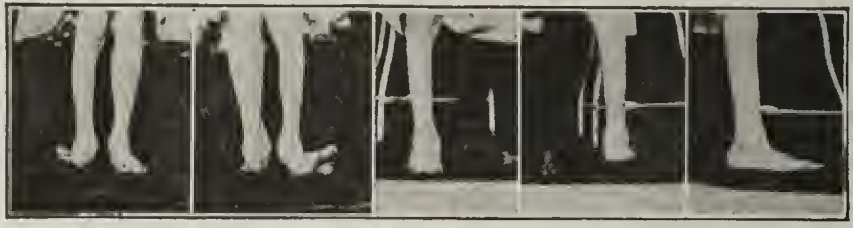

Fig. 14. — Infantile paralysis, calcaneovalgus deformity, operation, May, 1912: Anterior view before operation, posterior view before operation, anterior view six months after astragalectomy (Whitman), posterior view six months after operation, and lateral view six months after operation.

INTESTINAL OBSTRUCTION DUE TO ASCARIS LUMBRICOIDES

REPORT OF A CASE

J. MAXIME PERRET, M.D.,
AND
H. THEODORE SIMON, M.D.
NEW ORLEANS

In the latter half of the nineteenth century, opinion was divided as to the possibility of *Ascaris lumbricoides* being the etiologic factor in intestinal obstruction; thus, Leichenstern and Treves opposed this view, while Trousseau, Bretonneau and Stutz[1] upheld it, each having been among the first to report cases.

Bordoroni and Stepp in 1887 reported two cases, both of which were confirmed postmortem.

Simon,[2] in 1892, while holding a necropsy in a case of intestinal obstruction, found the cause to be a mass of roundworms.

Botoff,[3] in 1897, reported a case of obstruction, perforation and peritonitis, in which the postmortem revealed the presence of 500 roundworms.

In 1899, Taylor[4] found sixty-six worms in a case of intestinal obstruction.

Zotoff[5] reports a case of Mosler and Peiper of a 3 year old girl who died of peritonitis with two perforations in the ileum, 17½ inches from the cecum; through one of these openings twenty-five roundworms projected; the ileum between this point and the cecum, ascending colon and transverse colon were completely filled with roundworms, numbering 500 in all.

Van Meter[6] reports a case of a child aged 5 years, having a sausage-like mass above and to the left of McBurney's point, in which operation revealed in the lower part of the ileum a coil of roundworms causing complete obstruction; the author says that there were almost enough parasites "to fill a wash basin"; the patient recovered.

A case, reported by Venning,[7] of a 2½ year old boy who was operated on and died, was diagnosed before surgical intervention by palpation of the intestinal masses through the abdominal wall; 273 worms were removed, the site of obstruction being the jejunum, ileum and cecum.

Vickery[8] was called to see a pregnant woman with symptoms of intestinal obstruction and a history of vomiting several roundworms; on being given a dose of sanotin, followed by castor oil, she vomited twelve roundworms. The symptoms of obstruction disappeared, and excepting for the sudden termination of gestation, she made an uneventful recovery.

Takaki[9] reports a case of acute obstruction in a 3 year old child with complete recovery following the vomiting of 115 roundworms.

Having consulted the records of Charity Hospital in the ten years from 1906 to 1916, we find 112 cases of intestinal obstruction, in ninety adults and twenty-two children, and of these, there is but one case in which the roundworm is the etiologic factor. The patient was a young negro girl who was operated on for obstruction. A portion of the intestine was filled with a mass of worms. The condition necessitated a resection of the intestine, and a Murphy button was used; shortly afterward, after some apparent improvement, the child died, and necropsy revealed the presence of a roundworm in the lumen of the button, which it occluded.

REPORT OF CASE

History.—M. M., white girl, aged 8, was admitted to a surgical ward on the evening of March 14, 1916, having been referred by an attending physician for surgical intervention of what he rightly diagnosed acute intestinal obstruction. The family history was of interest, as the patient's five sisters and brothers had passed roundworms on many occasions. The past history was negative except that the child had frequently passed roundworms since the age of 2.

Five days prior to admission, the child was suddenly taken ill with a pain in the right lower abdominal quadrant, and slight elevation of temperature. On the second day she began to vomit, and this continued up to the time of admission. The vomitus consisted of a clear watery fluid. A dose of castor oil was given the second day and only a very small stool passed, with no more bowel movements until she came under our observation.

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[1] Huber, J. C., Trousseau, Bretonneau and Stutz, in Twentieth Century Practice of Medicine.

[2] Simon: Rev. méd. de l'est., 1892, p. 228.

[3] Botoff: Jour. d. clin. et thérap. inf., 1897, No. 10.

[4] Taylor: Am. Jour. Obst., 1899, p. 808.

[5] Zotoff, in Nothnagel: Encyclopedia of Practical Medicine.

[6] Van Meter, B. F.: Intestinal Obstruction Due to Roundworms, Surg., Gynec. and Obst., 1909, 8, 409.

[7] Venning, R. E.: Intestinal Obstruction from Ascarides Lumbricoides, The Journal, A. M. A., June 18, 1910, p. 2041.

[8] Vickery, D. H.: Intestinal Obstruction Due to a Coil of Worms, Brit. Med. Jour., 1913, 2, 1534.

[9] Takaki, Y.: Sei-I-Kwai, June, 1915.

TEMPERATURE, PULSE AND RESPIRATION

Time	Temperature	Pulse	Respiration
On admission	101	120	25
Four hours later	103	112	30
Eight hours later	102.4	116	26
Twelve hours later	99.6	100	24

Physical Examination.—The child was poorly developed and nourished. The skin was of a slight sallow tint. The glands in neck and groin were enlarged. The eyes were sunken, with dark hollows under the orbits. The teeth were badly kept. The tongue was dry and coated. The throat, nose, ears and heart were negative. Coarse mucous râles were heard over the lower half of the right lung, both anteriorly and posteriorly. The abdomen was distended and tympanitic; there was no rigidity. In the left lower abdomen, in the region of the sigmoid, a mass the size of a large lemon was palpated. The viscera were not palpable. The extremities and reflexes were negative.

Laboratory Reports: There was a total white blood count of 16,800 per cubic millimeter. The differential white count revealed: lymphocytes, 21 per cent.; endothelial leukocytes, 3 per cent.; neutrophils, 67.5 per cent.; eosinophils, 8.5 per cent. Examination of the urine revealed: albumin and sugar, negative; indican, strongly positive; microscopically, a few leukocytes.

After the examination a purgative enema was given, and returned colored with fecal matter and containing a mass of approximately forty roundworms, coiled and interwoven together, the size of a child's closed fist. A second enema was given and returned highly colored with fecal matter. The distention was relieved, and excepting for a rise in temperature the first eight hours, the patient's condition improved, and in twelve hours the temperature was but 99.6 F. The patient continued to improve, and excepting for an acute bronchitis, which she developed on about the seventh day, made an uneventful recovery, and was discharged as cured, April 2, 1916.

Mass of approximately forty Ascarides lumbricoides, X 1½, expelled in a case of acute intestinal obstruction.

SUMMARY AND CONCLUSIONS

We find that although the disease is rare, there are quite a few cases of intestinal obstruction due to roundworm.

Most cases are diagnosed at necropsy or on the operating table, and only seldom is the mass of worms expelled through the natural channels.

Although the most drastic purgatives may be of no avail, the enema may in a few cases cause the surgeon to lay aside his knife.

Charity Hospital.

The Dairy Cow.—The dairy cow has been aptly called the foster mother of the human race.—Hon. E. S. Brigham, *Bulletin,* Vermont State Board of Health, Dec. 1, 1916.

MECHANICAL PROBLEMS OF BRONCHOSCOPIC AND ESOPHAGOSCOPIC FOREIGN BODY EXTRACTION *

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PITTSBURGH

In dealing endoscopically with foreign bodies lodged in the larynx, trachea, bronchi or esophagus, it is fundamentally necessary to remember that the problem is not simply to remove the foreign body but to remove it with little or no risk to the patient. It is always necessary to remember that a patient is far safer with a foreign body in his air or food passages than he would be if the intruder were ruthlessly torn out at all hazards. Ruthless withdrawal is comparable to the act of the ignorant farmer who hitches a team of horses to the malpresented calf. Only in the rarest instances is immediate removal necessary, and it is far better to desist at once if at the first bronchoscopy it is found that special instruments will need to be devised to remove the intruder. On the other hand, it is never wise to make the first bronchoscopy without having prepared beforehand everything that can possibly be needed, so far as it is possible to foresee from a study of the roentgenogram, history, symptoms and physical signs.

The experience resulting from the encounter with foreign bodies of almost all conceivable shapes and substances has resulted in an armamentarium which probably can deal with all kinds of foreign bodies. When the bronchoscopist first catches sight of a foreign body for which he has been searching, the temptation to seize it by whatever part is visible and to pull on it with all the strength of which his forceps are capable is very great; and one might say that the temptation is greater directly as the duration of the search.

Yielding to this temptation has been the cause of more mortality in foreign-body bronchoscopy and esophagoscopy than any other single factor. Moreover, hasty, injudicious traction of this kind will very often not only fail to remove the foreign body but will so complicate the situation as to render subsequent removal exceedingly difficult. In other words, the mechanical problem is converted from a very simple into a very complicated one, just as pulling on a tangled mass of string will render subsequent disentanglement difficult or impossible. Therefore, it may be stated that there are three reasons why the study of the mechanical problems of foreign-body extraction constitute the most important study in foreign-body endoscopy.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

These three reasons are: 1. Attempted endoscopic removal of a foreign body by seizure, followed by traction without proper study of the mechanical problem, ends in a high percentage of mortality.

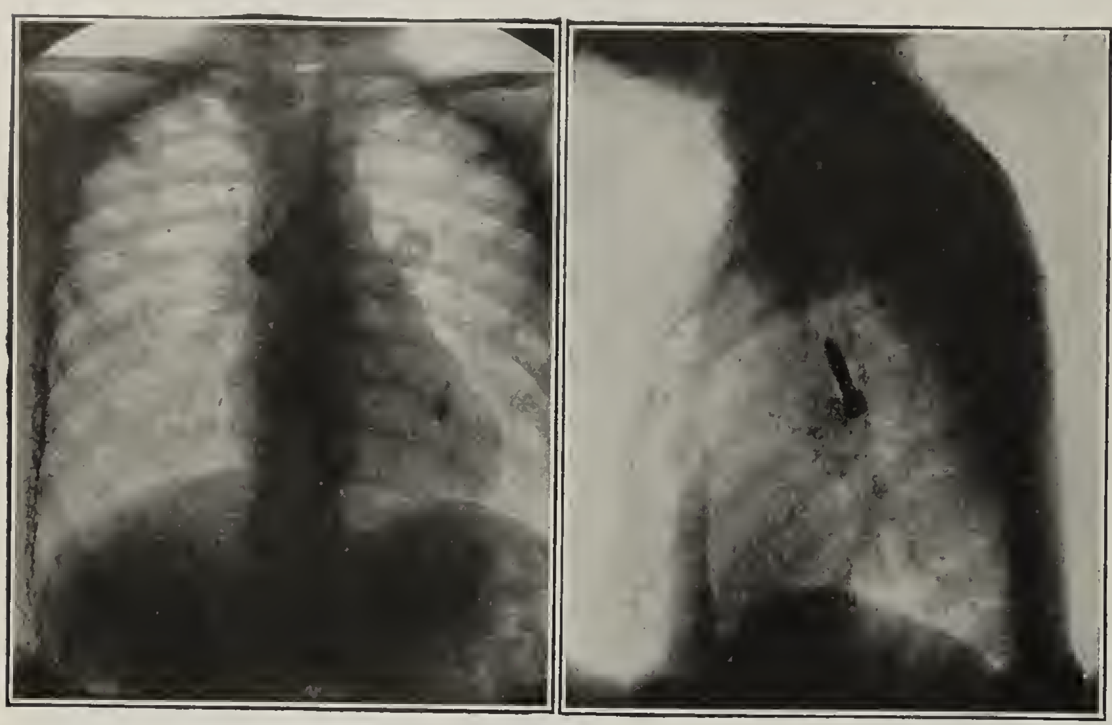

Fig. 1.—Roentgenogram showing an iron casting in the right bronchus of a child of 8 years. The movements of the casting are shown in Figure 3. Foreign body removed by peroral bronchoscopy without anesthesia.

2. Such attempts frequently fail to remove the foreign body.

3. Such attempts frequently complicate the problem so as to render subsequent removal exceedingly difficult, converting an easy problem into a difficult one, or even into one impossible of endoscopic solution.

The following considerations of solutions of mechanical problems are based on the successful endoscopic removal of foreign bodies from the esophagus, larynx, trachea and bronchi, in 543 out of 550 cases (98.7 per cent.). In the 550 cases, seven patients (1.3 per cent.) died within a week. In six of these the patient was in bad condition when admitted. In only one of the seven could the death be attributed directly to the bronchoscopy. The parents refused to allow a postmortem, so the cause of death could not be determined. In a large proportion of the 543 successful cases, removal had previously been unsuccessfully attempted by others. That success attended the efforts of Dr. Patterson and myself was due not to greater skill, nor to superior instruments, but rather to the careful study of the mechanical problems involved and to the avoidance of the dangers hereinafter pointed out. Some of the previously described solutions of mechanical problems are merely mentioned in connection with later statistics which confirmed the value of the methods. There is much overlapping of the groups of statistics because of many cases presenting a combination of two or more problems, each of which was separately solved according to its class.

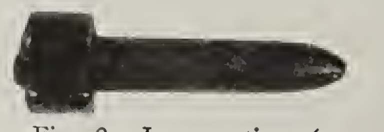

Fig. 2.—Iron casting (actual size) from a blind-roller shown in Figure 1. The hard, smooth conoidal end, presenting in a tightly fitting ring of swollen mucosa, rendered difficult the finally accomplished seizure of the stem below the conoidal end.

The Advantages of Small Tubes.—In the solution of mechanical problems of foreign-body extraction, the advantages of small tubes are not generally realized. For general purposes, such as the diagnosis of disease, finding of a small foreign body without risk of overriding, etc., the largest possible tube has great advantages; but in the working out of difficult problems of endoscopic foreign-body extractions, the small tube has advantages that make all the difference between success and failure. As will be seen in Figure 11, a tube (*A*) that fills the entire lumen of the esophagus or bronchus has no lateral range of motion, while a relatively small tube (*B*) has a very useful range of movement. The value of this lateral movement is realized when it is remembered that endoscopic tubes are rigid, whereas endoscopic instruments other than tubes are necessarily long and slender; hence the distal ends are not susceptible of a useful degree of lateral movement. The forceps *C* cannot be moved with any useful degree of control from *D* to *E*, whereas the forceps *F* can be energetically moved from *G* to *H* by lateral movement of the tube, *B*, because of the smallness of the endoscopic tube, *B*, relative to the esophagus, bronchus or trachea, as the case may be. We may say, then, that forceps in a large tube have no useful lateral range of movement, while tubes small in diameter relative to the diameter of the esophagus or bronchus have a lateral range of movement that is in some cases indispensable to success.

Motion of Foreign Bodies in the Bronchi.—An important factor which must be always in the mind of the endoscopist in working out the solution of a mechanical problem of foreign-body extraction is that the foreign body is never still a moment. The movements are bechic, respiratory and pulsatory. All of these movements in many cases greatly increase the difficulties of removal; in other cases the movements can be taken advantage of to assist the bronchoscopist. An instance of the latter may be cited in the case of a long foreign body, such as a pin, completely hidden in a small bronchus into which the bronchoscope cannot enter, but from which the point of the pin may be protruded during bechic, respiratory or pulsatory movement (Fig. 10). More often, however, these movements are a great hindrance, not only by the fact

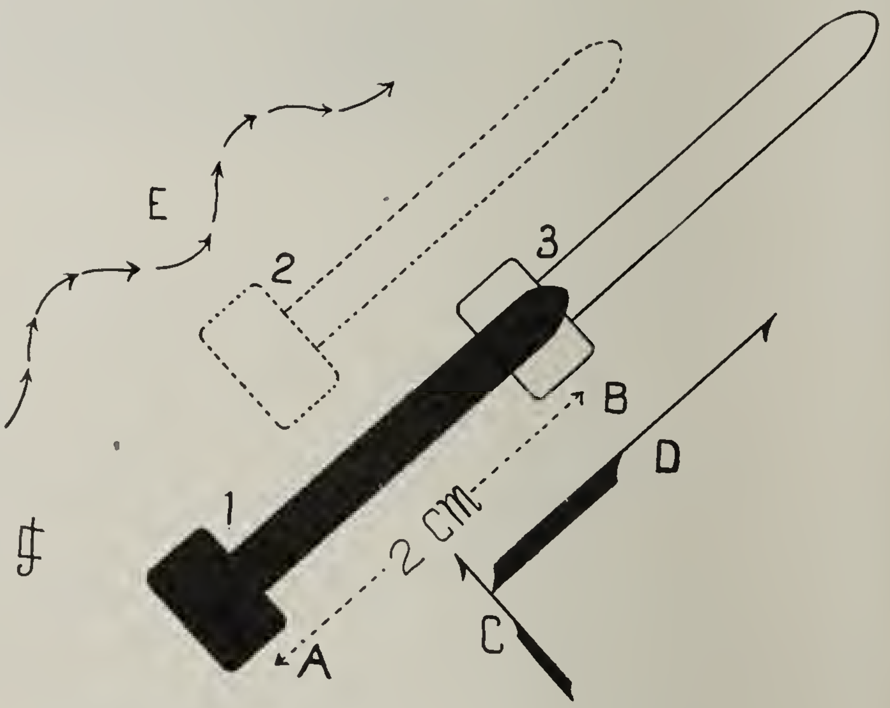

Fig. 3.—Schema illustrating the normal respiratory and pulsatory movement of the bronchi along with bodies contained therein. There is also, in case of bodies free to move, a movement of the foreign body with relation to the invaded bronchus, during cough, respiration, etc.

that they keep the foreign body in motion, but that they all tend to bury the point of sharp pointed objects. The respiratory and pulsatory movements are really in many planes, but the chief movements noticed by the bronchoscopist in all cases of foreign bodies in the larger bronchi is the to-and-fro motion toward and from the bronchoscope, chiefly in the bronchoscopic axis. Advantage can be taken of this movement so to place the bronchoscope that the point of a pointed foreign body may enter the tube mouth. In doing this it is very necessary to remember that the recession of the foreign body will withdraw the point out of the tube mouth unless the tube mouth is, at the proper moment, inserted far enough down over the foreign body. This maneuver concerns foreign bodies whose points are free when first approached or have been freed as the first stage of the solution of the mechanical problem. In addition to the more or less axial movement of the foreign body there are also a number of lateral movements, though these may be more or less hindered by some degree of opposition on the part of the bronchoscope.

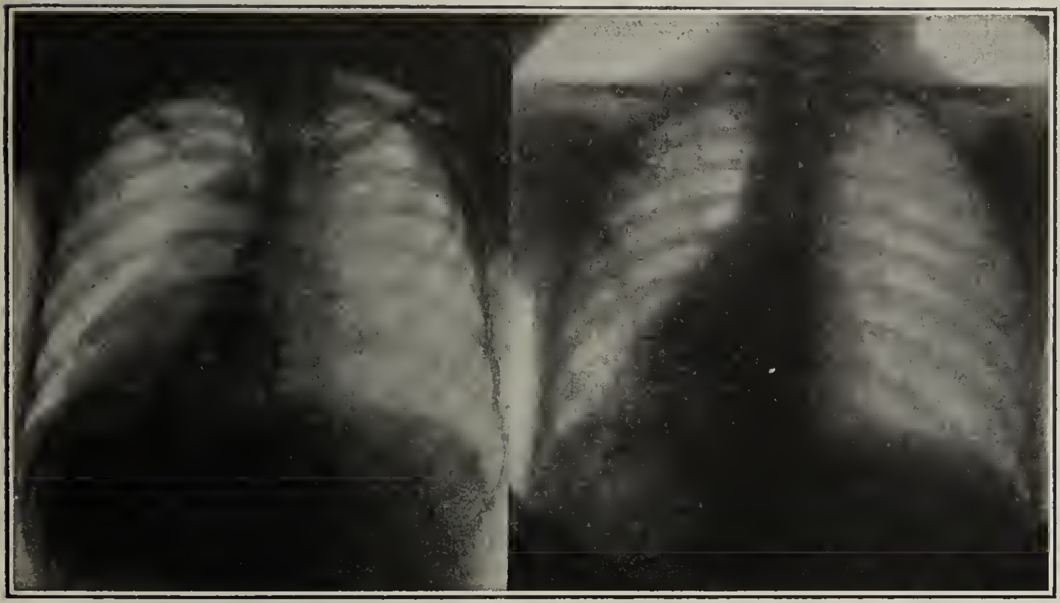

Fig. 4.—Roentgenogram showing obstruction of the left inferior lobe bronchus, by a Greek peanut (pistachio) shell, in a girl of 8 years. When such a shadow is seen we may know that we shall have to deal with a foreign body fitting tightly and corklike in a bronchus. There is shown compensatory emphysema of the right lung and also of the left upper lobe. The right-hand roentgenogram shows the disappearance of the triangular shadow after the removal of the pus and the obstructing foreign body, by bronchoscopy, without anesthesia, general or local. (Plate made by Drs. Johnston and Grier. Author's case.)

Fig. 5 — Shell of pistachio nut removed by peroral bronchoscopy without anesthesia. The broad surface was found presenting, requiring version to present an edge for seizure.

Dr. George C. Johnston thus describes the various movements as seen fluoroscopically in a case of the author (Figs. 1 and 2):

> The foreign body, which is 1 cm. in diameter by 3 cm. in length, is observed to be in constant motion. The foreign body was seen to move 2 cm. up and down at each excursion of the diaphragm. The excursions of the foreign body are downward and outward, upward and inward. In addition there is a constant lateral motion of the foreign body synchronous with the cardiac impulse. The foreign body is never at rest. The least amount of motion is found at the instant of full inspiration.

These movements I have endeavored to represent schematically in Figure 3. They are represented in one plane only. It is necessary to remember that there is a similar movement, though of less excursion, in many other planes.

PROCEDURE

The various steps in the solution of the various mechanical problems of foreign-body extraction, as practiced in the author's clinic, are as follows:

1. Roentgenographic study.
2. Preliminary working out of a mechanical problem, based on the probabilities as deduced from the Roentgenographic study.
3. Endoscopic study.

Roentgenographic Study of Mechanical Problems of Endoscopic Foreign-Body Extraction.—The marvelous advances in roentgenography have wonderfully simplified the solution of mechanical problems of the disimpaction and removal of foreign bodies. The roentgenologist now usually produces a roentgenogram which shows not only the foreign body but sufficient outlines of the bronchi to enable the endoscopist to formulate a plan of disimpaction and removal that will be correctly based, according to the experience in the author's clinic, in about two thirds of all cases in which the foreign body is opaque to the ray. In case of foreign bodies not opaque to the ray, their presence can often be determined almost certainly from the visible pathologic sequelae; yet this does not aid in the solution of the mechanical problem further than to indicate in certain instances (Fig. 4) that complete obstruction of a bronchus means a tightly fitting, corklike impaction of the foreign body in the invaded bronchus. In all cases roentgenographic study should include an anteroposterior and a lateral roentgenogram. In some instances aid will also be obtained from a roentgenogram taken in the quartering lateral position, but in no instance should this take the place of the lateral, and in any case great care is necessary to prevent the quartering roentgenogram from confusing the endoscopist's mental conception of the position of the foreign body as gained from the anteroposterior and the lateral roentgenogram, taken as nearly as possible on planes perpendicular to each other. Fluoroscopy cannot take the place of a roentgenogram, because, as a rule, the trachea and main bronchi cannot be seen on the fluoroscopic screen; and many bodies of borderline opacity are visible roentgenographically though invisible fluoroscopically.

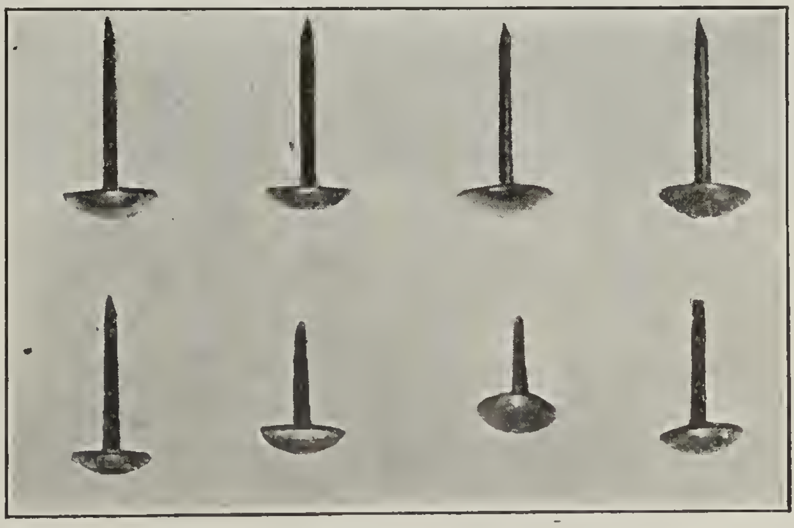

Fig. 6.—Upholstery tacks from the bronchi (eight cases). The removal of these presented the mechanical problem of the mushroom anchor.

Prearranged Plan.—Given good lateral and anteroposterior roentgenograms showing the size, shape and position of the foreign body, a knowledge of the duration of the sojourn, and a previous experience with a similar foreign body, a preliminary plan of extraction can be worked out, and in most cases such a plan will be found successful. If, however, the intruder has been injudiciously pulled on, preliminary plans are usually useless; nothing but local endoscopic study will avail.

Endoscopic Study.—The region of the foreign body should be approached carefully so that the tube mouth or secretion swabs shall not touch the foreign body until after the size, shape and, particularly, the position of the intruder relative to the bronchial wall, are studied. Careless swabbing may force the foreign body downward. In the larynx, to justify an endoscopic study before seizing the foreign body, the patient must be in the author's "low head" position, so that if dislodged the intruder will not drop downward into the deeper air passages. In using this position the author has a number of times released and regrasped a foreign body in the work of disengaging the point or otherwise solving the mechanical problem presented by the removal of the foreign body with the least possible trauma.

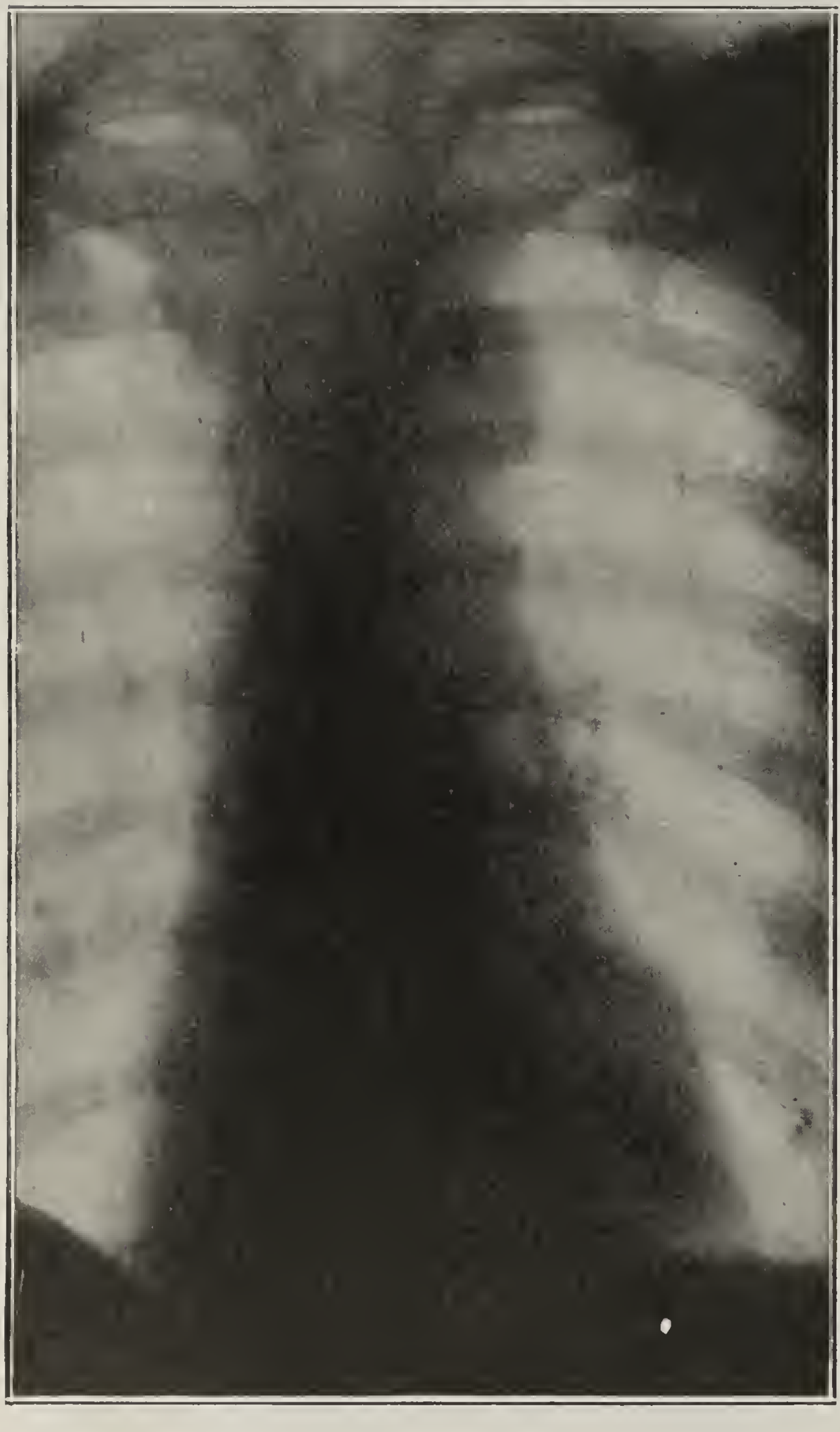

Fig. 7.—Roentgenogram showing a bit of wire from an egg beater in the esophagus, where it had lodged while the patient was eating custard pie. The hooked ends do not show because the bends are in the sagittal plane.

MECHANICAL PROBLEMS

Objects Presenting a Thick Conical End.—These often present great difficulty of grasping because the forceps are prone to slip both sidewise and longitudinally. Forceps whose jaws are slightly cup-shaped have less tendency to slip sidewise; and those with properly made teeth will usually hold if the jaws are sufficiently far down on the object, as for instance was done in case of the foreign body illustrated in Figure 2. This is not often easy to do in case of thick foreign bodies because the proximity of the bronchial walls prevents proper expansion of the forceps' jaws. The difficulty is much increased if the intruder has been in situ sufficiently long to permit of swelling of the superjacent bronchial mucosa; and the difficulties may be enormously increased by trauma of previous attempts.

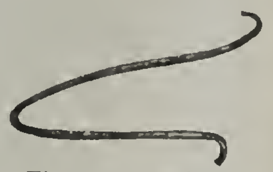

Fig. 8.—Wire removed by peroral esophagoscopy from the esophagus of a woman, aged 57 years. Removed by peroral esophagoscopy without anesthesia, general or local. The object is turned partly edgewise to show the hook-shaped ends, which presented the great difficulty in removal.

Irregular Objects.—These frequently present in such a way that they require turning so as to present a favorable surface for the grasp of the forceps. For instance, the peanut (pistachio) shell (Figs. 4 and 5) presented its concavity toward the tube mouth. The shell was turned so as to present its edge for the grasp of the forceps. Watermelon seeds (Fig. 12) in many cases require to be thus turned. Version is one of the most frequently required procedures in the solution of endoscopic mechanical problems.

Sharp Pointed Bodies.—All sharp-pointed, more or less straight bodies, such as needles, pins, nails, tacks, etc., have strong tendencies (1) to become embedded at the point; (2) to become transfixed crosswise, and (3) to work lower and lower into the air passages by a ratchet-like action. The mechanical problems of their removal have been elsewhere gone into quite extensively by the author and need not be reconsidered here. In general, however, it may be stated that the pulling on such bodies almost invariably results in crosswise fixation or fatal laceration of the bronchi, with failure to remove. In all cases the position of the foreign body should be carefully studied with a view to getting the point disimpacted and into the tube mouth before any traction whatever is made. Quite frequently the disengaging of the point requires the pushing of the foreign body downward so as to withdraw the point from the wall in which it is embedded by bechic efforts at expulsion in the case of the air passages, and by the pressure of food in swallowing in the case of the esophagus.

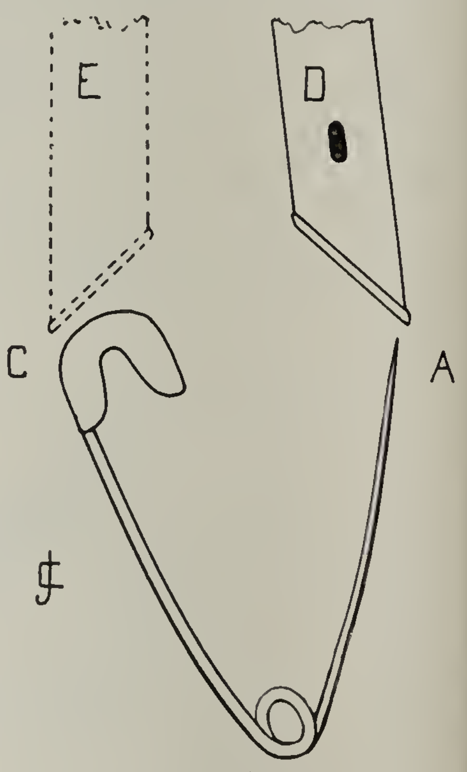

Fig. 9.—The problem of the safety pin. Twenty-seven safety pins have been endoscopically removed from the larynx, trachea, bronchi and esophagus, in the author's clinic, by this and other peroral endoscopic methods.

Transfixed Foreign Bodies.—Both points being embedded, these bodies usually require very careful handling; otherwise attempted removal will be quickly fatal. They are quickly and safely dealt with by the methods elsewhere described, which have been uniformly successful in sixty-four cases. Many of the cases presented other problems in addition to the problem of transfixion.

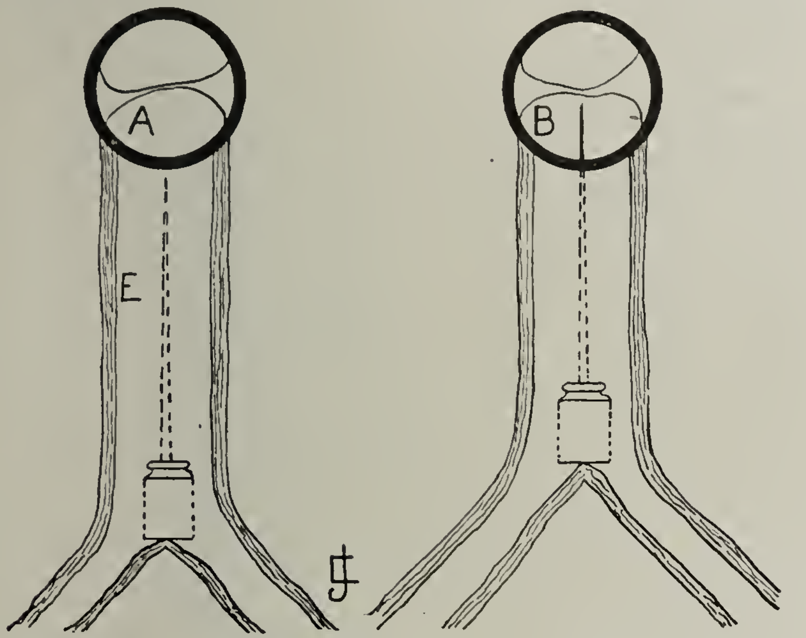

Fig. 10.—Schematic illustration of bechic aid in revealing a foreign body in a bronchus. The dental instrument, *E*, was entirely contained in a small branch bronchus so as to be entirely invisible to the bronchoscopist looking down the stem bronchus, *A*. When the patient coughed, the altered position of the bronchi caused the point of the dental instrument to emerge into the lumen of the stem bronchus as shown at *B*, whence it was easy to remove with forceps.

Safety Pins, Open, and Point Upward.—The most important utilization of the roentgenographic study is for the endoscopist to get a mental picture of the position of the foreign body with reference to the approach of the endoscopic tube. For instance, if the esophagoscopic tube is allowed to approach the foreign body without any previous study of the problem, it will usually, in the case of safety pins, present to view first the keeper end of the pin as shown at E, C, Figure 9. If, however, the endoscopist from previous study knows that the point *A* is, for instance, outward to the left, he bears in that direction with his tube mouth, as shown at *D*, with the result of bringing into view the point, *A*, or, if this is buried, the shank of the pointed end as near as possible to the point. This enables the endoscopist to solve the safety pin problem in one of the simplest ways, by seizing the pointed end of the pin, *A*, drawing it within the tube mouth, when traction will be relatively safe, as compared to traction on the end, *C*, which will almost invariably prove fatal from perforation of the esophagus, by the point, *A*. Practically the same problem is presented when a safety pin has lodged in a bronchus, especially if, as in one of the author's cases, the point, *A*, had entered far into a lateral branch. In one of the author's cases, the safety pin had lodged in the right bronchus with the point of the pin projecting into the right upper lobe bronchus completely hiding from view all of the shank, *A*. The problem was solved by closing the pin by use of the well-known tilting ring and push fork instrument. In case of esophageally lodged safety pins, the best method in the author's experience has been the one that in the Pittsburgh clinic is called "endogastric version." We have had altogether 27 cases of safety pins, 16 being in the esophagus, 2 in the trachea, 1 in the bronchus, and 8 in the larynx. Of the esophageal cases 5 were closed before removal, 4 were removed by protecting the points with the tube mouth (Fig. 9), and 7 were removed by endogastric version. All of the patients were discharged cured. Our "follow up" system discovered that in one case the child was taken suddenly ill about ten days after leaving the hospital, and died, the exact cause of death not being determined. In this case the pharynx and larynx had been found, at esophagoscopy, to have been very badly lacerated from the attempts of the parents with their fingers to remove the safety pin. The esophagus showed trauma caused by blind efforts with forceps and bougie before coming into the clinic. No postmortem was made.

Upholstery Tacks.—These (Fig. 6) usually lie point upward with the head buried in swollen mucosa, presenting the "mushroom anchor" problem, the solution of which has been elsewhere described. It may be stated that our recent cases have brought the total up to eight cases.

Double-Pointed Tack.—One of the most difficult problems to solve is that of the double-pointed tack, the points being upward and buried in the swollen mucosa. In the esophagus the most serviceable method is that of endogastric version, as with safety pins. In the air passages version is much more difficult, but can be accomplished by very patient work. The technic has been previously described.[1] We have had six cases of fence staples. Two were in the trachea, one in the right bronchus, one in the left bronchus, and two in the esophagus. All of these were removed by endoscopic version. Five patients made a prompt and uneventful recovery. One patient, who had been subjected to ill advised traction previous to admission, was suffering with a mediastinal emphy-

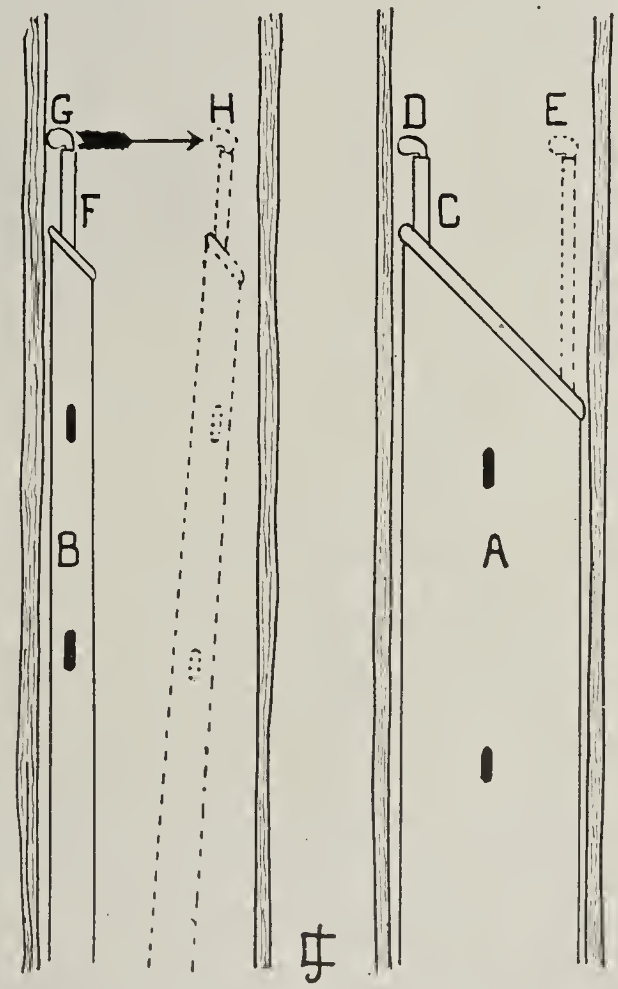

Fig. 11.—Schema showing advantage obtainable by the use of tubes of relatively small diameter. Sidewise movements of forceps can be executed with a small tube, *B*, that are impossible with a tube of large relative diameter, because the thin flexible forceps, incapable of lateral movement, can be forced sidewise by the rigid endoscopic tube if the latter is of relatively small diameter.

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[1] Jackson, Chevalier: A Fence Staple in the Lung, The Journal A. M. A., June 5, 1915, p. 1907.

sema, which rapidly proved fatal. In another case a double pointed tack escaped into the pleura, whence it was removed by external operation.

Hook-Shaped Bodies.—Hook-shaped bodies, such as artificial dentures with retaining hooks, bits of metal, wire, etc., present great potential dangers if injudiciously pulled on. Usually they require pushing to withdraw the point of the hook. A very difficult problem was presented by the very sharp, hook-shaped point of the wire, Figures 7 and 8. The sharp, hook-shaped extremities were liberated by sidewise movement and then were gotten into the mouth of the esophagoscope, where they were prevented from harming the esophagus during withdrawal. Traction on the part first presenting would have resulted in perforation into the mediastinum.

A few words on prophylaxis may not be amiss here. The presence of this sharp-pointed piece of wire in this woman's esophagus points to the carelessness of using an old broken egg beater in making the custard pie, the swallowing of a piece of which led to the accident. The frequency with which we have removed small bits of bone from the air and food passages of children and adults points to almost criminal carelessness on the part of the butcher shop and kitchen. Pins and needles should not be kept in the kitchen, nor should they ever be held in the mouth while dressing or sewing or at any other time. The fifty pins, needles and similar pointed objects we have removed point to avoidable accidents. Children should be taught not to put in their mouths anything not fit to swallow. The author has collected from the public press in a single year forty-three cases in which children died from the lodgment of a foreign body in the larynx, death occurring before a physician arrived. All toys should be regularly inspected for loose small parts that might be put in the mouth. Coins, poker chips or other small objects should not be used for teething rings. Workmen should have some carrier other than their mouths for tacks, nails, screws, etc. No one should go to sleep with an artificial denture or any other loose object in his mouth. Even an undissolved tablet has been known to cause death by asphyxia. The fact that, thanks to bronchoscopy and esophagoscopy, such objects can be almost invariably removed through the mouth without operation does not excuse the ignorance or carelessness that permitted the accident to occur.

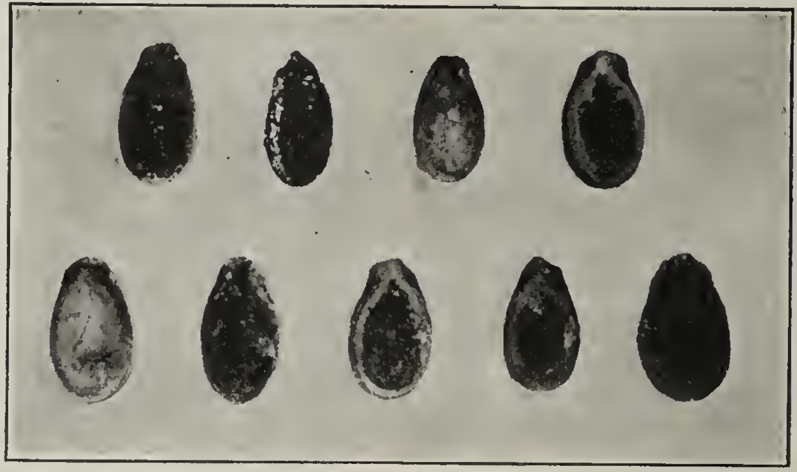

Fig. 12.—Watermelon seeds removed from the bronchi of children (nine cases), by peroral bronchoscopy, without anesthesia, general or local. Some of these required version so as to present an edge for the grasp of the forceps.

Tightly Fitting, Corklike Bodies.—These are especially apt to be associated with an annular edema of the bronchi which prevents a proper spread of the forceps' jaws. Two very successful methods of dealing with the problem have been previously published. Briefly described, one is by means of the lip of the bronchoscope making sidewise pressure to permit the insinuation of the hook below one side of the foreign body. The hook is then turned and the foreign body pulled on sufficiently to withdraw it above the annular edema, where it can be seized with forceps. In the other method, strong springlike forceps' jaws, which push back the annular edema in one plane, are employed. These two methods have been successful in dealing with this problem in fifty-two cases, without mortality.

Soft, Friable Bodies in the Bronchi.—The essential difficulty in most of these cases is to take sufficient hold with the forceps to permit the withdrawal of the body and yet not such a firm pressure as to crush the intruder. While the fragments of these bodies may be coughed up if comminuted, a much more likely result is to have fatal multiple abscesses with a septic bronchopneumonia as the result of aspirating the fragments into different portions of the lung. We have had sixty-two cases of soft friable bodies, including nut kernels, maize, and various vegetable substances. The foreign substance was removed in all of the cases. There was no operative mortality, but our "follow up" system discovered that two of the patients had died a number of weeks later of septic pneumonia. In both of the cases the foreign body was a peanut kernel. No postmortems were obtained, but it seems probable that some fragments of kernel remained behind either from the breaking off of a fragment when grasped by the forceps, or the foreign body might have been multiple in the first place. It is also possible that the very violent septic bronchitis which is found in practically all peanut cases may have been more than the child could combat.

Bones.—The problems of dealing with bones are concerned chiefly with their shape, and these have already been mentioned in connection with pointed objects, transfixed objects, etc. Of bones in the larynx, trachea, bronchi and esophagus we have had forty-seven cases. The bone or bones were removed in all cases. No anesthetic, general or local, was used except in two cases where the bone was of enormous size and very sharp. Here the relaxing effect of anesthesia was deemed necessary for safety, to prevent the esophagus being lacerated by spasmodic gripping of the foreign body on removal. In all of the cases of bones, the patients, with a single exception, made a perfect recovery. The exact cause of the one death, some days later at the patient's home, was undetermined. The patient had a nephritis, though this was stated not to have been the immediate cause of death.

Disklike Objects.—These usually present no difficulty unless they are somewhat saucer-shaped and wedged in swollen mucosa and transversely placed. In this case the lip of the bronchoscope is used to make a slight crevice or dent in the swollen mucosa at one part of the disklike object so that an edge can be drawn upward to be seized by the forceps. Pins, sharp points or serrated edges, on disks, complicate the problem and require rotation so as to prevent laceration of the tissues during withdrawal of the foreign body.

In sixty-four cases, buttons, coins, skirt weights and similar disklike objects, including a poker chip, have been removed in our clinic without anesthesia and without mortality.

THE POSSIBILITIES AND LIMITATIONS OF NONSURGICAL BRONCHOSCOPIC TREATMENT *

ROBERT F. RIDPATH, M.D.
PHILADELPHIA

GENERAL CONDITIONS OF PATIENTS REQUIRING BRONCHOSCOPIC EXAMINATIONS

The patients and their conditions will vary as does the rainbow. They are usually those who have been treated from one month to a number of years by many different doctors. The majority are more or less emaciated, from the persistent cough and the knowledge of something wrong in their chest for which they have received no relief. Some are sent direct by their physicians; others, having developed the dispensary habit, going from one hospital to another, finally hear of your wonderful bronchoscope and through curiosity as much as the desire for a cure come into your hands. Dependent on the special condition of our patient, we find the general condition. Hence, the asthmatic with his barrel-shaped chest; the tuberculous laryngetic, with hoarse voice and almost continuous expectoration of frothy consistency; the hysterical, who seemingly imitates all or any one of the many symptoms of disease. Generally speaking, however, they are perfectly willing to undergo any examination or instrumentation, to have a correct diagnosis made with the possibility of a cure.

POSSIBILITIES OF DIAGNOSIS GREATER THAN BY OTHER MEANS

That the routine use of the bronchoscope is of invaluable advantage in obscure diagnosis is being demonstrated constantly. Tumors or growths outside of the trachea or bronchial tube pressing and occluding the lumen are of frequent diagnostic occurrence. Calcareous deposits on the tracheal rings are as easily seen as though they were on the finger nails. False membrane of diphtheritic or other origin is found and removed with entire relief from the offending symptoms. Papilloma or other growths causing cough, dyspnea; reflex spasms of unwarranted severity, and either mechanically or clinically producing coughs, râles, expectorations, hemoptysis, malnutrition with greater susceptibility to other or all diseases are diagnosed and removed. Ulcerations from various causes, tuberculous or otherwise, are seen and medical agents applied. Strictures are dilated, asthma and tracheitis treated, all of these and many more are to us an open door through which we see many more possibilities in the future.

TREATMENT OF DISEASES AND CONDITIONS BY LOCAL MEANS

Tracheitis, or tracheal bronchitis, is one of the most frequent conditions we come in contact with. Like bronchial asthma, it appears in two forms: first, as highly inflamed or mucous-covered areas of mucosa, extending around the whole lumen of the bronchi, or as patches along its walls, varying in size from a large pinhead to from one half to an inch in length; second, we may find a dry condition, the secretions, if any, having formed hard crusts or scales of a dark or greenish hue. We are rather inclined to think the second condition is simply a later development of the first. It is within the realm of possibilities to follow the course of the disease from the original infection with the organisms producing the irritation, Nature doing her part by sending leukocytes in abundance to stop the offending invasion; then tracing the outpouring of these through the mucosa with serum, constituting in this way secretion, with the corresponding tuberculous cough and expectoration. If resolution takes place, our patient is well; if not, the mucosa, as a result of the drying of these secretions and the almost continuous cough, breaks down in places and ulcerations form.

The etiology is many sided. It may be due to the occupation, as in the case of a stone or marble worker, or workmen breathing the fumes from iron molding or various vapors of acids; chauffeurs who drive continuously, inhaling quantities of dust. Bad hygienic surroundings may be the cause, or it may be produced by a condition of the upper air passages necessitating mouth breathing, in which we have lack of proper filtration, warmth or moistening of the inspired air; it may be due to sinus involvement, the continuous heavy bacteria laden discharge inflaming the pharynx and continuing by gravity or osmosis, finally reaching the larynx and trachea.

The treatment naturally divides itself into two methods: that appropriate for the first condition and that suitable for the second. We have found applications of glycerite of tannic acid, applied by tampons, the ideal treatment of the first division. These are to be used every other day, the whole lumen of the trachea or bronchi to be carefully gone over and painted. For the later development several therapeutic agents suggest themselves. We must first remove all incrustations, touching the underlying ulceration with silver nitrate, or other silver preparation, or a 10 per cent. alcoholic solution of iodin. The dry, reddened membrane responds best to stimulation by the ultraviolet ray. This is applied by means of a vacuum through the bronchoscopic tube, giving not more than one-sixteenth inch spark at any time. As you all are aware, high frequency current is one of our most refractory agents, always wishing to go the long way to a given point instead of the short; and for this reason we have had considerable trouble in perfecting a properly insulated applicator for its use. The ultraviolet ray or spark when applied in this manner stimulates the mucosa to greater activity and acts as a tonic to the underlying arterioles and nerve filaments, dilating the blood vessels to their proper caliber. I have stated the length of spark on account of the great number of electrical machines on the market, with their various ratings of voltage and amperage, thus confusing and complicating the treatment. The current acts in two ways, a one-thirty-second to a one-sixteenth inch spark acting as a stimulant, whereas a larger, stronger spark is destructive in character.

Bronchial asthma can be traced, diagnosed and treated by bronchoscopic means in a surprising number of cases, although all available literature on the subject clouds the causative factor of this condition with many theories. If we expect to find the same clinical picture in all cases, we will fail utterly, for just as patients differ in all other characteristics, so their bronchial picture varies. As Jackson[1] has truly said, in order to get an accurate picture, it is necessary that the examination be done without any anesthesia, general or local, in at least one of the sittings with each patient,

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Jackson: Pectoral Endoscopy and Laryngeal Surgery, p. 478.

so that the bronchoscopic picture shall not be altered by the application of the anesthetic. The writer reported a case[2] the causative factor of which was a papilloma situated on the carina, and the removal of which gave immediate relief and permanent cure. Another case was found to have its exciting cause in quite a large ulceration between the second and third bifurcation on the right side; the treating and healing by bronchoscopic means was followed by entire relief of the patient's asthmatic attacks. In the majority of cases, however, we have found the mucosa of the trachea and bronchi red and swollen, here and there covered with stringy, mucilaginous secretion, the removal of which, in quite a number of cases, disclosed ulcerations. I have never seen, as Freudenthal[3] records, the appearance of a scarlike mass obstructing the entire lumen of the bronchus, but have frequently seen the lumen partially occluded by such masses. I would divide the cases of bronchial asthma into two general classes: those in which we have an inflamed, dry mucosa, which may or may not have a local lesion in the tubular air passage; and those in which the mucosa is inflamed and swollen, causing a lessening of the general lumen of the trachea or bronchi, and in which the secretion is copious; the primary factor may or may not be locally situated. Dr. James Adams has justly pointed out that asthma in most cases is essentially a toxemia and no treatment can be successful without recognition of this fact. If we take into consideration the many elements which may enter into the morbid anatomy of asthma, such as the nasal passages, alimentary tract, blood, urine, malformation and toxemia from scores of causes, we can readily see that the bronchoscopic appearance of the mucosa of the respiratory tubes also must vary according to the exciting factor. When all other possible causes have been eliminated and no apparent reason assigned, bronchoscopic treatment may be resorted to with numbers of cures reported.

Ephraim[4] reports six patients cured, eleven improved and twelve not influenced by endobronchial treatment. He used a mixture of novocain, epinephrin, and normal salt solution, later reporting 133 patients treated with a spray of epinephrin and novocain with excellent results. Greenwald[5] reports good results following repeated applications of 1 : 10,000 epinephrin.

Personally, in the treatment of the conditions described in the first division, I proceed as follows: If the trachea is dry or inflamed, the proper treatment is to build up the mucosa as any other mucous membrane in the same condition. We first relieve the congested arterioles of the excessive blood by spraying with 1 : 5,000 or 1 : 10,000 epinephrin in normal salt solution, after which may be applied by local tampons equal parts of compounded tincture of benzoin and boroglycerid; or a silver solution, or a spray of pure liquid petrolatum with 1 per cent. ichthyol applied to all diseased areas. This should be repeated in three days and continued at that interval for five or six times to note any effect. If the case is one of the second variety, the secretions must be removed by vacuum, all masses of mucus removed, the ulcers treated with silver nitrate, 10 per cent., and a local application of glycerite of tannic acid to the mucosa. This should be repeated twice weekly.

Papilloma of the larynx in children occurs in two forms. In one form the growth disappears spontaneously, in the other, surgical or other means are required. That papilloma occurring in children is more frequently cured spontaneously there can be no question. Of those patients requiring treatment, I am permitted in this paper to speak only of other than surgical means, of which there are four methods of treatment: (1) fulguration, (2) radium, (3) Roentgen radiotherapy, and (4) medicinal agents.

Fulguration by means of high frequency current is unquestionably a curative agent to be considered in this condition and if persisted in for several treatments will effect a cure; the only disadvantage exists in the growths which lie under the cord, their position being almost inaccessible for fulguration treatment. Harmon Smith[6] reports exceedingly satisfactory results by this means.

Radium in every case thus far reported has not only effected a cure, but seemingly prevents recurrence.

Roentgen radiotherapy has never been used to any great extent, but should have a curative effect if properly given. I am rather inclined to believe that a series of applications of the Roentgen rays will limit the frequency of return in those cases which have had operative treatment.

Delevan uses applications of alcohol, starting with a 50 per cent. solution and increasing the strength as the treatment progresses. We must, however, be exceedingly careful not to have the applicator dripping. E. L. Jones has had excellent results from a saturated solution of salicylic acid in alcohol.

I have used fresh pineapple juice in one case with entire destruction of the growth, the action of the juice seeming to shrivel the papilloma; the only disadvantage is in the number of applications necessary, requiring a dozen or more. I do not think tracheotomy is necessary before using any of these applications, but all medication must be applied direct to the papilloma and not indiscriminately to any and all of the laryngeal mucosa. Papillomas in adults are on the whole more amenable to treatment than similar growths in children and decidedly less liable to return.

It is also well to remember that benign growths proliferate on the surface and do not infiltrate.

The significance of tuberculosis of the larynx, trachea and bronchi is too well known and appreciated by the profession to need emphasis or repetition. With the aid, however, of bronchoscopic methods more light and quicker diagnosis and treatment are made possible. In practically all literature obtainable tuberculosis of the larynx and trachea are considered secondary to pulmonary involvement, and yet case after case coming under my care, when examined bronchoscopically have both clinically and microscopically been diagnosed tuberculosis without showing any pulmonary lesions, either clinically or by means of Roentgen-ray examination. Granting that the lung tissue is possibly better soil for the growth of the bacillus and the trachea and larynx become involved secondarily, I am unable to see any reason why the interarytenoid tissue, the cartilages or the mucous membrane could not be primarily infected, extension and invasion of the lung tissue taking place secondarily.

Dr. George Wood in his admirable article has clearly demonstrated the frequent involvement of the tonsils with tubercle bacilli, also that the tonsils act as a portal of entry for the disease into other portions of the body.

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[2] Ridpath, R. F.: Laryngoscope, 1914, **24**, 942.
[3] Freudenthal: New York Med. Jour., June 24, 1911.
[4] Ephraim: Monatschr. f. Ohrenh., 1913.
[5] Greenwald: München. med. Wchnschr., 1913.
[6] Smith, Harmon: Laryngoscope, 1913, **23**, 1029.

As the tonsil is so frequently involved, it does not require such a vivid imagination to reason that the same infection might, and does, occur primarily in the larynx and trachea; the only reason of our inability to properly diagnose the cases has been due to ourselves, and the close simulation of beginning tuberculous laryngeal inflammation to simple acute or chronic laryngitis.

With the routine use of the bronchoscope, I believe that another era has dawned for diagnosing and treating tuberculosis in its incipiency. According to Casselberry[7] one of the earliest and most destructive of the initial tuberculous changes in the larynx and one which may precede by years any more active development is the mammillated hyperplasia commencing at or near the subglottic portion of the base of the vocal process and gradually marked by a furrow in the vocal angle. This later ulcerates into vaguely outlined margins with mouse eaten edges, their base covered with granulation tissue. Infiltration and edema may now occur with extension of the disease. St. Clair Thomson reports 50 per cent. of those who die from tuberculosis show laryngeal involvement at postmortem examination, and further states that in ninety-nine out of 178 patients with laryngeal tuberculosis treated in the past three years, the disease was either arrested or improved. Brull reports 58 per cent. of the patients clinically cured and of these, 31 per cent. remained cured. While the local treatment for this condition affecting the epiglottis and larynx can be pursued by the direct bronchoscopic method, the suspension laryngoscope of Killian or Lynch is much to be preferred, affording the operator both hands free and close range examination. The treatment is to destroy the local lesion either by surgical means, with the curet or by electrically or medicinally cauterizing the area. Patients must be cautioned about the resulting edema from these treatments and instructed of its dangers. I would suggest to treat only a small portion of the infection at one sitting, thereby reducing the danger from edema. If the ulceration occurs in the trachea or bronchial tree, cauterization may be done by beaded chromic acid or trichloracetic acid.

Catarrhal hypertrophies of the mucosa appear as swollen, inflamed, spongy areas extending into the lumen of the trachea or bronchi and lessening its diameter. The secretion is usually found to be very tenacious and hard to remove. The treatment varies with the condition present, from the use of glycerite of tannic acid, or a 2 per cent. solution of silver nitrate, to the application to the swollen areas of chromic acid, used as a bead on an applicator.

Bleeding from any of the arterioles of the mucosa is easily seen. It may originate from a tuberculous lesion, malignancy or aneurysm and the treatment should be instituted according to the condition.

Stricture or stenosis of the trachea or bronchi occurs mainly from outside sources. Goiters, enlarged thymus, tumors of the esophagus, mediastinal or thoracic tumors and aneurysm may produce it, and with removal or treatment of the original cause we have a decrease or a cure of the stenosis.

Syphilis of the tracheobronchial tree may also occur. In spite of the frequent involvement of syphilitic lesions in the larynx, the finding of lesions in the lower air passages is a rarity. These lesions may be inflammatory, ulcerative or gummatous. A therapeutic or Wassermann test is, however, necessary for confirmation and exclusion of tuberculosis.

For vocal nodules, Wylie recommends very highly the use of the galvanocautery point. Great care, however, must be employed in its use. A saturated solution of magnesium sulphate repeated every other day or very small applications with trichloracetic acid will practically always give us the desired cure.

Cystomas, according to Jackson, have been known to be cured after galvanopuncture, but he also states that we must be sure to destroy the sac.

LIMITATIONS

As all procedures must necessarily have their limitations, so we meet with finitude in bronchoscopy. Patients with valvular heart disease, those having any cardiac lesions with failure of compensation, are practically barred from a bronchoscopic examination, first, because of the excitement caused by the examination, and second, by their inability to stand the local anesthesia. Patients with long-standing cases of asthma, with the typical barrel-shaped chest and the abdominal breathing, more or less constant cough, dyspnea, thick tenacious mucus and expectoration do not stand the examination well even if the tube can be passed at all. They are also very susceptible to cocain and the examination of these patients is almost impossible without its use on account of the chronic inflammation of the membrane. People with short, thick necks with their inability to flex the head on the back of the neck are numbered among the class of bronchoscopic impossibilities. Arthritis occurring in any vertebral articulation precludes examining the trachea. In serious cases of dyspnea the application of cocain with the instrumentation would be extremely dangerous. Dyspnea may increase if the larynx is stenotic before operation, necessitating tracheotomy. Ankylosed jaws naturally would make an examination impossible. Aneurysm might not only produce pressure, with a corresponding convexity to the tracheal circumference, but with the increased blood pressure accompanying it. This condition demands great caution, not to speak of the danger of rupturing the aneurysm, an accident which occurred in one of Collier's cases. Apoplexy and arteriosclerosis are contraindications. Goiter if of sufficient size to press on the tracheal rings or cartilages will be sufficient mechanical obstruction to limit an examination. Idiosyncrasy to cocain may induce toxic syncope. Serious hemorrhage could occur only in a hemophiliac.

The Medical Mind.—Our environment has often caused serious rifts in the brotherhood because, above all things, we are human. We are critical, skeptical, credulous. Let some toiler and earnest worker discover a truth and give it to the world. Its reception makes interesting reading and causes us to wonder at the strangeness of the human mind. Harvey announces the circulation of the blood; Jenner gives vaccination to us; Morton gives us anesthesia; Oliver Wendell Holmes shows us the cause and prevention of puerperal fever. All these and innumerable others are met by ridicule, angry opposition and abuse. It is not that the medical mind does not welcome the truth. It is that we are slow to see it—that we have been thinking in grooves for so long that it takes years before a new manner of thinking can be developed.—James M. Putnam, M.D., Address before Buffalo Academy of Medicine.

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[7] Casselberry: Infective Lymphoid Growths of the Laryngopharynx, Secondary to Sinus Suppuration, The Journal A. M. A., Feb. 13, 1915, p. 576.

THE POSSIBILITIES AND LIMITATIONS OF SUSPENSION LARYNGOSCOPY *

ROBERT C. LYNCH, M.D.
NEW ORLEANS

Suspension laryngoscopy as a procedure is so new that the proverbial pendulum has hardly begun to swing in either direction. In the first place, are you entirely satisfied with the instruments as they are shown to you at this time? Is it probable that the last word has been spoken in this regard? I may answer this by saying that I am constantly looking for a more simple instrument than the one I have been using.

It would seem that the mechanics involved is on a sound foundation and the principle as proposed by Killian is faultless, yet modern ingenuity may change our method considerably.

As we view it today, suspension laryngoscopy is not to be practiced successfully with any instrument designed primarily to sell for $10. The act of suspension is not a simple, safe operation and if we elect to suspend our patient with an instrument that is flimsy, fragile and too dainty to bear the burden, we shall lay the patient open to the possibility of a serious termination and ourselves to criminal negligence.

You must bear in mind that in order to convert the curved road from the teeth to the vocal cords, with the mouth wide open, into a straight path, there is required a considerable amount of power and a certain amount of muscle relaxation, the one bearing a direct proportion to the other; and in addition must be considered the possible variations in normal anatomy designed apparently to defeat your purpose.

This means that one must use more power than the uninitiated realizes and must apply this in a manner that is perfectly safe in its every detail. There are required rigid, strong, well-built instruments which will withstand any strain to which they are subjected.

It is an easy matter to view the larynx through a Jackson or Mosher spatula, and the application of either model in trained hands is practical without pain or danger to the patient, and not uncomfortable to the operator. In the use of this, however, one hand is busy with the spatula, and whatever further is done must be accomplished through a closed or split tube.

With suspension the chief advantage is in seeing the parts in their entirety through a wide-open mouth and in obtaining a view limited only by the boundaries of nature, with no part of the instrument in the field, and with both hands free to work as the indications require. One examines more minutely and by direct vision selected areas, using one or both hands to acquire the view. One sees plainly before him the entire interior of the oral cavity, the mesopharyngeal and hypopharyngeal spaces, the mouth of the esophagus, and the posterior and interior aspects of the larynx and trachea by such a broad view as is impossible to acquire by any other means. For instance, to look into the ventricles of the larynx either by my tilting mirror or directly, or to see the inferior surface of the vocal cords, either by a mirror placed below them or by actually lifting the cord so as to bring the under surface into view is a possibility under suspension only.

To study the larynx in health and disease by the tactile sense is an entirely new experience in this field. For one who has been trained in the old school of mirror, tongue napkin, applicator or forceps to be permitted to sit before his patient with the larynx entirely exposed in such a manner that no part will be lost sight of; to view each detail carefully, slowly and deliberately and to have the perfect assurance that nothing that the patient can do will in any way alter or disturb the view; then to proceed deliberately to study each detail by the sense of touch and sight combined; to palpate tumor masses; to feel the extent, character and depth of ulcerated and indurated areas; to determine the progress of proliferating, inflammatory and new growth formations; to study the muscular movements of the vocal cords during respiration and phonation and to search the nooks and corners for evidence of disease must awaken in him a sense of delight and satisfaction similar to that experienced by the skilled diagnostician who palpates a stone or abscess in the pelvis of the kidney or an aneurysm of the common iliac artery, or a gynecologist who recognizes an early extra-uterine pregnancy.

Now, to proceed further and to remove by dissection a tumor or cyst growing from any locality in the same manner and with the same instruments, slightly modified, as the general surgeon would select to remove a similar mass from the skin surface; to pass a bronchoscope between the vocal cords down into the trachea of an infant or young child; to remove a foreign body from the trachea by means of forceps unaided; to curet and cauterize ulcerated areas accurately without danger of injuring the normal structures surrounding the field of operation; to do a plastic operation on a selected part and to be able accurately to place stitches when and where needed; to introduce the esophagoscope or to remove from any area within the field of view a specimen of tissue for the microscope — these briefly are some of the present possibilities of suspension laryngoscopy.

It must be borne in mind that the suspension apparatus is not intended as an instrument for ordinary office examination, nor is it to be used when one wishes merely to see the lingual tonsil or the mouth of the esophagus, nor will it ever replace the use of the bronchoscope or esophagoscope. In fact, it is not intended to replace the ordinary throat mirror or the various direct spatulas or the tubes. Its field of usefulness is, as I have tried to outline, separate and distinct from all other methods known to us.

One acquires skill in its use with a little practice, but like all delicate manipulations, a certain amount of continuous practice is essential to best results. For this reason if one has but a limited field or a small clinical service in which facilities are limited, the suspension will not be a valuable addition. It is not intended for use in makeshift, impromptu operating rooms, with kitchen tables, ironing boards and the like for equipment.

Flimsy mouth gags with sliding tongue plates, having a handle and hook attached, will not replace the carefully constructed instruments presented to you by Killian and myself. So long as the principles involved remain as we now consider them, this type of instrument can yield nothing but failure to you and throw discredit on the procedure, so I caution you against them as a class.

Fixed cervical vertebrae throwing the chin near the sternum or any other similar deformity which would render it physically impossible to open the mouth or convert the curve into a straight line would contraindicate the use of the apparatus.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

A large epithelioma at the base of the tongue with cervical gland involved and one or both pillars of the pharynx indurated would likewise contraindicate its use.

In those cases in which thyrotomy and low tracheotomy have been done in persons with long necks, if the larynx seems to drop lower into the chest cavity than the normal and the resulting scar from previous operations limits the free extension of the chin, I have found it impossible to see by suspension any more than the posterior aspects of the arytenoid cartilages.

Lastly, one has the privilege of discretion in the selection of his subjects for suspension, and this he is expected to practice at all times and with due regard for patient and apparatus alike.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JACKSON, RIDPATH AND LYNCH

Dr. William Bricker Chamberlin, Cleveland: Just as the bronchoscope marked an advance over the older indirect method, so suspension laryngoscopy has marked an advance, but in a fairly limited field, over the bronchoscope. Dr. Lynch has made some decided contributions in the endolaryngeal instruments which he has devised. I have used a few of them, and find them exceedingly valuable. The advantages of suspension laryngoscopy must be apparent to all who have used this method. The first thing that must occur to one is the advantage of this method in having the patient suspended by a mechanical device, thus leaving both hands free for any manipulation. The very striking advantage of having two hands free came to me sometime ago, when in a rather short space of time I had three cases of open safety-pin in the esophagus. I was able in each case to dilate the opening of the esophagus with a pair of nasal forceps, and by grasping the head of the pin and giving the forceps a turn bring the eye of the pin into view. Then I grasped the eye of the pin with a second forceps, thus doing a version in the esophagus the same as we do a version in the uterus. Suspension laryngoscopy is especially valuable in children. It certainly has rendered the handling of the larynx in children a very successful operation. Much of this work could probably be done equally well by bronchoscopy but it certainly is much easier to accomplish by means of suspension. In children with suspension, a general anesthetic is necessary. In the adult one may use either a general or a local anesthetic, depending on the disposition of the patient. Both suspension laryngoscopy and bronchoscopy have their special fields. One who has examined the hypopharynx or larynx with the bronchoscope can fully appreciate the added advantages which suspension affords. You have the whole field immediately in view, and you can demonstrate this field to those who have never seen it before—men who are not experienced in the use of the laryngeal mirror. I want to enter a plea that we continue to perfect ourselves in the old method of indirect examination and indirect operation. Dr. Lynch has well said that suspension laryngoscopy is not a procedure for the country home on the kitchen table or ironing board; nor is it a procedure for the office; it is a hospital operation. Many growths in the larynx can be removed just as successfully by the indirect method as by the direct, and if any one of you had the choice between having a small papilloma of the vocal cord removed by the indirect method in a few moments in a physician's office, or going to a hospital and submitting to the discomfort of suspension, you would not be long in making up your minds. There has been such enthusiasm over bronchoscopy and suspension laryngoscopy that many of the younger men have failed to perfect themselves in the old technic of indirect examination and indirect operation. This is a great mistake.

Dr. Thomas Hubbard, Toledo, Ohio: In the invention of instruments for bronchoscopy or esophagoscopy it is exceedingly important that they be considered from all points of view. Any instrument for grasping a foreign body that will not permit easy release is a dangerous instrument. A curved hook should not be used in the tracheal tract, because it is possible to so engage the curved hook in a ring of the trachea or bronchus that it is very difficult to let go. A right angle hook is much safer.

I want to endorse Dr. Jackson's statement that, as a rule, we should use as small a tube as possible. There are exceptions. Peanut cases are liable to develop pneumonia, and the reason is probably the multiple fragments. It is important to remove large and small fragments without a reinsertion of the tube, because of danger of subsequent laryngeal edema. With the exception of cases of that character I think the small tube is preferable. We should also bear in mind the liability of overlooking a foreign body which may be impacted in the ventricles of the larynx. The same applies to foreign bodies in the esophagus and here the large caliber tube is particularly indicated.

Dr. Samuel Iglauer, Cincinnati: If I understood Dr. Ridpath's statement correctly, he implied that primary tuberculosis of the larynx might not be an uncommon thing. That statement would have to be questioned somewhat. We might not be able to demonstrate tuberculosis elsewhere than in the larynx, but the real test is the postmortem test, and I believe postmortems show that primary tuberculosis of the larynx is exceedingly rare. If it were primary the prognosis would be much more hopeful. As to the use of the cautery in tuberculosis of the larynx: I have had occasion recently to look up the literature on this subject, and it seems to me that our prognosis should be much brighter now than ever before, especially if one reads the article by Ruedi of Davos. He treated over 500 patients, using chiefly the cautery according to the method of Siebenmann, which consists in destroying the entire tuberculous lesion. He claims 33 per cent. of cures in all his cases. Some of his cases, however, have been under observation too short a time to allow for such a high percentage, but nevertheless there is no doubt that we should take a more favorable view of tuberculosis of the larnyx, especially if the patient has not much pulmonary involvement. The statistics of Siebenmann are better; they have covered a larger period of time, and his percentage is 16.

I understood Dr. Ridpath to say that he could cure papilloma of the larynx in children by fulguration. I would like him to go into details as to how he carries out the treatment and how many cases he has had. I have used it but once, without any apparent results. He also spoke of radium. You may do damage with radium. I have one patient now in whom I am firmly convinced that I destroyed the papilloma, but burned the larynx to such an extent that he has a condition which is very difficult to relieve. Radium was applied three times. The third application produced the burn, so that great precaution should be taken in the use of radium inside the larnyx. I used 50 milligrams for about seven or eight hours.

Dr. Jackson believes in preparedness in bronchoscopy. I attempted to remove a screw from an abscess in the lung. It had been in situ for three years. I was unable to see anything by bronchoscopy owing to the excessive amount of pus. I therefore procured a giant magnet. A steel rod previously shaped was introduced through the tracheotomy and the magnet applied to the rod. The screw came out dangling on the end of the rod. Dr. Jackson also spoke of the method of seizing the point of an open safety-pin and drawing it into the tube. I have done this four times. Twice it was very easy because the pin was in the hypopharynx and I could remove it through the Jackson speculum. But in the two other cases the pin was in the esophagus and while I seized the point of the pin and was able to withdraw it successfully, yet when it came out it opened wider and dropped back into the mouth. As the pin was withdrawn the clasp of the pin caught on the cricoid cartilage. As an aid to bronchoscopy in very small bronchi I have devised a little instrument, a "bronchioloscope." The object of the instrument is to give an unobstructed view by sliding a flexible forceps along the outside of the bronchioloscope.

Dr. H. P. Mosher, Boston: Dr. Jackson has given us the last word on the mechanical extraction of foreign bodies.

Dr. Ridpath works along the line I have suggested and has given us his results. Primary tuberculosis of the larynx, if it is ever to be discovered by any one aside from the pathologists, is to be discovered by the man working with the lighted tube.

Dr. Jackson has forced a revolution in the method of anesthesia in the examination of the trachea or esophagus. Dr. Ridpath was not specific on this point. I would like to know whether he succeeds in making his diagnosis and carrying out his repeated treatments without any anesthetic.

Speaking of the movement of foreign bodies in the trachea, I was reminded of a case which puzzled me quite a bit. This was a foreign body in the esophagus. This child was brought in with a history of having swallowed and retained in the esophagus a nickel when the fluoroscope showed that the nickel had not passed down, but was in the usual place at the opening of the esophagus, and had an upward and downward movement of 1 to 1.5 cm. That immediately brought up the question whether I had not made a mistake and that it was in the trachea. It proved, however, at operation to be in the upper part of the esophagus. The explanation of the movement was that the nickel was large enough to distend the esophagus quite a bit, and, of course, as it extended it distended the anterior wall of the esophagus, which is a common wall with the trachea, the movement of the trachea transmitting the foreign body to the esophagus.

Dr. Ross H. Skillern, Philadelphia: We can all do that work and we should do it. When we do this bronchoscopic work we have to forget time entirely, because the sine qua non of the whole thing is thorough anesthetization of the parts. That takes perhaps ten to fifteen minutes with each patient. We use a very strong solution of cocain with epinephrin, and keep on using that until the larynx and glottis are absolutely anesthetized. Then introduce the laryngeal speculum and the other instruments. Dr. Lynch in his suspension laryngoscopy has given us one of the greatest advances that we could possibly have. I think I have used nearly every model that Killian devised. They were all good more or less, some of them much more satisfactory than others—they seem to improve progressively—the last model, however, was not as good in my hands as were others. We had trouble with our long epiglottis retractor. The instrument would bend; it seemed too flimsy. I got a couple of teeth one time, pulled them out of the upper jaw. But on the whole, I was always more or less in a strain while the baby was being swung up. Now, since Dr. Lynch has perfected his instrument I go about it without any fear or trembling whatever. The great advantage of his instrument is its solidness. You can put it in there and you can absolutely hold up the epiglottis. One must admit his instrument is more difficult to introduce than the Killian, because with the Killian we do the suspension first, whereas with his instrument you have to be able to perform a direct laryngoscopy before you can introduce this instrument properly. Killian made a great stride in his discovery, but it was an American who brought the instrument to its present state of perfection.

Dr. George F. Cott, Buffalo: These patients return after having the bronchoscope introduced several times, not to have the procedure repeated but because they want the effect of the cocain. I know we had a few in the Killian clinic, and they came back for the cocain.

Dr. W. E. Dixon, Oklahoma City: Most of these patients can be treated without any cocain at all. I find it very satisfactory to pass the bronchoscope with the Jackson instrument and treat the larynx medicinally without any cocain—much easier with the Jackson speculum than with the Bruening or the Kohler.

Dr. George F. Keiper, Lafayette, Ind.: We need not be in a hurry to pass the bronchoscope. I remember a case in which I missed a foreign body and it was because the physician insisted that I pass the bronchoscope without first obtaining a roentgenogram. As a rule, the patient declares he can locate the foreign body in the trachea or gullet, absolutely locate it, and yet when you have a roentgenogram made there is sometimes no foreign body or any evidence that there ever was a foreign body there. In locating a foreign body in the eye the patient can always tell you where it is, but do you find it in this place? Not at all. With reference to the treatment of asthma by the use of the bronchoscope, I have had some experience along that line and I have never failed to relieve obstinate cases which were not relieved by any other means by the use of the bronchoscope, following out the plan of Nowotny of Krakau and also as reported by Freudenthal, as well as by Secord Large of Cleveland and Henry Horn of San Francisco.

Dr. Robert H. Good, Chicago: I would like to ask if any one has tried blocking the superior laryngeal nerve with novocain for this purpose. I did this the other day and it certainly worked nicely. This patient made no complaint on passing the bronchoscope.

Dr. Lee Cohen, Baltimore: I would like to place on record a case of laryngeal papilloma in a child of 5 years, who was operated on five times in fifteen months, suspension laryngoscopy being employed. In spite of the most thorough removal, the use of alcohol, etc., the growth recurred with monotonous regularity until after the last operation, about nine months ago. Dr. Burnam, an associate of Dr. Howard A. Kelly, was requested to use radium. While the details as to dosage or the duration of each application cannot be given, it can be stated that the number of applications were four, and all of these were made from the outside over the larynx. There has been no further sign of recurrence, nor have any contractions within the larynx occurred, as has been observed repeatedly when radium applications were put inside of the larynx. Furthermore, in spite of the most extensive cutting operations, involving almost every portion of the larynx, the child's voice is perfectly normal.

Dr. J. W. Murphy, Cincinnati: I had a case in which the stem of the tracheotomy tube which the patient had been wearing became loosened and was inspired into the left lung. There were no physical signs. A few hours after the accident the only pain complained of by the patient was between the shoulder blades. I have also had several cases of bone foreign bodies in the esophagus, and all the patient could say was that the pain was in the region of the scapula. I think the internists have solved some of these problems in reference to pain in and around the stomach in which the pain is located high up near the shoulder.

Dr. William Redfield Butt, Canton, Ohio: The point made by Dr. Good in reference to anesthetization of the larynx should not be lost. It is valuable. Dr. George Fetterolf of Philadelphia, a couple of years ago, read a paper on alcohol injection of the superior laryngeal nerve for relief of pain in laryngeal tuberculosis, and it works very well in those cases. The superior laryngeal nerve supplies sensation to the entire mucosa of the larynx, with the exception of the tip of the epiglottis. It can be injected with an ordinary hypodermic needle in the space between the hyoid and thyroid externally. Combining this with a little cocain applied locally within the larynx to the tip of the epiglottis gives full anesthesia of the whole larynx.

Dr. Robert F. Ridpath, Philadelphia: I made the statement in my paper that tuberculosis of the larynx is decidedly more common than the literature indicates. I also gave my reasons why we have not diagnosed it more frequently—partly due to our own inability, and partly due to it being masked or simulating other forms of infection of the larynx. As my paper limited my subject to the nonoperative procedures it was necessary to have as complete a paper on that subject as possible. I mentioned fulguration in papilla of the larynx. In the paper I did not state that I had used it personally. My statement is entirely a quotation. Dr. Harmon Smith of New York has used it quite successfully. Dr. Yankauer of New York also uses it. Personally, I have never used it. The treatment which I have instituted, which is entirely of a medical nature, you will find incorporated in the paper. I, of course, could not speak of the surgical end in this paper.

In the examination of asthmatic patients you will find it is practically an impossibility to examine these, especially at the first examination, without the use of cocain. You have a person who has a cough which is irritating and frequent; you have an upheaval of the whole chest; you have also the natural nervousness of the patient due to the disease. All of these must be overcome. Personality overcomes some obstacles, but cocain overcomes decidedly more, so we use cocain. We do not use, as has been mentioned by Dr. Dixon, a saturated solution of cocain and epinephrin in these cases, but we anesthetize the pharynx and the epiglottis with a 20 per cent. cocain solution. The trachea and bronchi can be anesthetized, if necessary. This is applied with a tampon and a long applicator. In my former paper I gave my methods of applying this to the trachea. Patients do not come back for the effect of the cocain. Any one who has had cocain applied to his throat will not come back for the second dose if he did not receive some benefit from the other medicinal agents which have been applied. In fact the cocain absorbed from mucous membrane is anything but pleasing. They come back because we have helped them. I have shown you a tube or applicator which I devised for the application of high frequency ultra violet rays. We are not at this time able to give any definite data on the subject, but we think it is an agent which all investigators should look into.

Dr. Chevalier Jackson, Pittsburgh: One by one the various parts of the human body are being subjected, so far as possible, to examination by the eye. If the bronchoscope is ever to attain the full measure of usefulness which it deserves, it will be necessary to do the bronchoscopy either under local anesthesia or without any anesthesia, general or local. The internist, rightfully, will object to subjecting his patient to a general anesthetic, when the symptoms are slight; in other words, in that early stage in which a diagnostic bronchoscopy is particularly indicated. This is very different from the foreign body bronchoscopy, in which the operator is perfectly justified in using any anesthetic that appeals to him as best in the particular case according to his personal equation. In our clinic, Dr. Patterson and I use no anesthetic at all in children under about 10 years of age; in those above this age local anesthesia is used in bronchoscopy and direct laryngoscopy. We do not use general anesthesia for either bronchoscopy, esophagoscopy or laryngoscopy. Dr. R. H. Johnston tells me he gets good results from alypin anesthesia. In any case requiring repetition of the procedure the danger of drug habit, as mentioned by Dr. Cott, is very great, and I think all such work should be done without any anesthetic. There is one point in which our experience does not coincide with that of Dr. Ridpath. We have never yet found it impossible to do a direct laryngoscopy or a bronchoscopy on any patient who could open his mouth. Possibly our turn is yet to come. Dr. Hubbard's point in regard to the danger of seizing a foreign body with a snare or any other instrument which cannot be made to let go if it is necessary appeals to me as being exceedingly valuable. I never had that experience but once in the early days of bronchoscopy. I had a bronchoscope fastened in a bronchus by a pin being projected by cough through the holes of the bronchoscope, the point entering the opposite wall. The transfixed bronchoscope could not be withdrawn until I broke the pin with forceps, taking two fragments out separately. I have since modified the holes in the bronchoscope so that this accident cannot happen again. Dr. Hubbard's point about the peanut kernel is also excellent; but it seems to me it would apply only to peanut kernels not too large to be drawn into the distal end of the bronchoscope. Larger fragments would be crushed by the forcing shut of the forcep's jaws entering the tube mouth. I wish to emphasize Dr. Iglauer's caution in regard to the use of radium. We have not used it for anything except cancer. Overdosage, especially in case of a benign growth, might end in disaster. I think the point made by Dr. Mosher in regard to the movement of a foreign body in the esophagus is most important. Dr. Skillern's remarks about the time required for bronchoscopy deserve emphasis. Bronchoscopy hastily done in between a hard day's work on tonsils, adenoids and other routine surgery is not conducive to the best results. The experience of Dr. Dixon corresponds with that of Dr. Patterson and many others.

Dr. W. R. Buck, Canton, Ohio: I should like to ask Dr. Jackson if he has had any experience with direct laryngoscopy after thyrotomy, and other laryngeal operations.

Dr. Jackson: Any operation on the neck is apt to create adhesions that will make direct laryngoscopy more difficult; but we have not yet encountered, a case in which it could not be done. We have many patients, especially children, who have had papillomas or diphtheria in whom thyrotomy or laryngostomy has previously been done. In any of these cases exposure of the larynx is made easy by inserting the laryngoscope at the side of the tongue instead of over the dorsum. This does away with the necessity of so much displacement. External esophagotomy may render esophagoscopy exceedingly difficult; but with care and patience the esophagoscope, as well as the bronchoscope, can be introduced in any patient who can open his mouth.

HEALTH INSURANCE AND THE MEDICAL PROFESSION

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At the recent Conference on Social Insurance, at Washington, several medical men voiced the opinion that it would be possible to give better medical service to sick persons of moderate means and to the sick poor than is given today. True, in many of the hospitals, the sick poor now receive the best that medicine can give. The rich and the well-to-do can buy an equally good service. But it is impossible for self-respecting people of small means who pay their bills to obtain from the profession the medical services they should have or for the profession to give them this desired grade of service under present conditions. The science of medicine has grown so extensively that no one man can give everything to his patients. There must be the cooperation of several men to obtain really adequate medical service today. This is best perfected in the group method as seen in the team work in well organized hospitals.

To obtain more effective measures of caring for the sick poor or for those of small means in a community has been the aim of the framers of the health insurance bill of the American Association for Labor Legislation. Whenever compulsory health insurance has gone into operation, an amount of sickness has been disclosed that has surprised even physicians working among the poor. This was especially true in England, and particularly so among the women workers. In certain investigations made in this country, for example, in that in Rochester, N. Y., made by the Metropolitan Life Insurance Company of New York City, it was found that only 63.8 per cent. of those incapacitated for work employed physicians or were being treated in institutions; only 50 per cent. of the total sick outside of institutions were in the care of physicians, and only 45.3 per cent. of those sick but able to work were being cared for. The State Charities Aid Association made a study in Duchess County to ascertain what percentage of those sick, in all classes of society, obtained adequate care. By "adequate care" is meant that service which results in the patient's recovery when that can be expected, and which is of such a character that neither the patient nor the community incurs avoidable risks. It was found that, even among the well-to-do, 19 per cent. did not receive adequate care. Among the middle classes — those who could pay for certain services for a certain length of time — 50 per cent. were not adequately cared for, and among the poor 68 per cent. received inadequate care. In other words, to obtain the best economic human value from employees or to give the best economic value to an employer, there must be a change in the method by which medical service can be obtained, an improvement in the service rendered, and a broadening of opportunities to render this service.

Sickness in this country is still looked on as a personal misfortune. The social conscience has not yet realized that sickness is an economic calamity for which all members of the community are responsible in varying degrees, and for which the whole community pays. It bears, of course, most hardly on the individual who suffers the calamity, but the sickness of a community reduces its economic income, since it diminishes the earning power of each individual who suffers. The greatest economic asset that a workman possesses is the health that enables him to go to work each day. If he loses that, he loses his power of earning his living. Most wage earners live on a wage from which they can store up but little to protect them against individual misfortune. The great misfortune of their poverty is not that they are poor, but that when calamity or misfortune befalls them, their poverty changes to destitution and they must suffer the destitution or turn to public charity for aid. If, then, it is possible to develop a health insurance scheme in which sickness is regarded as a calamity that may befall any one, and in which every one has joined together to sustain and aid those who are temporarily stricken, the dire effects of sickness to the family or to the individual are warded off, poverty ceases to turn into destitution, and proper convalescence is possible to the sick individual that he may regain his damaged health and be again of a value equal to his former value as an economic asset in the community. This is the justification from a social point of view for the change from the economic conditions under which we live to those which a compulsory health insurance scheme would bring about in a community.

In any health insurance scheme, intricate machinery is necessary, and physicians are an essential part of this machinery. The service rendered by the medical profession must be on a business and not on a charity basis. The public has long considered it a part of the physician's duty to give his time and knowledge to charity whenever the very poor were concerned. This has been willingly and gladly given; but because it has been so willingly given is no justification for asking that physicians under the health insurance law shall not be justly and adequately remunerated for an adequate service. Physicians must earn their livelihood in carrying out the provisions of the law, and they are justified in demanding that the standards of this livelihood shall not be lowered from the standards they already possess. These are the standards of the professional classes of the community, and not always those of the daily wage earner.

All successful measures dealing with sickness insurance require concentration of authority in local control. Hence, under the contemplated law, the fund which distributes the cash benefits and medical benefits is not a state fund or any generalized corporate carrier, but a local mutual benefit fund, the directorate of which is composed equally of employers and workmen, with a state representative. The state health insurance commission divides the state into districts, none of which shall contain less than 5,000 persons who are subject to compulsory health insurance. There shall be as many local funds in each district as shall be deemed necessary. Each fund will have special whole time referee medical officers paid by the funds, whose duty it shall be to decide when the insured shall receive the sick benefits and when the sick are well enough to go back to work. These medical officers must be paid a salary, as they are not permitted at any time to engage in private practice. They report to the health officer on the local medical committee any unhealthy conditions found or any infractions of the sanitary code or sanitary ordinances. They have the duties of a health inspector to investigate and report, and they can be removed on charges for failure to perform such duties. They are, however, paid by the funds and responsible to them, and are thus hired, by both the employers and employees to judge of the occurrence of sickness and of its limitations, and to give a general supervision during its duration.

The standards under which these medical referees are appointed are decided by the advisory medical board to the commission, one member of which is the state commissioner of health. Examinations for appointment are held either by the state civil service board or by some other adequate board. The medical referees work under regulations agreed on by the directorate of the funds and the local medical board. It is thus possible to obtain high grade men who have a grasp of preventive medicine and sanitation and also of internal medicine and surgery. This is a broader specialism than is possessed by the average physician and surgeon today.

It has been strongly urged that all men doing executive referee work should be executive officers of the state commission and not of the funds, on the ground that they would be more impartial, that they would be less apt to lean too much to the side of the funds or to the side of the patient, and that both employers and employees would be satisfied with any decision so long as it was given by an impartial person representing the central power of the state. Theoretically this might be so. Practically, officers appointed by the commission would not be responsible to the funds, and could not be held to strict accountability by the funds. It would be a loss of local control and local authority. The local funds represent both employer and workman, and it is necessary that they should control the men on whose decision depends the expenditure of their money. A state referee would not be removable by the funds either for unsatisfactory or for incompetent work, and if he were incompetent, it would not be any advantage simply to transfer him from one fund to another. In our system of government, appointments by governmental commission are more liable to be purely political than appointments by local funds, because the self-interest of the funds would force them to protect themselves against poor appointments. This self-interest in money matters, this self-interest in the expenses of these mutual funds, is the active driving power to keep up the standards of service in sickness insurance. Employers and workmen will be unwilling to see their earnings wasted, and this factor will inevitably prove the force necessary to keep up essential standards.

The personal care of the insured is carried on by panels of physicians. Every legally qualified physician in the state may, on application, be put on the panel or list of physicians willing to do health insurance work in his district. Any physician living on the edge of a district or any other physician so desiring may enter his name on one or more panels. The proposed law provides that if the medical work in a district is done by salaried physicians or by physicians in establishment funds, the requisite panels shall be formed of these same physicians. The insurance provided is not only for the workmen but also for his dependents, and there is contemplated free choice of physicians by the insured, within reasonable geographic distance. All persons provided for in the law must be on the list of some physician. Free choice of physicians by any patient must be subject to the willingness of the physician to take the patient. The local medical committee must have the power to assign to some physician all patients who have not become definitely settled on some physician's list. Probably there must be a limit of the number of patients that a panel physician may treat. If this is not done the English error of having a small fraction of physicians care for a majority of the patients, producing hurried medical service and inadequate care to the sick, will be repeated. Five hundred families, or 1,000 insured, or some such ratio as this, which would give to each physician an average of twenty or thirty patients a day to see, would be a useful maximum. This is a matter, however, that could well be left for executive regulation. The panel physicians must group themselves together, as such, in order that they may appoint their representatives on the local medical committee and also that the interests of the physicians who are on the panels may be protected by organization. Under such organiaztion or through existing medical societies these physicians, should they so desire, may contemplate collective bargaining. This collective bargaining should be permitted, but it should not be the only method by which medical service could be arranged. Panel physicians must give the sick adequate care for ordinary needs. The medical referee as an officer of the funds takes from the panel physicians all responsibility of deciding when a patient is sick enough to receive cash and medical benefits, and when he is well enough to cease to receive these. Experience abroad has shown definitely that it is impossible to combine this responsibility with the daily care of the sick in one physician. If the physician who has the daily care of the patient must also decide when the patient is to go on the funds or off the funds, as it is called, there is incessant friction. There is always the accusation of collusion with the funds to drive sick people to work or of collusion with the patient to put healthy men on the funds or to keep them there. Hence the necessity of the medical referee officer of the funds deciding all questions involving beginning, duration and cessation of benefits.

The usual body with which the directorate of the fund will deal in medical matters is a definitely organized local medical committee. The various regulations necessary for the control of all medical matters in any district, that is, regulations referring to panel physicians, to dispensaries and hospitals, to specialists, and dentists, to the relationship between the panel physicians and the medical referee officers and between doctors, druggists and nurses, and all such relations as are necessary for the intricate running of a health insurance law must be supervised by the local medical committe, composed of representatives of the panel physicians and of representatives of the dispensary and hospital attending staffs, and also — and here is a very important point — a member of the local health department or the local health officer. This committee has the power to pass on and report to the directorate of the local fund on all regulations affecting medical matters promulgated by that directorate. In the majority of cases these two boards will agree. But if they fail to agree, an arbitration committee is to be formed consisting of a representative of the local sick fund, a representative of the local medical committee, and a third person who shall be appointed by a county judge or by a justice of the supreme court. This arbitration committee has the final decision in these matters, unless there be an appeal on either side to the advisory medical board and through that to the commission. It seems necessary that this local medical committee should have the veto power to be exerted only against the appointment of an unfit medical referee officer by the local sick fund. It should not have the power, nor should it be permitted to recommend medical referees to the fund, but it should be able to prevent unfit referees from being appointed. This doubtless would be rarely used, but it should be in existence.

There should be in many localities, if not in all, a corps of consultants to furnish second opinions. This is especially true of small towns which lack dispensary service and may lack sufficient hospital accommodations. The consultants may be connected with dispensaries or hospitals, or may not be. They should act as referees in purely medical and surgical questions whenever there is an insistent demand or an insistent appeal from the decision of the medical referee officer of the fund.

Under the health insurance law the dispensaries would be places for group medicine, that is, for the gathering together of all specialists, and consulting opinions in general medicine and surgery may be secured. Any patient can be sent by any physician to the dispensary to obtain special treatment or an opinion on some special condition, or he may be sent to a general practitioner at the dispensary for an opinion on diagnosis or therapeutics. This second opinion — that is, this consultation — should be granted to the patient whenever it is demanded by the patient, by the panel physician, by the medical officer of the funds, or by the directorate of the funds. Under the panel system every patient is under the care of some panel physician, and therefore panel physicians cannot treat in dispensaries in every day medical and surgical care the patients of other panel physicians. Panel physicians can act as consultants in the dispensary, but it would not seem possible to have the ordinary advice in internal medicine in the dispensary as is done today. If the panel physician is restricted in the number of patients he can treat, and if patients are not permitted to change their panel physicians except at stated intervals, patients certainly cannot go from physician to physician or from dispensary to dispensary to be treated for ordinary ailments. If they are going there with the knowledge of their physician for a second opinion on diagnosis or therapeutics, the dispensary will prove a boon to them and to the community; but if any other condition is allowed, the dispensaries will prove a never ceasing source of trouble, friction and confusion. The different specialties can be followed in the dispensary, or the specialists outside the dispensaries can send their patients to men in the dispensaries for the consultant's opinion, if they so desire. But here again the division must be made to prevent incessant confusion. The dispensaries will be a boon because they will develop into the best examples of group medicine. Free dispensaries will cease to exist. The medical and surgical care furnished in dispensaries will be paid for the same as to other physicians under the insurance act. If, in the community, there remain patients who are not under the insurance law, who desire to go to the dispensary, that is a question outside of the insurance law, and regulations must be promulgated and enforced to regulate such special groups of patients.

There must also be ample hospital accommodations for patients who need hospital care. Patients sent to hospitals must be attended by members of the staff who are regularly enrolled on the panels. A reorganization of the basis on which physicians do their work in municipal hospitals, and even in private hospitals, would have to take place. At present, both public and private hospitals accept fees for the treatment of patients under the workmen's compensation laws, but it is forbidden the attending staff to accept any of these fees, and these are kept from them and go to the hospital. The exploitation of physicians should cease. The men working under the act should receive their just dues for the care of these patients, the hospital charging its just due for their nursing, food and lodging. But hospital care and medical care should be distinctly separated, and the whole of hospital nursing expenses should not be charged as is now done to medical fees.

We come now to the consideration of the state medical advisory board. This forms part of the general state supervision, and should be taken into consideration with the state health insurance commission. This advisory board is composed of representatives of the various state medical societies and the state commissioner of health. It passes on all regulations relating to medical benefits and on the relation of physicians and surgeons to the insured, and the commission waits for the approval of this board before putting these regulations into effect. The commission may put temporary regulations into effect for not more than six months. To this medical advisory board are referred all disputes regarding medical benefit that have come from the local committees on appeal through the arbitration committee to the commission. This medical advisory board also decides on the standards on which the local medical referee officers shall be appointed, and gives these standards either to the civil service commission to hold the necessary examinations or to some other authorized body whose duty it is to examine these medical referee officers for the local funds. In the law as now contemplated the state commissioner of health is a member of this advisory board, but if thought advisable the secretary of the state board of health could be designated. The state board of health has the power through him to see that in the standards promulgated by the medical advisory board for the local medical referee officers there shall be included standards of sanitation and preventive medicine which will enable these referee officers to act in an intelligent manner in regard to the questions of preventive medicine and sanitation in their daily duties in supervising the care of the sick under the local funds. Moreover, the local medical officer or the representative of the local board of health is on each local medical committee, and the regulations under which the work is done in each district has been passed on by the central health authorities. This health insurance law does not detract or take away in any manner from the powers already possessed by the state health department or by any local health department in the state. The powers of both the state and the local health departments are widely autocratic and should be so, and they are not hampered or diminished in any way by this act as contemplated. This act, as a matter of fact, broadens the field of preventive medicine and sanitation and gives wider and better opportunities than is now possible for the health departments to put into effect their regulations, because the opportunity is here offered to promulgate standards by which men may be appointed and regulations under which officers shall work which shall contain all the necessary provisions for the problems of preventive medicine and for the control of sanitation. The idea has been widely disseminated that this health insurance law does not provide for the great problems of preventive medicine and for the sanitation of the community. If it does not, it will be due to the failure of the members of the health department of the state and of the local departments to grasp the broad opportunities here offered through the control of their representatives by means of the standards under which they are appointed and the regulations under which they work. There is here both local and central control. If there arises any dispute between two local committees about sanitary matters, the local power over them possessed by the local health department can quickly force a decision. Such power exists today, and there is nothing in the health insurance act to diminish that power. If disputes arise between two committees of separate districts, the state health department has control and can exert it. The same power is possessed by state and local health departments under this law as is now possessed, and can be exerted, and the same responsibility rests with them to exert it.

Under the health insurance law there are also advisory boards to the central state health insurance commission from the local sick funds and also from the trained nurses, appointed by the state society of trained nurses, where one exists. The organization of an efficient form of nursing under this law is a necessary feature and one which will be formulated. The regulations would probably run parallel to the medical regulations, because harmony between these two sets of regulations will be necessary. There will also have to be regulations regarding the prescribing of drugs, both for the economical prescribing of the necessary medicine and the economical provision of surgical supplies and the various appliances, such as eye glasses and trusses. These are part of the medical benefits, and are paid for by the local funds. They, therefore, come in under the regulation of the board of directors of the local sick fund. All regulations regarding them will have to be promulgated in general by the commission, and, if necessary, modified under the advice and guidance of the directorate of the local sick fund. These details, however, should be regulated by executive order of the commissioners and not be put into the fundamental organic law of the state. There are matters that need quick action, and therefore should not be in that part of the law which requires legislative action to change, but should be left to the discretion of the commission in order that they may be changed at any time.

The state health insurance commission appointed by the governor is composed of a chairman, a physician and a third member. The medical profession has wisely insisted that it shall be adequately represented on all committees before which their interests would come for decision, and in the scheme here outlined this adequate representation of the profession has been provided and safeguarded in a manner that is just and fair to the profession.

The question of remuneration to physicians is one that is not yet decided. Some members of the profession insist that it shall be definitely stated in the law. They are unwilling to leave it to executive regulation after the law is passed. The experience of physicians in some states, especially in Massachusetts and in New York, under workmen's compensation laws, has made them realize that their interests were not safeguarded. These laws were passed before physicians realized the responsibilities that would come to them or what their duties would be under the law. One of the most noticeable features of the workmen's compensation laws today is the totally inadequate surgical care provided by the law for the really seriously injured person, and the inadequate remuneration which any honorable physician may obtain when caring for any person who is seriously injured.

The methods of remuneration should be discussed, There are four possible ways of payment: by straight capitation, by visitation, by some variation or combination of these two, or by salaried district physicians. By straight capitation is meant that the doctor is paid so much per patient per year. This is the scheme which is employed in England, and is the scheme of the ordinary lodge practice and club practice, as seen in this country. It is a method of payment which has always produced inadequate service, unsatisfactory to both physician and patient. Those who require the greatest amount of care and those who are really sick are the ones who are liable to receive disproportionately less care than they should have. These evils are inherent in the method, and it is the condemnation of these evils which has caused such vigorous condemnation and resentment in the profession against the lodge practice and contract practice of today. Everywhere an underpaid physician giving inadequate and hurried service is held in contempt by his patients and by his profession. The only recommendation for this method is that it is the cheapest and also the easiest method for the funds to calculate how much medical care will cost.

The payment by visitation is acknowledged to be the most expensive method, since the physician treats his patient, as in ordinary private practice, and charges each visit pro rata against the funds. Expensive though it may be, unless it is proved to be prohibitive, the expense per se is not a valid objection against this method. Under this method there is no question that the patients receive the best care. It has always proved to be more satisfactory than any other method to both patients and doctors. The time honored relationship of confidence and privacy between physician and patient, which from time immemorial has been considered desirable, is best conserved under this method of remuneration. In certain towns in Germany, such as Bremen, this is the method employed, and its operation has there proved satisfactory. In certain rural districts of Germany it is also the only method under which medical care is given. It is urged against it that with an unknown morbidity of disease there is always an unknown expense facing the funds. This objection sounds stronger than it really is in fact, because after a few months' trial the varying morbidity of a district can be fairly well gaged, and unless there is some unforseen outbreak of an epidemic, the morbidity as calculated runs along with very little variation of error. It is further urged against this method that unnecessary visits may be made. If this proves to be true there must be a procedure by which a dishonest physician may be dropped from the panels and, unless reinstated, prevented by law from receiving further remuneration from the insured under the health insurance law. The local committees and the physicians on the panels must protect themselves against the action of dishonest physicians. This has been done in England and Germany, and can be successfully done here.

It is possible that a compromise between the methods of capitation and visitation may be put in force. It is a more complicated method than either one of the other two, but, like all compromises, it may appeal to many people. The method referred to is that by which the local sick funds give a lump sum to some responsible medical society. Physicians give their services by visits and by work done, and calculate each visit and each kind of service as so many points and charge the total number of points against the medical society. At the end of each quarter each physician hands in his record of points made, and the total number of points of services given are divided into the total lump sum of money, and each point has a certain value for that quarter, the value of each point varying from quarter to quarter according to the amount of work done. The disadvantage of this method is that the more work that is done the more the value of each point diminishes, and there comes a time when, with the amount of money remaining stationary, a period of great morbidity, such as an epidemic, would cause double the amount of work to be performed, and the value of the point would be one-half its value in ordinary times. Hence a physician is paid by the law of diminishing returns the greater amount of services he gives. This is unquestionably unjust and soon forces the same situation of an overworked physician, underpaid, giving hurried service. To obviate this, it is possible to agree that if the morbidity of a district increases above a certain amount, physicians shall be remunerated per point of service done at the rate of the average value of the points as shown in the previous three years. This would prevent the injustice of this law of diminishing returns in payment referred to above, and would be a just remuneration on a just basis. Of course, under this proposed law there would be 100 per cent. collection of all just medical fees, a factor which should be taken into account in considering the remuneration of physicians.

The medical organization as outlined here is a well balanced scheme by which the quarrels and friction produced under the health insurance laws of the old world are avoided. It gives to the medical profession the standing and the privileges for which the English physicians had to fight — that of adequate representation throughout the entire scheme on the committees before which their interests will come. It prevents the incessant wrangling of the German scheme because of the false position in which the physician is there placed, in which he is forced not only to give the daily care to his patients but also to decide when they are put on and off the sick fund. In this scheme this decision is relegated to the special medical officer of the funds. This medical officer has other functions which safeguard the interests of the patients. Because it is his duty to decide whether or not the patient can continue to receive cash benefits, he is in constant touch with the panel physician, and if affairs are not going well medically he can at all times obtain the necessary second opinion and aid to bring about the best care of the patient.

All possible disputes between panel physicians and the funds or between patients and the funds are safeguarded by arbitration committees, and the whole scheme of health insurance is delegated to local organizations of funds and physicians by which the real work can be best carried out. The proposed plan avoids the English mistake of huge insurance carriers with their thousands of insured scattered helter skelter in masses or individuals throughout the entire country. All health insurance to be successful must be locally controlled, and the medical benefits and medical nursing are done by local control under this present scheme.

The scheme outlined takes what is best in the German method of giving medical benefits sufficient to guard the health and the best interests of the patients. It furnishes not only daily care, but develops the means by which a patient may obtain a second opinion for diagnosis or for therapeutics whenever it is desired. The scheme as here promulgated in the dispensaries and hospitals offers not only a better method than is now in vogue, but also the very scheme through which medicine is developing and through which it is bound to develop to the highest degree in the near future—that of group medicine. It offers in districts, in which there are no dispensaries or hospitals, consultants from whom the necessary second opinion may be obtained even though the development of group medicine has not proceeded so far as in more densely settled communities. This health insurance scheme is also linked firmly together with the present existing powers of the health departments. The standards through which the local officers of the funds are appointed are supervised by the health commissioner himself before being promulgated. In each local medical committee there is a health officer with the full powers of the health department behind him, and there is in the law a provision that if the medical officers of the funds do not properly report and do not take proper cognizance of sanitation and preventive medicine in their daily work, it is a cause sufficient to bring about their trial and removal from their position. Every endeavor has been made to uphold the hands of the present health authorities and continue their present great powers for good. As far as organization is possible, as far as it is possible to give power and responsibility, they have been adequately linked together. Every endeavor has been made to localize responsibility for the performance of each duty, and with this responsibility the endeavor has been made to give adequate power to perform it. This is true of the ordinary every day medical and surgical work of the profession and equally true in the great fields of preventive medicine and sanitation of the health department. There remains only the personal equation of the human machine; and the human personal equation until put to the trial is always an unknown quantity.

Medical Fossils.—Occasionally I meet with men who are still living professionally in their undergraduate days, reading the same old books, and writing the same old prescriptions, both blind and deaf to the changed environment. Fortunately the more intelligent of the public easily recognize these fossils and appraise them at their true worth. They are interesting as relics of the past, but worthless in the present.—V. C. Vaughan, M.D., *Science*, Dec. 8, 1916.

A CONSIDERATION OF THE SEROBIOLOGIC REACTIONS AFTER FIVE YEARS OF OBSERVATION *

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Somebody has said that the serobiologic reactions have created a new science. It may also be said they have given us a new symptomatology. If we regard them as symptoms and not as reactions, they become much easier of understanding and interpretation. The lack of understanding concerning them has been due chiefly to two things: First, we do not know the source of the so-called antibodies which are necessary for a positive Wassermann, or the origin of the lymphocytosis or increase of globulin content which occurs not only in the spinal fluid but in the blood as well. Naturally, then, all our knowledge thus far in regard to these reactions has been obtained by the inductive method, that is, drawing conclusions from individual observations and striking an average or a percentage to be used in the formulation of general rules about them from the sum total of observation.

In any knowledge obtained in this way, it is natural to expect that new observations will be reported from time to time which require some modification of previous conceptions. In the second place, in the application of general laws to any particular class of cases, there are always the exceptions to be taken into consideration. These reactions or symptoms were often found where, from the nature of the case, we did not expect them to occur, or, on the other hand, absent in cases in which, according to our previous knowledge, we thought they ought to be. If, then, we view these reactions as symptoms, which they certainly are, and study their interpretation in connection with and as we do other symptoms in any case, much of this past confusion in regard to them will disappear. We do not expect to find all the symptoms of a disease present in every case. Not every case of meningitis presents a Kernig's sign or rigidity of the neck. Furthermore, not every case of rigidity of the neck is diagnosed as meningitis. Nystagmus is a common symptom of multiple sclerosis, but it would be a serious mistake to regard every case in which the symptoms of nystagmus was present as a case of multiple sclerosis. Tremor is an important and frequent symptom of paralysis agitans, yet we would fail to recognize many cases of this affection if we excluded the diagnosis because of the absence of tremor.

We must learn to think of the serobiologic symptoms as we do all other symptoms and realize that their value and the interpretation which we give them is not an isolated one, but depends largely on the syndrome accompanying them. In this new symptomatology, as in the old, it is not in the typical cases in which the symptoms are present that difficulty in interpretation arises, but in those in which these symptoms are irregular or only partly present.

In the beginning of the Wassermann era the impression was quite general that a negative Wassermann made the diagnosis of syphilis extremely doubtful.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* This article and the one by Dr. Pilsbury which follows complete the symposium on Syphilis of the Nervous System, which was begun with the articles by Drs. Schaller, and Riggs and Hammes last week.

We are still often confronted with the statement that the Wassermann is negative, as if the final word with reference to syphilis in the case under consideration had been spoken. We know positively at present from records made by hundreds of observers all over the world that in syphilis of all stages a serum Wassermann is found in only about 65 per cent. of the cases. We do not often find it in the primary stage. In the secondary stage it is nearly always present, and in the tertiary in perhaps from 40 to 50 per cent. of the cases. In tabes this symptom is present in from 60 to 70 per cent., in cerebrospinal syphilis in 80 per cent., and in paresis in from 95 to 100 per cent. of all the cases. In my own work, in sixty cases of syphilis without symptoms referable to the nervous system, the Wassermann was positive in thirty-nine, or 68 per cent.; in eighty-one cases of cerebrospinal syphilis, in forty-three, or 53.3 per cent.; in fifty-seven cases of paresis, in fifty-three, or 92.7 per cent., and in twenty-six cases of tabes, in thirteen, or 50 per cent. It ought to be perfectly plain, from a perusal of such reports, that in a large number of cases of syphilis the serum Wassermann is absent, so that we are able to say positively that the absence of this symptom in the blood serum proves nothing either for or against the assumption of specific disease.

Observation[1] has shown us that a definite relationship between the activity of the syphilitic processes and the Wassermann reaction, as well as the other reactions in the blood and spinal fluid, does not always exist. Late syphilis, bone syphilis, tabes and cerebrospinal syphilis with extensive involvement and active symptoms may give negative reactions, while, on the other hand, cases with strong positive reactions occur in persons who are apparently in good health. A case of paresis, in a complete remission, may give just as strong a positive Wassermann, or just as much of an increase of the lymphocytes in the spinal fluid as an active and rapidly progressive one. There are numerous cases which, after a mild treatment, lose their positive reactions, only to have them return after a short interval. On the other hand, there are cases which, before the beginning of treatment, are negative, but afterward become positive. In one of my cases, a positive serum Wassermann, after the administration of salvarsan intravenously, became negative and remained so, although the clinical condition gradually grew worse and the patient finally died. In another case, a positive reaction remained positive in spite of vigorous treatment, although the symptoms entirely disappeared. Practically all of the authorities at present regard a positive Wassermann as proof of a syphilis either past or present, and the weight of opinion considers that it is present.[2] In other words, a positive Wassermann is thought to mean the presence somewhere in the system of living spirochetes. The exceptions to this rule are so few, about 0.5 per cent., and the other diseases in which it occurs are so easy to differentiate from syphilis by the symptoms and history, that their importance may be considered negligible.

The spinal fluid reactions, especially in obscure conditions, and where the nervous system is involved, are of much more practical value, in both diagnosis and prognosis, than the serum Wassermann. It is quite the vogue now to have a serum Wassermann made on the patient; but to have a thorough examination of the spinal fluid is comparatively rare. In all cases with obscure symptoms referable to the nervous system, the spinal fluid examination is of vastly greater value. In my work I have been much impressed with the large number of cases in which what may be called the cardinal symptoms of nervous syphilis, such as pupil anomalies, Romberg sign, absent knee jerks, and sensory disturbances, were absent, and the symptoms present were few in number and obscure in character. In this category may be mentioned especially neuralgias and paresthesias of the fifth nerve, sciatica, Bell's palsy, persistent insomnia, symptomatic migraine, and choreiform movements not unlike the type occurring in Sydenham's chorea. In many of such cases the serum Wassermann is negative, and unless a spinal fluid Wassermann is made, only serves to mislead one.

Case 1.—A man, aged 40, whose only somatic symptom was a twitching of the left cheek and lower eyelid, subjectively had no complaints. Both the physical and neurologic examinations were negative. A history of a syphilitic infection, dating back fifteen years, was obtained. The serum Wassermann was strongly positive. Likewise, the spinal fluid in 0.2 c.c.; the lymphocytes were 80/3; the globulin + +, and the colloidal gold test gave the typical paretic curve. Within six months from the date of this examination, although specific treatment was begun immediately and continued during this entire period in the form of weekly injections of mercuric salicylate, the patient began to get irritable and quarrelsome, his sleep was disturbed, and he soon became violently insane. This case ran a galloping course, and in a little more than a year the patient died of paresis.

This case is interesting for the reason that six months before the appearance of any somatic or psychic symptoms of paresis, how much longer, no one knows, the serobiologic symptoms of paresis were all present. It is further interesting from a therapeutic standpoint because specific treatment was begun at once, and on the first appearance of mental symptoms, salvarsan intravenously and salvarsanized serum intraspinally were administered and then followed with a course of sodium nucleinate injections, but without any result in staying the progress of the disease.

Case 2 illustrates the incongruity often existing between the clinical and serobiologic symptoms. It also shows how misleading a serum Wassermann and the symptoms which we formerly had to depend on for our diagnosis may be, as well as the value of the spinal fluid examination in every suspicious case.

Case 2.—T., man, aged 45, married, American, salesman, examined March 2, 1916, had one brother who died of paresis and another who had an advanced tabes. The patient had been married seventeen years, and had one child, living and well; his wife had had no miscarriages. Fifteen years before he had a chancre and mild secondaries; treatment at that time consisted of yellow mercurous iodid pills for about two years. Since then he had had potassium iodid and some mercurial inunctions at intervals, but had not taken any systematic course after the first two years. The only complaint at the present time was a sensitiveness in the upper part of the nose internally and a stuffy feeling in the head, as if he had a cold. These symptoms were not constant. The nose and throat specialist whom the patient consulted could find no explanation for them in the nasal passages. The patient visited me, not because of these symptoms, but for the reason that the death of the brother from paresis frightened him, and he wished to find out if any traces of his former syphilis were still present. The serum Wassermann, a luetin test and the neurologic examination all resulted negatively. He was then persuaded to have an examination made of his spinal fluid. This gave a strongly positive Wassermann with 0.2 c.c., the minimal quantity of fluid, a Nonne + +, lymphocytes, 172/3, and the colloidal gold test reacted in the paretic zone. Up to the present time the patient's condition continues good.

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[1] Von Wassermann, A., and Lange, C.: Zur Frage des Entstehens der Reaktions producti bei der Serodiagnostik auf lues, Berl. klin. Wchnschr., March 16, 1914.

[2] Nonne, M.: Syphilis und Nerven System, Ed. 3, p. 813.

It is interesting to note that the origin of the infection in all three brothers was different. This argues against the doctrine often expressed of a certain type of syphilis which possesses a special virulence for the nervous system and in favor of the theory of lessened family resistance which is so often observed in other infectious diseases.

In a certain type of cases in differential diagnosis the globulin and lymphocyte reactions have been of more value to me than the Wassermann. In many cases with organic nervous involvement the Wassermann has been absent in both the serum and spinal fluid, even when 1 c.c. of the fluid was used, and the diagnosis had to be made from the history, clinical symptoms and the spinal fluid findings without the Wassermann. In such cases, with either no history or a negative history of specific infection, the variations in intensity of these two spinal fluid findings, carefully considered, in conjunction with the clinical symptoms, have often proved the deciding factor in making the diagnosis. The following cases are illustrative of this:

Case 3.—B., aged 26, farmer, seen in consultation Dec. 26, 1915, could give only an imperfect history on account of his mental condition. There was nothing of importance in the family history. It was learned from his father that he smoked and drank to excess, but on the advice of a physician had stopped drinking about five months before. In June, 1915, he began to have paroxysms of pain in the region of the left kidney which were thought to be due to gravel. In November, he had a very severe attack of pain lasting several hours. From this time on, at night, he began to whistle and sing, and kept up such a disturbance that his room had to be changed so the other members of the family could sleep. During the day he seemed rational. This condition remained the same until December 4, when he began to have trouble in passing urine. He became unable to void it, and some difficulty was experienced in catheterizing him. At the time I saw him, December 10, he was delirious all of the time, and had involuntary actions of both bladder and bowels. His temperature, although it had been normal for the two days previous to my visit, varied between 101 and 101.6. The pulse ranged between 90 and 112. The patient was rather emaciated and had a slight cough. Heart and lungs were negative. The urine contained albumin and quite a number of red blood cells. The inguinal glands were distinctly enlarged; also, two epitrochlear, about the size of a split pea, were present on each side. There was a general tendency to a coarse tremor. A suggestion of ankle clonus and a positive Babinski on the left side were the only somatic symptoms observed in the neurologic examination. The serum Wassermann was negative. A spinal puncture was made, December 11. On that day the temperature reached 103. The spinal pressure was slightly increased. The spinal fluid was clear; Nonne, +; lymphocytes, 20/3; spinal fluid Wassermann, negative with 0.2 and 1 c.c. of fluid. The colloidal gold test gave what might be called a freak reaction, with no change in the first tube, a reddish blue in the second, blue in the third, and no further changes in the remaining tubes. On the same day of the puncture mercurial inunctions were begun. On the following day, the patient became worse and went into an unconscious condition in which he remained for a week.

In this case the enlarged epitrochlear and inguinal glands, as well as the history of development, with delirium coming on at night and disappearing during the day, led one to suspect syphilis. On the other hand, the emaciation, slight cough, and the high temperature caused one to feel that tuberculosis was also a probability to be reckoned with. From the history and the neurologic examination as well as the spinal fluid findings, it seemed quite certain that the case was a meningitis and that this meningitis was either syphilitic or tuberculous in character. After careful consideration of both the reactions and symptoms, tuberculosis was excluded, chiefly because of the mild degree of intensity of the globulin and lymphocyte reaction. The position was taken that in any case of tuberculous meningitis in which the symptoms were so extensive and severe, both the globulin and lymphocyte reactions would be much increased. The mildness of these reactions was thought to be absolutely out of harmony in a tuberculous meningitis manifesting such acute and extensive symptoms. The negative Wassermann in the blood and spinal fluid was given the importance only which should be given to any negative symptoms. We know absolutely that we cannot exclude syphilis because the serum Wassermann is negative, and we must come to the same opinion relative to the spinal fluid Wassermann. If it is absent we must not, for this reason alone, exclude the possibility of nervous syphilis, but merely apply to its absence whatever other differential diagnostic value this absence may possess. It does sometimes have a very particular value, which is well brought out in the next case:

Case 4.—T., aged 35, merchant, married, with two healthy children, stated that his father died from tuberculous meningitis, which was the significant thing in the family history. The patient himself, five years before, had a tuberculous affection of the lungs which was at this time apparently quiescent. He also gave a history of a specific affection dating back ten years. He seemed in good health up to the time of the present illness. He had been sick two weeks when I saw him. He then complained of a pain in the head and back of the neck. His eyes were very sensitive to light. He was extremely nervous and restless, with no appetite and bowels constipated. His temperature ranged from 99 to 101. The only objective symptom elicited in the physical and neurologic examination was a slight rigidity of the neck muscles. The serum Wassermann was negative. The spinal pressure increased. The spinal fluid Wassermann in 0.2 and 1 c.c. was also negative. The globulin was strongly positive, the lymphocytes 100/3. The goldsol test showed the greatest change in the dilutions from 1:160 to 1:640. In this case the absence of the Wassermann in the spinal fluid, taken in connection with the marked increase of the lymphocytes, was very significant. According to our past experience all spinal fluids in specific cases with so large a lymphocyte increase had given a positive Wassermann. For this reason it was thought that syphilis could be safely excluded. Accordingly the diagnosis of tuberculous meningitis was made. The subsequent history of the case confirmed this diagnosis.

The Wassermann reaction is, of course, the most reliable of all serobiologic symptoms when present in differentiating between nervous syphilis and other organic disease of the nervous system; but it is so often absent, even in the spinal fluid, and there are so many times when the distinction must be made without it, that I have come to depend a great deal on the globulin and lymphocyte reactions in my work. The lymphocyte reaction has been especially valuable. The diseases in which it occurs with a symptomatology that might be mistaken for syphilis are not numerous, and even then there is usually some factor which in itself is distinguishing, as in the case just reported of tuberculous meningitis, with a negative Wassermann and the large lymphocyte increase.

The normal number of lymphocytes in a cubic millimeter has been often stated to be from nothing to five, with a borderland of nine or ten.[3] According to my observation, I believe this estimation of the normal number of lymphocytes too high. Five lymphocytes to 1 c.mm. would give fifteen in the 3 c.mm. in the Fuchs-Rosenthal counting chamber, while the usual count in normal cases for the whole space is certainly much less than this. In the following case a pupil anomaly and the lymphocyte count were the most important differentiating symptoms:

CASE 5.—G., man, aged 40, clerk, unmarried, had been sick about four weeks when he came under my care; he was then incoherent, disoriented as to time and place, and unclean in his habits, with an inclination to expectorate on everybody and everything near him. He complained of some headache, which was increased by coughing or sneezing. His appetite was excellent, his mental state one of exhilaration and good humor, his memory very poor. On account of the mental condition, no past history or history of a present illness was obtainable. Physically, his condition was good. Pulse and temperature were normal; urine examination was negative. Station was bad, and when he attempted to walk, he staggered like a drunken man. He did not lie still for a second when awake, but kept twitching and jerking, like a person with an aggravated case of chorea. The right pupil was larger than the left, but both reacted to light. No other pupil anomalies were observed. The patient's articulation was good, but he was coarse and loud in his talk. Spinal pressure was not increased. Both the serum and spinal fluid Wassermanns were negative. The globulin reaction was also negative and the lymphocyte count was 18/3, just one more to the cubic centimeter than is given as normal. Brain tumor or cerebrospinal syphilis seemed the most probable conditions to be considered. However, on account of the number of lymphocytes, the latter diagnosis was made. This patient made a good recovery with mercurial inunctions and intravenous injections of salvarsan. After his recovery a history of specific infection of twelve years' duration was obtained.

When even a slight increase in the number of lymphocytes is often so important in deciding the diagnosis, the necessity for obtaining the spinal fluid absolutely free from blood can be readily appreciated. The faintest trace of it will give a positive Nonne and a lymphocytosis, and if not detected, lead to erroneous conclusions.

The study of these reactions in the spinal fluid was at first almost entirely confined to patients manifesting nervous symptoms. Recently, however, a great many observations on their behavior in the spinal fluid in primary and secondary cases of syphilis without any nervous symptoms have been made. M. Fraenkel[4] was among the first in reporting on the spinal fluid reaction in fifteen cases of untreated secondary syphilis, without evidence of nervous involvement. He found the Wassermann positive in five of these cases. Dreyfus and Assmann, in a large number of examinations in secondary syphilis, found that the spinal fluid was normal in only 22 per cent. of the cases. In later examinations on the same patients, 75 per cent. of them gave negative reactions.

Wile and Stokes,[5] in an article on the spinal fluid in secondary syphilis, conclude that from 60 to 70 per cent. of all cases which progress to the secondary stage show some change in the fluid, which indicates a nervous involvement. In a later article on the same subject they say: "We now feel our figures in our former article were too conservative and in all probability every case of secondary syphilis has an involvement of the nervous system." A consideration of these observations and others similar in character indicates to what extent the study of these reactions have changed our conceptions of syphilis and especially the syphilitic invasion of the nervous system. A nervous syphilis has always been regarded as belonging distinctly to the later manifestations of that disease. In the light of these recent investigations we may now believe that the nervous system shares in the general invasion of the body during the primary and secondary stages. In the great majority of these cases either as a result of treatment or a naturally developed resistance, recovery takes place and the spinal fluid becomes normal. Dreyfus has ascertained that in approximately 12 per cent. of the syphilitics, without nervous symptoms, examined by him, the spinal fluid has continued pathologic. He compares this percentage with the 12 per cent. of specific organic nervous affections found by Mattauscheck and Pilcz among 4,000 army officers who had contracted syphilis. In commenting on this comparison, Nonne[6] says that the conclusion lies near that these cases in which the fluid remains pathologic are the ones which later on develop the syphilogenic nervous affections. The conception at present of the development of a specific nervous disease is then a latency, dating back to the primary and secondary stages, which continues latent until some exciting cause transforms the latent process into an active one. Clinical experience is also in harmony with this view. In one of my cases, a cerebrospinal syphilis developed several weeks after a severe head injury. The patient was apparently well before his accident, but soon afterward he complained of a severe headache and became mentally very dull. He also developed a hemiparesis on the right side. The spinal fluid gave an increased globulin and lymphocyte reaction. These symptoms entirely disappeared with specific treatment.

In regard to head injuries, Nonne says, "It has been known for a long time that they can cause an outbreak of brain syphilis, and especially the development of gummatous brain tumor has been observed following such injuries." It is not rational to suppose in these cases that the nervous tissue became infected with spirochetes after the injury from some distant focus. The only logical explanation is that these germs were already present in the injured tissues in a latent state, and the injuries so lessened the normal tissue resistance that the latent process was converted into an active one.

In prognosis, as has been stated, and as we have seen in the cases reported, neither the number of the reactions present nor their degree of intensity bears any direct relationship to the rest of the symptomatology. In Case 3 the syphilitic process was an exceedingly acute and progressive one, yet the only reactions present were the globulin and lymphocyte, and these were mild in character. On the other hand, in Case 2 there was entire absence of subjective and somatic symptoms and yet the reactions were all intensely positive. Case 1, with a slight twitching of the face as the only somatic or subjective evidence of nervous disease. in which all the reactions were strongly positive and which in a short period of time developed into a galloping paresis, would seem to point to a gloomy prognosis when such conditions exist. Nonne has reported in this connection thirteen cases in which the reactions were positive, both in the blood and in the spinal fluid. Three of these cases were progressive in character; the other ten remained stationary over a period of five years. The following case is quoted from Nonne:[7]

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[3] Nonne, M.: Syphilis und Nerven System, Ed. 3, p. 99.

[4] Fraenkel, M.: Weitere Beiträge zur Bedeutung der Auswertungsmethode der Wassermann-reaktion in Liquor cerebrospinalis, Ztschr. f. d. ges. Neurol. u. Psychiat., **11**, Nos. 1 and 2.

[5] Wile and Stokes: A Study of the Spinal Fluid, with Reference to the Involvement of the Nervous System in Secondary Syphilis, Jour. Cutan. Dis., September, 1914, p. 607.

[6] Nonne, M.: Syphilis und Nerven System, Ed. 3, p. 139.

A man, aged 62, formerly a captain, has been a tabetic for fifteen years. Mercurial treatment, twelve years ago. Since then no specific treatment. The pupils do not react to light. Knee jerks are absent. Hitzig's zone. Four years ago Wassermann in blood, + + +. Wassermann in spinal fluid, + + with 5 c.c. of fluid. Globulin, +; lymphocytes, +. At present practically no change in either the reactions or somatic findings. The patient feels well and works every day.

This case is not an isolated case, but one of a series of cases which Nonne has observed.

The next case is a report on the reactions in an old case of tabes, the first symptoms of which appeared about twenty years ago:

Case 6.—This case has gradually progressed in a halting way during all of these years and is still advancing. The chief discomforts now are a high degree of ataxia, lightning pains which are exceedingly severe in character, and loss of bladder control. Feb. 15, 1915, the serum Wassermann was slightly positive; spinal fluid examination pressure, normal; globulin, negative; lymphocytes, 3/3; colloidal gold test typical in the syphilitic zone; spinal fluid Wassermann, negative in 1 c.c. March 1, 1916, a little over a year later, the serum Wassermann was negative; spinal pressure, normal; globulin, negative; lymphocytes, 6/3; spinal fluid Wassermann, negative; colloidal gold test still in the syphilitic zone. Except for the colloidal gold test, the spinal fluid reactions, at both examinations, might be considered normal, yet during the period between these examinations, this patient has been practically bedridden because of the high degree of ataxia and has suffered most severely from lightning pains.

When such contradictory observations as I have cited are compared, the whole subject of the interpretation of these reactions from the standpoint of prognosis seems to be in confusion. The confusion, however, is not so complete as it appears. Many cases of cerebrospinal syphilis of the genuine type have been reported in which the spinal fluid became normal, either spontaneously or as a result of treatment. In these cases, so far as I know, there have been no relapses reported. On the other hand, observations thus far indicate that cases in which there is a pathologic fluid are never safe from relapsing. It seems quite plain that we cannot consider any case of syphilis as having recovered, and this applies as much to primary and secondary syphilis as it does to the nervous type until the spinal fluid becomes normal. Absence of symptoms and repeated negatives in the blood cannot be regarded as recoveries in those cases in which there is still a pathologic spinal fluid. For this reason no patient should be dismissed by the syphilologist and treatment stopped without a complete spinal fluid examination. In the so-called cases of parasyphilis, such as tabes and paresis, the outlook for obtaining normal spinal fluids, with present methods of treatment, except in the old *abgelaufene* type (cases in which the disease has spent itself), such as the last case reported, is rather hopeless, and in treating these cases this should be realized.

The variations in intensity of the reactions in such cases or the changing of some of the positives into negatives as a result of treatment have, in my opinion, very little value from a prognostic standpoint. The following explanation of the reactions in the type of cases represented by Cases 2 and 3, in which such an incongruity exists between the reactions and the symptoms, is suggested. In Case 3 the process is an active one and the invasion of spirochetes is limited in extent. In other words, it is an active syphilitic process of recent origin and with a good prognosis. In the type represented by Case 2, the process is an extensive one. The whole central nervous system is invaded, but up to the present time it is latent. Sooner or later something will occur to make it active, and then the course will be rapid and severe, as it was in Case 1, in which the conditions were somewhat similar.

CONCLUSIONS

The serobiologic reactions should be regarded in the same manner as the symptoms in a clinical picture. They furnish only a part of the information, which must be carefully weighed in connection with all of the other facts obtained. Often when other symptoms fail, they are found to be present, and give the clue to the proper diagnosis. On the other hand, we must not forget that the reverse is sometimes true and they are absent, and then we must depend on the other symptoms for our diagnosis. In atypical cases, hard and fast rules cannot be formulated for these reactions any more than for the other symptoms.

A spinal fluid examination should be made in all cases in which symptoms are present which are referable to the nervous system, unless the etiology of these symptoms is definitely known.

An examination of the spinal fluid is the surest means we have at present of discovering the presence of latent syphilis, and in all cases of syphilis before the patients are discharged from further treatment, this ought to be done, in both early and late cases.

In the absence of other symptoms, its findings form the best criteria in deciding when it is safe to stop treatment. In the so-called cases of parasyphilis the last statement does not apply because of the impossibility with the present methods of therapy of obtaining a normal spinal fluid.

In nervous syphilis, without other symptoms, a normal spinal fluid means a good prognosis and a recovery; a pathologic one, a latency which at any time may become active.

Reporting Tuberculosis.—The *Monthly Bulletin* of the New York State Department of Health reviews the excuses that physicians give for failing to report cases of tuberculosis, and states that these cannot be regarded as valid by the department. All cases, no matter what the organ involved or the stage of the disease, must be promptly reported to the health officer on the special report card, even though the diagnosis was made only at death or necropsy. The coroner's certificate of a person dying from tuberculosis may be accepted by the health officer in lieu of a report, but in this instance the health officer must make out a report and send it to the department. A laboratory report of sputum positive for tuberculosis will not be regarded as doing away with the necessity of sending a regular report card. When the clinical symptoms justify a diagnosis of tuberculosis, the case must be reported by card, even though the laboratory findings are negative for tubercle bacilli. If afterward the case proves not to be tuberculosis, the physician may notify the health officer to that effect.

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[7] Nonne: Syphilis and the Nervous System, Ed. 3.

MERCURIAL MEDICATION WITH SPINAL DRAINAGE *

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This is intended to be a brief paper, and few references will be given. The literature of syphilis of the nervous system is now so extensive that it properly falls into various categories, though sharp divisions are not always made into clinical, serologic, etc. We seem to be no nearer a valid line of distinction between paresis and cerebrospinal syphilis than we were, and most authors are becoming very cautious in their assertions as to what does and what does not constitute paresis. There is no reason to suppose that there is any essential difference in the spirochetes in these two conditions, but there is experimental evidence to sustain the view that the spirochete which attacks principally the brain is somewhat different from the one which cripples the heart or assails the liver, as witness a recent communication from the Army Medical School to Dr. Archibald Church.[1]

On anatomic grounds, Dunlap[2] characterizes general paralysis as "a subacute or chronic inflammatory and degenerative process which goes through and through the great central nervous organs," whereas "the varieties of cerebral syphilis on the other hand, for the most part, play around the surface of the central nervous system, instead of going all through it." In making a serologic distinction, Kaplan[3] considers the colloidal gold test of more value than the Wassermann, and of course the findings in any case of nervous syphilis may have been altered by treatment. Kolmer[4] says, "In cerebral syphilis the blood serum, and particularly the cerebrospinal fluid, will react positively less frequently than in general paralysis"; but this is doubtful. It is sometimes said that the cell count runs higher in cerebrospinal syphilis, but the largest count which I have seen, 360 cells, occurred in the fluid of a patient with undoubted paresis. Darling and Newcomb,[5] in four of five cases of cerebrospinal syphilis, failed to find more than six cells, and in a fifth case never found more than 100. They lay stress on the great variation in cell count in these conditions but state that it was no greater in the one condition than in the other. They, with Weston,[6] had previously reported three cases of cerebrospinal syphilis in which the cell count never exceeded 3 per cubic millimeter. Two of the cases now being reported have never shown to exceed 5 cells per cubic millimeter, and one has varied from 130 to 360, all being cases of paresis.

There seems to be no reason for making a distinction in treatment between paresis and cerebrospinal syphilis, and no extravagant hopes can be built on any form of treatment as yet devised in well developed cases of either condition, though prolonged remissions, even in general paralysis, may be expected with vigorous treatment in early cases. Gilpin and Earley[7] assume that mercury and arsenic given by any of the ordinary routes fail to reach the cerebrospinal fluid, but this is probably not invariably true, as very small amounts of arsenic have been reported. For example, Barbat[8] found 1 part per hundred thousand of metallic arsenic in the fluid immediately following the administration, presumably intravenous, of a full dose of neosalvarsan. Gilpin and Earley ask, "Is it not reasonable, then, to think that if we reduce the pressure within the cerebrospinal cavity we may succeed in bringing foreign substances through the capillary walls and thus secure the direct effect of drugs such as arsenic and mercury on the nerve tissue itself?" The plan carried out on three patients reported at that time was repeated lumbar puncture, performed every week or every two or three weeks, together with mercurial inunctions. Paresis, taboparesis and tabes were represented, and the results were quite encouraging.

On theoretical grounds it does not seem that the removal of from 20 to 40 c.c. of fluid once every week or two should have more than a very transient effect in reducing pressure, and it seems probable that spontaneous variations in pressure may occur from time to time, though doubtless in less degree. The fluid is probably rapidly replaced after withdrawal, and it is possible, of course, that the very rapidity might have a tendency to carry over foreign substances which happened to be circulating in the blood at that particular time. At any rate, the method seemed worth trying, and ten cases of paresis, taboparesis and cerebrospinal syphilis were so treated, that is, the patients were given mercurial inunctions, 1 dram six days in the week, and were punctured every two weeks with few variations. In most cases the inunctions were continuous. They were not selected patients, but would represent about the usual hospital run, and some would be a severe test for any form of treatment. The amount of fluid withdrawn varied from 20 to 35 c.c., the Wassermann was performed with 1 c.c. of fluid by Dr. Clarence Emerson, and the cells were counted in a Thoma-Zeiss chamber with the high power. On the whole, the results are not striking, and similar effects might reasonably be expected without spinal drainage. One of the patients is decidedly better and several are slightly so, but the one who improved the most had an alcoholic as well as a syphilitic factor. None have been treated in this fashion for more than about four months, and none for less than ten weeks, and this is perhaps not time enough for a maximum amount of benefit.

REPORT OF CASES

Case 1.—White man, aged 35, laundryman, married, no children, always intemperate, admitted Jan. 10, 1916, acquired syphilis at the age of 19, and has had gonorrhea several times with resulting stricture. He had a little treatment following chancre, but probably not very much. He first showed signs of mental disturbance in July, 1915, after drinking heavily. He was excited, nervous, sleepless, suspicious and threatening. He spent ten weeks in a general hospital before commitment, and received specific medication, including two intraspinal treatments. On admission he was found well oriented, with little disturbance of conduct aside from irritability. Right pupil was large and rigid to light, left moderately responsive to light and distance. Knee jerks were exaggerated, cremas-

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[1] Church, Archibald: Some Modern Views of Syphilis of the Nervous System, The Journal A. M. A., May 20, 1916, p. 1596.

[2] Dunlap, Charles B.: The Pathology of General Paralysis, Am. Jour. Insan., October, 1914, p. 249.

[3] Kaplan, D. M.: Serology of Nervous and Mental Diseases, Ed. 1, 1914, p. 191.

[4] Kolmer, John A.: Infection, Immunity and Specific Therapy, Ed. 1, 1915, p. 462.

[5] Darling, Ira A., and Newcomb, Philip B.: The Correlation of Clinical and Serological Findings in Paresis and Cerebrospinal Syphilis, Am. Jour. Insan., January, 1916, p. 449.

[6] Weston, Paul G.; Darling, Ira A., and Newcomb, Philip B.: The Colloidal Gold and Other Tests Applied to the Spinal Fluid in Psychiatry, Am. Jour. Insan., April, 1915, p. 773.

[7] Gilpin, Sherman F., and Earley, Thomas B.: Drainage of Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis, The Journal A. M. A., Jan. 22, 1916, p. 260.

[8] Barbat, J. H.: Finding of Arsenic in Cerebrospinal Fluid Following Intravenous Administrations of Neosalvarsan, California State Jour. Med., 1915, **13**, No. 11; abstr., The Journal A. M. A., Dec. 18, 1915, p. 2199.

teric, abdominal and gluteal reflexes absent. Slight muscular unsteadiness was present. The Wassermann reaction was positive in blood serum and later in spinal fluid (Table 1). A diagnosis of cerebral syphilis was made. At present the right pupil is large and fixed, while the left reacts only a very little to light. The knee jerks are about as they were, and there is about the same amount of muscular unsteadiness. The patient is fairly reasonable in his conduct, and cooperates well in treatment.

TABLE 1.—CEREBROSPINAL FLUID IN CASE 1

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wasser-mann, 1 c.c.
2/10	++	++	......	40	25	++++
3/24	++	++	+	24	30	++++
3/10	++	++	+	34	35	++++
3/24	++	++	+	?	30	++++
4/ 6	++	++	+	31	30	++++
4/20	+	++	+	30	35	++++
5/ 4	+	+	++	16	30	++++
5/18	+	+	+	27	35	++++
6/ 1	+	+	+	28	25	++++

Case 2.—White man, aged 52, carpenter, wife dead, three children, admitted Sept. 28, 1915, denied intemperance and venereal infection. Trouble had been steadily progressing for about two and one half years, ataxic gait, speech, etc., and delusions that people were stealing his tools. On admission the patient showed disorientation, impairment of memory and judgment and slight euphoria. Argyll Robertson pupils were present, knee jerks absent, speech was defective and writing impossible. On account of extreme ataxia, the patient was kept in bed. Blood serum Wassermann was reported negative, Oct. 12, 1915. A diagnosis of taboparesis was made. Spinal fluid later was positive (Table 2). This patient has not improved in any essential respect under treatment.

TABLE 2.—CEREBROSPINAL FLUID IN CASE 2

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wasser-mann, 1 c.c.
2/15	++	++	......	35	15	++
2/29	++	++	++	37	25	++++
3/14	++	++	++	40	25	++++
3/28	+	++	+	23	25	+++
4/12	++	++	++	46	25	++++
4/26	+	+++	++	24	20	++++
5/10	+	++	++	24	25	++++
5/24	+	+	++	39	22	....

Case 3.—White man, aged 55, farm laborer, divorced, three children, admitted Jan. 11, 1916, acknowledged alcoholic intemperance, but denied venereal infection. At time of admittance he was confused, disoriented, stupid and apparently demented, but later much improved mentally. The left pupil was large and fixed, the right reacted to light and distance. Knee jerks were a little exaggerated, cremasteric and abdominal present, gluteal absent, no speech defect. A provisional diagnosis of alcoholic insanity was made, after spinal fluid findings, changed to cerebrospinal syphilis with alcoholism. January 21, Wassermann was positive in blood serum; February 17, doubtful in spinal fluid. Patient is better mentally and cell count has descended from 223 to 38 per cubic millimeter.

TABLE 3.—CEREBROSPINAL FLUID IN CASE 3

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wasser-mann, 1 c.c.
2/17	+	++	......	223	20	+—
3/ 2	+	++	+	123	20	+—
3/16	+	+	+	120	25	—
3/30	+	+	+	120	25	++
4/13	+	+	+—	63	25	+
5/ 1	+	+	+	73	30	++++
5/15	+	+	+—	64	25	++++
5/29	+—	+	+	38	30	....
3/16	....	....	....	Blood serum		++++

Case 4.—White man, aged 43, salesman, admitted Jan. 21, 1916, married, two children living, wife had a miscarriage at six months, one seven months, fetus lived a few hours, one child, the first, which died at 12 days and another which died at 10 years, having abnormally large head and deformed lower extremities; presented a history of intemperance and of gonorrhea, but none of syphilis. Three weeks before commitment, the patient complained of sudden feeling of distress on lifting a heavy weight, and soon afterward became increasingly talkative and affirmed that an uncle in Chicago had left him $100,000. He said he was well and his wife was ill and that he had perfected a scheme to keep his balance in the bank the same without making fresh deposits. When admitted, patient was a little euphoric and showed defect of judgment, but not of orientation and apparently not of memory. The right pupil was slighly larger than the left, but both were rigid and very small, even in absence of light. There was central dimness of vision in the left eye field, described as a misty appearance. There was history of probable meningitis at the age of 3, followed by squint which later disappeared. Knee jerks were present; cremasteric, abdominal and gluteal reflexes absent. There was no ataxia, no marked tremor or unsteadiness, no speech or writing defect. March 18, blood Wassermann was +++. A diagnosis of paresis was made. In a general way the patient certainly shows some improvement, that is, he is more reasonable, his delusions are less in evidence, and he has regained much of the flesh that he had lost; but there is no marked change in the spinal fluid.

TABLE 4.—CEREBROSPINAL FLUID IN CASE 4

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wasser-mann, 1 c.c.
2/19	+	++	......	72	25	++++
3/ 4	+	++	+	63	30	++++
3/18	+	++	++	60	25	++++
4/ 1	+	+	++	70	32	++++
4/15	+	+	++	77	35	++++
4/28	+	+	+	50	30	++++
5/12	+	++	+	57	35	++++
5/26	+	++	+	57	25	....
6/ 9	+	++	++	91	25	++++
3/18	......	......	......	Blood serum		+++

Case 5.—White man, aged 48, cigar maker, married, one child aged 20 years, admitted Oct. 25, 1915, gave a history of probable chancre occurring a good many years before. There was mention in the physician's return of sexual abnormality for ten years, the exact nature not known. The symptoms began about July, 1915, with sleeplessness, restlessness, later hallucinations of hearing and delusions of plotting. There was no marked alcoholic factor. When admitted, the patient showed no disturbance of orientation, but had delusions of influence and acknowledged hearing voices, especially at night. He was good-natured, but not euphoric. He had a noticeable speech defect and a little defect in writing. The knee jerks were slightly exaggerated, but pupils normal, cremasteric and abdominal reflexes present. He was paroled from November

TABLE 5.—CEREBROSPINAL FLUID IN CASE 5

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wasser-mann, 1 c.c.
2/19	+	+	......	5	30	—
3/ 4	+—	—	—	1	30	++++
3/18	+—	—	—	4	25	—
4/ 1	+—	—	—	2	20	—
4/15	+	+—	—	4	22	+++
4/28	+	—	—	4	25	++++
5/12	+	—	—	1	25	++++
5/26	+—	+—	—	1	20	....
6/ 8	+—	+—	—	2	25	—
3/18	......	......	......	Blood serum		+

24 till January 16. The blood Wassermann was positive, March 18. A diagnosis of paresis was made. The spinal fluid Wassermann was variable, and never more than 5 cells were present. The physical condition is essentially unchanged; hallucinations and delusions are less prominent, and efficiency is increased. The patient takes care of the clothing room in the ward in which he resides.

CASE 6.—White man, aged 44, laborer, divorced, two children, admitted Sept. 18, 1915, gave a history of nervousness, speech difficulty and mental confusion for about three months before commitment. When admitted he was quiet, a trifle confused, without definite or systematized delusions. There was no marked disorientation, but some impairment of memory as evidenced by inconsistent statements. Alcoholic intemperance and venereal infection were denied. The pupils were slightly unequal and very sluggish to light, knee jerks exaggerated, cremasteric and abdominal reflexes present, movements and station a little unsteady, and speech and writing defective. February 23, the blood Wassermann and also the spinal fluid were + + + +. A diagnosis of paresis was made. The number of cells has been quite variable, but there has been little variation in the intensity of the Wassermann reaction. The pupils are now almost rigid to light, knee jerks very much exaggerated, tremor and unsteadiness greater than at time of admittance. The patient cannot be said to have shown the least improvement under treatment.

TABLE 6.—CEREBROSPINAL FLUID IN CASE 6

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wassermann, 1 c.c.
2/23	+	+++	+	110	30	++++
3/ 8	+	+++	+	213	25	+++
3/23	++	+++	++	170	35	++++
4/ 6	++	+++	++	180	30	++
4/20	+	+++	+	140	30	++++
5/ 4	++	++	++	156	30	+++
5/18	++	++	++	80	30	++++
6/ 1	+	++	++	130	30	++++
2/23	......	.....	......	Blood serum		++++

CASE 7.—White man, aged 38, telephone man, married, who had had no children, and whose wife had had no miscarriages, who was not intemperate and who denied venereal infection, admitted Aug. 22, 1914, was well oriented, his memory was good, no delusions were present, but his condition was not fully appreciated. The pupils were equal, but rigid to light. Knee jerks present, also abdominal, cremasteric and gluteal reflexes. There was considerable tremor, and well marked ataxia. There was considerable increase of globulin and albumin, and 115 cells per cubic millimeter in the spinal fluid. A diagnosis of paresis was made. Mercurial inunctions and potassium iodid were ordered. There was a mild paretic seizure, Oct. 14, 1915. The number of cells has varied considerably, but the number was high at the last count, and the Wassermann still strongly positive. The pupils are still rigid, the left knee jerk much exaggerated, and the patient is more tremulous and unsteady now than he formerly was. He still does not appreciate his actual condition.

TABLE 7.—CEREBROSPINAL FLUID IN CASE 7

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wassermann, 1 c.c.
2/24	+	++	++	52	25	++++
3/ 9	+	++	++	41	25	—
3/23	+	+	++	33	25	++++
4/ 6	Specimen contained blood		......	50*	35	++++
4/20	+	++	++	60	20	++++
5/ 4	+	+	++	40	20	++++
5/18	+	+	+	60	25	+++
6/ 1	+	+	+	130	25	++++

* Other than red cells.

CASE 8.—White man, aged 47, tailor, married, three children, admitted Nov. 20, 1915, had no history of intemperance or venereal infection. About two years before commitment his gait became peculiar and he began to drop things. He became very nervous and so forgetful that he could not go on a simple errand and bring back what was wanted. About one year before commitment, spinal fluid was negative. When admitted, patient was disoriented and showed considerable mental confusion, impairment of memory, judgment, etc. The pupils reacted to light and distance, the knee jerks were a little exaggerated, and there was slight defect in speech, writing and gait. A diagnosis of paresis was made. December 6, the spinal fluid showed a slight increase in globulin, but there were only 4 cells per cubic millimeter, the Wassermann reaction was negative in both blood and spinal fluid. Since then the spinal fluid Wassermann has been positive three times and negative twice, and the number of cells has never exceeded four. There has never been more than a slight increase of albumin and globulin, and the Ross-Jones test was positive only once. The knee jerks are now more exaggerated than they were, while tremor and muscular unsteadiness are more pronounced.

TABLE 8.—CEREBROSPINAL FLUID IN CASE 8

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wassermann, 1 c.c.
2/29	+	+	—	0	30	+++
4/ 1	+	+	+	1	25	—
4/15	+—	+	—	4	25	—
4/28	—	+—	—	0	22	++++
5/12	+	+—	—	1	30	++++
5/26	+	+—	—	1	25	....
6/ 9	+	+	—	3	30	+
1915 12/ 6	+	+—	......	4	25	—(Blood serum—)

TABLE 9.—CEREBROSPINAL FLUID IN CASE 9

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wassermann, 1 c.c.
3/14	+++	+++	+++	290	25	++++
3/28	++	+++	++	210	28	++++
4/12	++	+++	++	130	30	++++
4/26	++	++++	+++	277	25	++++
5/10	+	+++	+++	203	28	++++
5/24	+	+++	+++	199	30	....
6/ 8	+++	+++	+++	360	30	++++

CASE 9.—White man, aged 40, laborer, single, with history of intemperance, but none of venereal infection, said to have delusions of God directing his movements, etc., when admitted, Oct. 11, 1914, had ideas of grandeur and unlawful detention, ideas of reference and hallucinations of sight and hearing. The pupils reacted moderately, knee jerks were exaggerated, abdominal and cremasteric reflexes were present and gluteal absent. Later on, disturbance of speech appeared. A diagnosis of paresis was made. Blood Wassermann was positive when admitted. The spinal fluid Wassermann is still + + + + and the patient is no better physically, though he is more tractable than he was at one time. June 8, the spinal fluid contained more cells than at any previous time, 360 per cubic millimeter.

TABLE 10.—CEREBROSPINAL FLUID IN CASE 10

Date, 1916	Globulin (Noguchi)	Albumin (Trichlor-acetic Acid)	Ross-Jones Test	Cells	Amount, c.c.	Wassermann, 1 c.c.
3/16	+	+	+	46	30	++++
3/30	+	+	+	20	25	++++
4/13	+	+	+	17	25	++++
5/ 1	+	+	+	80	25	++++
5/15	+	+	+	85	30	++++
5/29	+	+	+	56	26	....
3/16	......	......	......	Blood serum		++

CASE 10.—White man, aged 36, painter, single, formerly intemperate, admitted March 14, 1916, one year before com-

mitment had an attack of mental disturbance which lasted about three weeks. Shortly before commitment he became excited, sleepless and confused, with hallucinations and illusions. When admitted, patient acknowledged having had both gonorrhea and syphilis at the age of 18, but said he was treated and cured. Delusions were present and some mental confusion. Pupils were sluggish to light, knee jerks exaggerated, tremor present, speech and writing a little defective. The Wassermann reaction was + + in the blood and + + + + in the spinal fluid. A diagnosis of paresis was made. The fluid Wassermann was the same at all examinations since admission. Cells have varied from 17 to 85 per cubic millimeter. The right pupil is now a little larger than the left and decidedly sluggish to light. Otherwise the patient is about the same, except that he is steadier and more efficient in his work.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SCHALLER, RIGGS AND HAMMES, BALL, AND PILSBURY

Dr. J. Henry Barbat, San Francisco: During the past two years I have been doing experimental work regarding the permeability of the meninges to drugs. Patients were given salvarsan, neosalvarsan, and later arsenobenzol intravenously, and immediately after the injection as much spinal fluid as possible was withdrawn by lumbar puncture, usually as much as 60 c.c. The second half of this fluid was tested for arsenic. Twenty-four hours after the first tapping, 20 c.c. of spinal fluid were withdrawn. Within one hour after the injection of arsenobenzol, 20 c.c. of blood were taken and the serum separated from the clot. These specimens were all sent to the Hygienic Laboratory at Washington to be tested for arsenic. About four fifths of the arsenic is fixed in the body cells within one hour after its intravenous administration, leaving only one fifth in the blood, a proportion of about 1 : 100,000. When neosalvarsan is used a slightly larger proportion of arsenic gets into the spinal fluid than with arsenobenzol. In my series of cases the analyses showed an average of 10 per million arsenic in the blood, largely in the serum. In the spinal fluid which was drawn twenty-four hours after the administration of the drug, there was found from a trace to 10 per million, the average being one fourth per million. The second half of the fluid drawn immediately after the injection of arsenobenzol showed traces of arsenic in 40 per cent. of the specimens. Carr and Hall demonstrated arsenic in the spinal fluid after the administration intravenously in a very small percentage of cases. J. J. Viton of Buenos Aires showed clearly that the permeability of the meninges depends on whether or not they are irritated or inflamed. The injection of homologous serum into the spinal canal will produce leukocytosis; injection of horse serum will produce leukocytosis plus pain and fever. Therefore irritation of the meninges, whether by chemicals or other means, will increase the permeability. This brings us to the question as to whether the intraspinal injection of any drug has any specific effect in the treatment of any of the cerebrospinal syphilitis lesions. I believe that the effect of all these intraspinal injections is to set up a meningitis which, by increasing the blood supply, permits the passage of antibodies and drugs into the spinal fluid enabling them to act more efficaciously on the spirochetes. This condition can more easily be brought about by the technic which I spoke about at first.

Dr. Tom A. Williams, Washington, D. C.: One feature of syphilitic meningitis which is so frequently forgotten is the fact that in the tertiary phase, at least, it is not a serositis; the inflammatory condition is not one of the surface of the membrane, but of the deeply seated blood vessels in the membrane. The lymphocytotic reaction is a mere epiphenomenon, so to speak, quite different from the leukocytotic reaction in epidemic meningitis or in pneumococcic meningitis. Therefore, in order to affect the disease one must attack the perivascular lymphatic spaces in the meninges. What Dr. Barbat has just said is, I think, very true. Three years ago I considered the real elements of advantage in intraspinal medication. I need not repeat what I said in view of what Dr. Barbat said. Sicard, at the very beginning of salvarsan therapy, made a practice of injecting intraspinally weak salts of mercury while at the same time mercurializing or salvarsanizing the patient, with exceedingly gratifying results, which are not inferior to those which have been so often vaunted as peculiarly efficient by persons using salvarsanized serum. I believe that the meningeal reaction produced by the introduction of foreign substance intraspinally is responsible for any advantage there may be, although we do not really know that there is any permanent advantage in intraspinal medication, which must always be combined with systemic medication, whether by salvarsan, preferably, or by mercury as was formerly the case. I do not presume to speak of the problem of paresis, for it would take much longer than five minutes to even lay down the ground for it. I am talking only of the syphilitic meningitis which eventuates in what is called tabes dorsalis.

Dr. Albert E. Sterne, Indianapolis: In the last seven years I have seen no reason to change the estimation of the results of treatment of any form in cases of the kind under discussion. I desire to place particular emphasis on the fact that no neurologic examination is complete without a thorough bioserologic survey of each individual case, for undoubtedly the biologic findings guide us correctly, to my mind not only diagnostically, but, still more important, prognostically. But so far as the ultimate results of treatment are concerned, I have not been able to convince myself that there is any marked gain. We have, possibly, a better temporary result than was formerly secured. But the crux of this whole question seems to me to lie in two directions: First, we must not fail to recall that we achieved excellent results in the vascular forms of syphilis, not only of the nervous system, but of the body as a whole, but particularly of the nervous system, by the methods employed previous to the use of salvarsan. Some of the forms of vascular syphilis affecting the nervous system recovered then as now. The results of treatment of parenchymatous syphilis are hardly better now than formerly. The happy aspect of the present methods of treatment is this: Personally, I believe that every nervous system is affected early after the primary infection. If the patient has headaches within the first few weeks following primary infection, his spinal fluid should be examined, when in most instances it will be found to bear the characteristics of an invasion of the central nervous system. That is the time, if any time, when we might expect to accomplish something, not only positively curative, but also prophylactically for the prevention of the tertiary degenerative changes in syphilis of the nervous system. That is the time to give intraspinal medication. I do not care what form you use, whether arsenical or mercurial preparations. It has been our habit recently to use the drainage method, but in a slightly different way. When we give an intravenous injection we immediately follow it with a spinal puncture, injecting nothing into the spine, but withdrawing spinal fluid, and creating, so to speak, a wave toward the cerebrospinal axis. Until we know positively the direction and extent of the flow of the cerebrospinal fluid, we cannot definitely say how much may be gained in this way. Owing to the characteristics of the choroid plexus we cannot say, with any degree of assurance, how much or little can be attained, but there is evidence pointing to the fact that we have rapid regeneration of the fluid, and furthermore, that at least part of the spinal fluid is derived from the blood. With the influx into the cerebrospinal axis we have reason to believe that whatever drugs we place in the blood current will soon reach the cerebrospinal axis after lumbar puncture. The time to give intraspinal medication is early, and intravenous medication followed within twenty minutes by spinal puncture would seem to be worthy of trial, in place of direct intraspinal application.

Dr. Julius Grinker, Chicago: I would like to ask Dr. Schaller if the presence of the knee jerks in thirteen of the thirty-five cases was really controlled by him, or was it only reported by his interns? It has been my experience that interns will occasionally report the knee jerks as being present in tabetics, when there is only a pseudoreflex present, which is often found in tabetics, and which is merely a voluntary response. If he has controlled the findings then the percentage of present reflexes in tabes is rather high in his service. My own observation of hundreds of cases of tabetics gives me a smaller percentage of present tendon reflexes. As regards the Achilles jerk, it has been my experience that this reflex is very often lost before the knee reflex. Referring to the negative Wassermann findings in the spinal fluid of eleven cases of tabes, I wish to ask Dr. Schaller whether they were not advanced cases of tabes. I have in mind just one case of tabes in which the patient had positive Wassermann findings with symptomatic improvement after intraspinal injections of neosalvarsan by the Swift-Ellis method. He left the hospital, but returned after a year when repeated Wassermann tests corroborated by an outside laboratory failed to give positive tests. The man at his second entry had an advanced case of tabes; he was extremely ataxic and there was no doubt that he was worse, and yet the Wassermann reaction was negative. With reference to intraspinal injection of either salvarsan or salvarsanized serum in paretics, and the following remission of symptoms, I think the so-called favorable results are deceptive. We must not delude ourselves into believing that we are causing improvement when the improvement is simply a natural phenomenon incident to the disease. I have seen tabes patients with extreme ataxia come to the hospital with crutches and after a few injections of salvarsan go out without assistance, but even here we must use extreme caution in estimating the beneficial effects. Besides, intraspinal injections are not as harmless as one may imagine. In two cases paraplegia followed an injection; in two other cases (not my own) death was the result of intraspinal injection of neosalvarsan. The injection of neosalvarsan, even the small dose of 3 mg., has in many instances caused disastrous effects. Mercurialized serum injections given intraspinally have in my hands caused violent reactions, high temperatures, and extreme pain. In some of the cases there was improvement and in others the reverse. It appears then that at the present time we are not quite prepared to say which is the best mode of treating nervous syphilis. Certain it is that in both tabes and cerebrospinal syphilis the Swift-Ellis treatment, the most harmless of any, deserves still further trial. In paresis we may use this method experimentally, though I have still to see the first patient who improved under treatment by any means whatever.

Dr. Mathew A. Reasoner, Washington, D. C.: As to experimental studies of strains of the specific organism of syphilis, a word may not be amiss. As the result of isolating twenty strains from various sources, two from the spinal fluid of patients suffering from nervous syphilis and eighteen from chancres and mucous lesions, we have satisfied ourselves that there are variations in the strains of syphilis we have studied. I am not prepared to say that there are any variations in the morphology of the strains of spirochetes which we have seen. In one strain which I obtained from a man who probably committed suicide three months afterward, I did find choroidal involvement in the rabbit. This same manifestation was observed with our nervous strains. With reference to one statement by Dr. Ball, the serobiologic findings must be considered in conjunction with the others. In the absence of history or manifestations, one positive Wassermann should not be accepted as proof of syphilis. Some one might have mixed the tubes, not to mention other possible sources of error. The test should be repeated. And likewise, in the presence of suspicious manifestations, a negative Wassermann will not be accepted as proof that syphilis does not exist. Other methods may be needed to prove it.

Dr. George H. Moody, San Antonio, Tex.: Excluding here a consideration of all syphilitic affections except paresis and tabes, and coming directly to the question of their treatment, we recall that two or three years ago some believed they had had, and were reporting, recoveries as the result of arsenical treatment and that a year ago it was practically decided that no patients were getting well. It seems to me that all the papers and discussions at this present meeting lead us definitely to our same former position that nobody is recovering from paresis or from locomotor ataxia. I ask the essayist if they have observed any deleterious results following the administration of arsenic in large doses? I am afraid that in a few of my cases the degeneration in cases of paresis, especially, has been more rapid after heroic arsenical administration, such as is being advocated and administered. I am not certain of this and would like to be convinced a little further if there is any evidence leading to such conclusion. Dr. Riggs has reported definitely that there seems to have been marked improvement in many cases. All of us, perhaps, have had similar observations. I know also that many of these patients improved before we gave arsenic at all, under the mercurial treatment, some of them becoming so much improved that for a little while we almost believed them well. The point is, Are there any cases in which we are making patients worse as a result of the arsenic? We are now agreed, I think, that formerly we did degenerate many of our patients with paresis and locomotor ataxia by the long administration of heroic doses of the iodids and I believe that none of us are administering them this way to patients at this time. Shall we later come to believe that the heroic treatment by arsenic may degenerate some of our patients with paresis and tabes?

Dr. Henry F. Stoll, Hartford, Conn.: I would like to ask some one who has given more intraspinal treatments than I to explain the following: Three patients recently treated were given salvarsan, and within an hour the spinal canal was drained practically dry. The next day the patient was given an intraspinal injection. In this case the Wassermann reaction in the fluid obtained on the first day was ten times as strong as on the second day, i. e., it took ten times as much fluid to get complete inhibition the second day. I do not know whether to interpret this as indicating that the newly formed spinal fluid had not had time in which to develop fully its Wassermann bodies, or whether it means that some of the salvarsan had gotten into the spinal fluid.

Dr. W. F. Lorenz, Mendota, Wis.: I doubt the value of removing spinal fluid with the hope of increasing the amount of contained arsenic. This practice would seem to me analogous to catheterizing the bladder and by the creation of a vacuum hope to abstract from the blood toxins that may be present. It seems to me that the difference in the chemical composition of cerebrospinal fluid and blood plasma is so great that one must conclude that the former is not a simple transudate or filtrate but the product of a secretory tissue. Viewing it in that light, a negative pressure on one side would hardly affect the composition of the secretion. Several years ago I reported traces of arsenic in the spinal fluid after the intravenous administration of salvarsan. In regard to negative Wassermann reactions in syphilitics, I recently succeeded in obtaining a positive reaction with the globulin fraction of such a negative serum. The albumin fraction was negative and antagonistic to the binding forces contained in the globulin. I could by varying the amounts of globulin and albumin from the same serum create a negative or positive reaction.

Dr. James B. Ayer, Boston: I thoroughly believe that we can treat successfully a paretic, only we must get the case early. I believe that the chief value of all this work during the past five or six years is that it is pushing us back more and more toward the original lesion, so that now the feeling is that we should get patients with nerve syphilis in the secondary stage or the very earliest tertiary stage, and begin the treatment then. It sounds radical, but I believe it is rational. On the other hand, if we do get a patient late, perhaps after he has had syphilis for five years, if we can pick him up on some slight symptom and find that he is suffering from cerebrospinal syphilis, I believe that often the patient can be cured. Perhaps you cannot prove that a seeming neurasthenic is going to be a paretic, but if you find the reactions strongly positive in the blood and spinal fluid, if you get the colloidal gold reaction, you can feel quite certain that that man is an early paretic. Such patients are being treated successfully at the present time. If in those cases you do not do something, there is every reason to believe that the patient is going to develop general paresis and die from it. Even if you save only one in one thousand, you do more than you would by letting them alone or by giving them a little something to relieve the immediate symptoms. I thoroughly believe in some form of antisyphilitic serum treatment. I am trying now to get serum into the brain under pressure by the lumbar route. I believe that is a likely form of treatment.

In regard to Dr. Stoll's question of the significance of changes in the spinal fluid on two successive injections, I think the work of my colleague Dr. Solomon on variations in Wassermann and colloidal gold reactions in different loci of the brain and spinal canal bears on that subject.

Dr. Robert Henry Haskell, Ionia, Mich.: I would like to ask if any of the men using the Ogilvie method of treatment have had herpes zoster develop. After using the Swift-Ellis treatment, two years ago, I treated two patients by Ogilvie's method. Following the initial injection the first patient developed herpes zoster in a rather unusual location. He had been in the hospital for some time and there was no other herpes zoster present. Two months later another patient developed herpes zoster following treatment, this time a typical shingles. Was there any etiologic relation between the injection and herpes? Herpes zoster in general paralysis is not unknown. Arsenical zoster is well recognized in dermatology. Salvarsan intravenously occasionally has herpes following it but search of the literature has not revealed any such complication following salvarsan intraspinally. The French literature contains several instances of cocain administered for spinal anesthesia producing a herpes, and following Camp's observations on spinal cords from patients receiving intraspinal salvarsan treatment, the etiologic relation in these cases appears possible and probable.

Dr. Malcolm Sumner Woodbury, Clifton Springs, N. Y.: In regard to the question Dr. Moody has raised, I do not know that I have positive evidence of deleterious results following subdural treatment. I have seen some patients with paresis whom I though were helped by the combined subdural and intravenous methods. We have been using mercurialized salvarsanized serum subdurally, supplemented by injections and inunctions of mercury. The patient whose case I will report as bearing on the question is one I saw during the last few months and who appeared to be simply a psychoneurotic. There was a lurking suspicion that we might have here a case of very early paresis, though physical signs were absent. To corroborate the diagnosis the usual serobiologic tests were made. As a result we obtained a positive Wassermann on both the blood serum and spinal fluid. This patient was put on the ordinary line of treatment intravenously, subdurally and by inunction. At two weeks' intervals he received three doses of the mercurialized salvarsanized serum. He appeared to be feeling generally very much better. Two weeks after the third dose, while coming by train to report for the fourth treatment, he was seized with a sudden manic attack. His case has progressed rapidly since that time to a paretic dementia. Whether the treatment stimulated the onset of the active symptoms I do not know. In regard to the early diagnosis of tabes: It seems to me that it is of considerable value for us to pick out the single, individual symptoms which may appear alone and indicate possible tabes. I would refer to one case, not particularly unusual, in which loss of vibration sense in the legs was the only indication which we could make out on examination, and in which examination of the spinal fluid corroborated the diagnosis.

Dr. George A. Moleen, Denver: Anisocoria, mentioned by Dr. Schaller, is not infrequent when tuberculosis, especially of the deeper set of lymphatic glands, is present, and when they exert an irritative influence from pressure on the cervical sympathetic I have found that to be the case. Such pressure obviously causes dilatation of the pupil on the ipsolateral side. In addition to the symptom mentioned by Dr. Grinker, the early recognition of the loss of the Achilles reflex together with loss of the vibratory sense as estimated by the tuning-fork are also important and early symptoms. With reference to paresis: The first patient received five injections of salvarsanized serum, and recovered so thoroughly that he was able to leave the institution and carry on his ordinary occupation, that of salesman, and did well for a year, but took no other treatments and ignored advice to do so, after the injections. But he returned to the hospital with a definite paresis, failed rapidly, and died about a month ago. The second patient had three intraspinal injections of salvarsanized serum followed by mercurialized serum. The mental confusion disappeared following injections, and he then came down with an apoplectiform seizure, which has left its permanent effects, with no mental symptoms. Two other patients, brothers, one with distinct confusion, expansiveness and grandiose ideas, were given intraspinal injections of salvarsanized serum and left the hospital, however, continuing a mercurial course. The brother was definitely paretic, with little mental change, but received the same treatment. These two cases have been rendered stationary for about a year under the treatment. The fifth patient went to California, was given intraspinal treatment and then returned, evidently very much confused, and had to be brought home by attendants. He then had about six injections of salvarsanized serum made by the same laboratory in spite of which he progressed rapidly and died about six months after his return. A patient with tabes, treated by intraspinal salvarsanized serum and doing well, after involvement of sphincters and marked diminution of visual acuity, was given three salvarsanized serum injections. The patient went to New York, where five more injections were given, without changing the cytologic picture or limiting the number of lymphocytes but very little. The use of iodin, particularly in the form of Lugol's solution, alternated with mercury in some form (blue mass by the alimentary tract being my favorite), has to my mind been a means of at least ameliorating or checking the progress in these cases. The method of administering Lugol's solution is 5 or more drops in water or milk before meals and gradually increasing to 50 or 60 drops.

As to the Wassermann reaction, if we regard it from its fundamental application it is not specific. I favor the clinical findings against the laboratory if there is conflict. The reaction is not specific, but is rather a reaction against lipoid bodies which have been shown to be present in other conditions.

Dr. C. Eugene Riggs, St. Paul: Dr. Ball's paper recalls our own experience with the colloidal gold reaction. In over 90 per cent. of our cases of paresis we obtained the typical paretic curve, and in over 50 per cent. of our tabetics we observed a distinctive curve, which we believe to be characteristic of tabes. Also our cerebrospinal syphilitic cases have almost invariably reacted in the syphilitic zone. There are some bizarre reactions, however, that we all have noted in this colloidal gold test. It is not uncommon for us to get the paretic curve in a case apparently of pure tabes. I have in mind now one of our cases of tabes which gave the paretic curve. This patient has been under observation for the past four years. He says he is feeling well. The objective signs still obtain, but the important point is that there has been no development of mental symptoms, no suggestions of paresis. In syphilitic endarteritis one may obtain the paretic curve. A German observer has reported its occurrence in puerperal eclampsia. We have observed it in disseminated sclerosis. We have also obtained this curve in cases of cerebrospinal syphilis, in which the infection had occurred not more than a year previously. Just what the significance of this reaction is, it will require further observation to definitely determine. Eleven years ago, Dr. Dana called attention to the importance of treatment of the early, "the pre-paretic" stage of paresis. If we can get these patients early there is a possibility of accomplishing definite results. After the disease is well established, and nervous tissues have been disintegrated, they cannot be replaced. Our experience, as well as that of Cotton, Ogilvie and many others, has been that very frequently an amelioration of the disease takes place. Sometimes we are able to make the patient what we call socially possible. He is able to live at home under a restricted environment, much to his own and his family's satisfaction. Even if we obtain only an incomplete remission, the patient may be able to straighten out his business affairs, which usually are in a chaotic condition. We believe it has been demonstrated that frequency of remission is an accomplished fact as a result either of the intraspinal or of the intensive form of treatment; this means much and of itself makes the treatment of this class of patients well worth while. Answering Dr. Moody's question, we have never seen a patient unfavorably influenced by the use of intraspinal medication. We have under our care at the present time a paretic who had a remission; and then a relapse. He is now undergoing his second remission. In his case, we have given forty-one intraspinal injections. This man is certainly very greatly improved over what he was when he first consulted us.

Dr. Walter Frank Schaller, San Francisco: In reply to Dr. Grinker I would say that my comparative figures dealt only with the early tabetic cases. As to the tendon reflexes in the lower extremity I have seen all of the cases reported, and practically without exception have examined all of them for the tendon reflexes. I have been very careful about the technic, preferring the Babinski reflex hammer, as I think that this instrument is better than any of the others in common use, and is especially desirable for eliciting the Achilles tendon reflex. Often, instead of striking the patellar tendon with the reflex hammer, I purposely arrest the hammer just before contact in order to eliminate a possible voluntary knee jerk through suggestion. I have often been impressed in certain cases by a striking difference between the activity of the Achilles tendon reflex and the patellar tendon reflex; when the former is lost, the latter is found not only to be present but quite lively instead of diminished, as one might expect. In regard to Dr. Moleen's remark about the vibration test, I included this test under "Deep Sensibility." We use the Luer fork and very often find the osseous sensibility reduced to 4-5 on the scale.

I was very much interested in what Dr. Ball said about the cell count and I believe that this is one of our most accurate diagnostic tests. I use the Nageotte cell chamber in which one may count cells in a considerable amount of fluid. What Dr. Reasoner and Dr. Pilsbury had to say about the Wassermann reaction appears to me to be deserving of emphasis. I do not accept a Wassermann reaction alone without clinical support as conclusive evidence of syphilis.

Dr. Charles R. Ball, St. Paul: There is one point in my paper which I would like to emphasize particularly: Case 2 was a patient with very active and severe symptoms but negative reactions, except for a mild globulin and lymphocytosis. The patient in Case 3, on the other hand, had practically no symptoms, either subjective or objective; and yet his spinal fluid reactions were such as are usually found in paresis. A rational explanation of the difference in the reactions in these two cases may be that in the first case we have an active process with all the congestion and pressure symptoms which accompany active processes but localized and limited in extent. In the second case we have a so-called latent process but widespread in character with a general invasion of the nervous system. In the one case the symptoms are from two sources, first, pressure due to hyperemia and swelling; second, the toxin of the spirochete. Here the symptoms, due to pressure, predominate. In the other case, there is no active process, and consequently, no symptoms which accompany such processes. There is simply a mild and chronic toxemia which in time will have its influence on the nervous elements. To my mind these two cases illustrate the difference between true cerebrospinal syphilis and parasyphilis (tabes and paresis). In the former, we have the symptoms of a localized and limited inflammation of a mechanical nature predominating. The symptoms due to a toxemia are secondary, while in the latter the mechanical or pressure symptoms are secondary in character and the toxic predominate. The rational explanation to me of the cortical atrophy in paresis and the posterior column degeneration in tabes is that it is toxic in origin, in all probability the toxin of the spirochetes.

Dr. Lawrence B. Pilsbury, Lincoln, Neb.: Two years ago I reported twelve or fourteen patients with paresis treated with intravenous injections of salvarsanized serum. Some did badly, two or three at least are still in the hospital apparently no worse than they were two years ago, and have had absolutely no treatment in the last two years of any sort whatever. Just how much the salvarsanized serum had to do with the remissions I do not know. I also have other cases with prolonged remissions without any treatment. I fear that Dr. Lorenz took too seriously the suggestion that substances might pass over from the blood into the spinal fluid. Yet it does appear from Dr. Barbat's results that a small amount of arsenic appears in the spinal fluid in some cases, and some other investigators have obtained the same result. I believe it is very important that these patients, if they are to be treated intensively, should be treated early. And if the general practitioner would only send at once to the neurologist his patients with "heat and sun stroke," "fainting spells," etc., and let the latter make a thorough examination of the blood and spinal fluid, I think there would be fewer patients with paresis getting to the state hospitals later on in a hopeless stage.

THE MASTOID OPERATION OF TEN YEARS AGO AND OF TODAY

BRIEF ESTIMATE OF THE ADVANCE AS MEASURED BY PRACTICAL RESULTS *

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Whatever changes have occurred during the past decade in our method of operating have involved chiefly the treatment of the flaps or soft parts. When men differ as to technic they differ usually in advocating either the old wide-open, gauze-packed wounds, with which we are all familiar, or some form of closed or partially closed wound.

Undoubtedly a growing respect for the soft parts in mastoid surgery has led to some modifications of surgical method. I shall try to show that these changes have not been haphazard, but rather the logical outgrowth of a better appreciation of laws governing wound repair.

The Bone Operation.—With minor differences to be noted later, the bone operation of ten years ago was practically that in use today. Posterior drainage from the vault and thorough removal of diseased bone, in whatever direction and to whatever distance this might lead, were then, as now, recognized as the chief surgical aims. Complete obliteration of the mastoid cells and removal of the mastoid tip formed part of the prescribed technic. Removal of the diploic tissue or intercellular bone structures from the zygomatic region was recognized in theory, but in practice not so generally or so thoroughly carried out as in the operation of today. The necessity for removing all overhanging ledges of bone from the margins of the bony wound was insisted on by all competent surgeons. In fact, the dislike for sharp and angular bone margins led often to removal of bone posteriorly considerably beyond the limit of the diseased area, this giving rise to exceedingly extensive bone excavations. In skilful hands this operation, thus completed, left a large cavity walled by smooth and apparently healthy bone.

Treatment of Soft Parts.—The wound at completion was flushed with sterile salt solution, dried, and then packed with iodoform or sterile gauze. Beginning at the aditus, gauze strips were pressed firmly into every portion of the bone cavity, and were used in such liberal quantity as to project well above the wound level. The soft parts were thus held widely separated, the posterior flap being pressed well back to the posterior margin of the extensive bone excavation.

Subsequent Dressings.—While the outer dressings were commonly changed within twenty-four hours, the wound packing was usually not removed until the fifth day after the operation. When first removed, it was not uncommon to find a perfectly clean wound surface of practically bare bone. Not infrequently the appearance of the bone cavity at the first change of dressing was identical with that seen at the completion of the operation, with perhaps here and there a bare trace of beginning granulations. This in the absence of fluid pus was generally regarded as a favorable condition. Should pus or serum have collected at any point between the bone and gauze, it was wiped away. The wound was then repacked in precisely the same fashion as the first dressing, except perhaps that slightly less pressure was employed. These, or similar dressings, changed on alternate days, constituted from this stage the routine of treatment.

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Results.—Generally speaking, the results obtained were fairly good and it may be stated that in a majority of cases recovery with complete elimination of the suppurative process took place. As offsetting this fact must be mentioned certain recurring mishaps, which seem to have been in some degree attributable to the method in use:

1. In a fairly large percentage of ultimately successful cases, healing was unduly delayed, a lapse of ten or twelve weeks or longer between operation and final healing being by no means uncommon.
2. In a portion of the cases, certainly much larger than is met with today, secondary operation for removal of diseased bone was necessary.
3. In a rather large percentage of cases final healing, usually considerably delayed, occurred with the formation of a permanent and unsightly depression of variable depth occupying the site of the operative bone cavity. This unfortunate deformity is exceedingly rare today.
4. In a considerable, and formerly puzzling, percentage of cases healing in an apparently healthy wound was delayed, sometimes indefinitely or to the point calling for secondary operation, by persistent failure of the aditus to close. This, again, so far as I know, is a rare obstacle to healing in the mastoid operations of today.

The foregoing represent perfectly well-defined postoperative conditions which most experienced surgeons have met with. That they occur less frequently today than formerly suggests a relation of cause and effect. I personally believe that no discussion of an established operation is of the least value which has not some practical aim in view. In this sense, the most useful discussion would take the form of an attempted analysis of the occasional causes of failure. With this purpose, I shall limit my discussion strictly to the following headlines: (1) surgical treatment of the aditus, (2) surgical injuries to bone, (3) influence of pressure on tissue repair, (4) drainage versus tight packing in mastoid surgery, (5) treatment of the soft parts.

Treatment of the Aditus.—A stage of the simple mastoid operation in regard to which there is as yet no uniformity of practice is the treatment of the aditus. Formerly the simple establishment of drainage was by many considered all that is required, and there are surgeons who still hold and maintain this view. It seems to me that a rational view on this point might be stated as follows: In very recent cases, in which persistent pain or severity of symptoms compel early operation, little treatment of the aditus may be necessary. Why curet the aditus if lined by an intact, though swollen, mucosa, easily capable of a return to normal?

Usually, however, the tympanic lesion sufficiently antedates mastoid symptoms to make this region a seat of advanced pathologic change. Generally the mucosa is eroded and partly replaced by exuberant granulations. If these granulations are only partially removed from the aditus, what remains may shrink and the parts rapidly regain their normal character. On the other hand, a small amount of granulation tissue left in this situation may mark the site of a focus of disease in the underlying bone. Such a focus of disease, if not surgically removed, may perpetuate the tympanic lesion. There is no question that many trying cases of delayed repair and some failures have been due to this cause.

Granulations attached to the roof and posterior wall of the aditus may be quickly and radically dealt with. Frequently a considerable mass of diploic tissue is attached to the tegmen tympani, thorough removal of which provides a much safer postoperative condition.

Granulations occupying the floor of the aditus are frequently attached also to the short process and body of the incus, and greater care is necessary in order to avoid dislocation and even extraction of the incus. Particularly in operating on young children is this danger a real one. Removal of granulations in this situation often brings the incus into view, and sometimes also the head of the malleus. In cases of long-standing tympanic suppuration, which have not reached the stage characterized as chronic suppuration, exposure of one or both ossicles by careful removal of the outer wall of the vault may be necessary in order to bring the vault into a condition favorable to prompt tympanic resolution. This, however, is exceptional. The contention of some surgeons that the incus should be exposed to view as a routine practice in all mastoid operations does not appeal to me as sound.

Surgical Injuries to Bone.—In regard to general technic of the bone operation, I would like to refer to one point only. Aural surgeons have been particularly slow to see the possible danger of excessive planing or scraping of bone surfaces in mastoid surgery. If the inner plates, either by intent or accident, are actually removed over any considerable area, the underlying dura through its abundant blood supply invariably and almost immediately inaugurates the formation of granulations which are the foundation of tissue repair. Who has not exposed an area of dura over tegmen or covering the sinus and within a few days seen this membrane absolutely hidden by a layer of healthy granulations? On the other hand, if the boundary plate in any part of the mastoid cavity is scraped or reduced to an extent injurious to its vitality, the process of repair is either retarded or actually fails. Theoretically, excessive scraping of the bone may act injuriously in two ways, namely, either by insult to the minute blood vessels within the bone, as a result of which repair is retarded until the vascular supply is reestablished; or by reduction to a point actually destructive to bone vitality. Thus we may have only a superficial or surface necrosis, which later is thrown off in the discharge; or the injury may involve the entire thickness of the bone. I have seen cases in which, after a puzzling period of delayed repair, the bony covering of the sigmoid sinus has come away almost as a sequestrum, thus paving the way for normal repair.

When we have defined roughly but clearly the confines of our mastoid cavity, that is, have revealed in contour its various limiting plates, we shall do well to avoid overtreatment of these surfaces. For example, when we have removed in bulk the cells attached to the bony covering of the sigmoid sinus, we see at first in the inequalities of this surface the outlines of the cells, now opened, lying nearest to this plate. With a curet we may easily display our skill in reducing this surface to one of even and polished smoothness. But in doing so we may seriously impair its health and vitality. This, of course, applies equally to other limiting plates of the mastoid cavity. I am convinced that many an operator has blamed himself in cases requiring secondary operation for failure to remove all diseased bone, when in reality he had erred in the opposite direction, that is, in reducing the bone in certain regions to a degree destructive to its vitality.

There are two causes for excessive curetting of bone surfaces in mastoid surgery, namely, (1) the surgeon's fear of overlooking a series of deeper cells still uncovered; and (2) a more or less general impression among aural surgeons that a smooth and even surface is per se a condition favorable to repair. I know of no evidence in support of this view. If the bone is healthy it may, and often does, withstand this treatment, but repair is retarded. If diseased, it is safer to leave uncovered dura than dura covered by diseased bone or bone which has been scraped to a degree leaving its vitality in doubt.

Influence of Pressure on Tissue Repair.—If in mastoid surgery the bone has sometimes received harsh treatment, the blood supply has received even less consideration. It must be remembered that in the old open-wound method of treatment, the sole source of blood supply necessary to tissue repair was the bone itself. In addition to the loss of its supporting periosteum, to the occasional injury to bone vessels through excessive use of curets, the bone cavity at completion was subjected to the pressure of tight gauze packing. That this pressure, maintained at least through the first weeks following the operation, should sometimes influence the wound is not surprising.

Occasional Results of Pressure by Gauze Packing.—Tissue repair, proceeding normally in certain areas, is retarded or inhibited at others, at which points the bone, being deprived of its protective and nutrient granulations, suffers a loss of vitality and consequent superficial necrosis. There can be little doubt that a certain percentage of cases coming to secondary operation owe their failure to this cause.

Repair throughout the entire wound surface being retarded, epidermization from the skin margins has extended into the wound cavity, resulting in eventual recovery, but with the formation of an unsightly cavity, or depression, behind the ear.

Repair throughout the bony wound being retarded, the mucosa lining the tympanic vault has spread outward through the aditus to contiguous wound surfaces. As a result of this, closure of this part of the wound has been indefinitely delayed. The nature of this obstacle to closure of a mastoid wound has not been understood, and many patients have suffered prolonged and painful postoperative treatment and some have been subjected to secondary operation who, but for irrational pressure in the region of the aditus and antrum, would have recovered promptly.

A rational deduction from experience which would seem applicable to all fields of surgery might be stated in the form of a law, namely, that *wounds in the process of normal and healthy repair should be subjected to the least possible mechanical disturbance.* Judged by this standard, we bring still another indictment against this method of treatment. Aural surgeons have failed to appreciate that small new processes of tissue repair, delicate new granulation, rudimentary efforts at vascular anastomosis were destroyed or set back at each change of dressing.

The foregoing, in my opinion, represents the defects in theory and practice of the operative methods of ten years ago. Nor is it safe to speak of them as belonging wholly to the past, for, as in every field of endeavor, there are many men of established reputation who, with their immediate followers, are slow to abandon methods learned when they were younger.

The Blood Clot Operation.—In passing I want to say a word about the so-called blood clot operation. Its theory was based on the hypothesis that blood possesses inherent bactericidal properties; and that if the wound is closed at the time of operation, the blood collecting therein not only protects from further infection, but actually provides a reticulum, or scaffolding, through which new granulations and blood vessels are projected, the whole being converted into firm and permanent connective tissue.

A weak point in this theory is the fact that in cases of severe tympanic infection, pus from the vault may escape backward through the aditus; and that even if the blood clot occupying the mastoid cavity is not infected thereby, tympanic drainage is cut off, and tympanic suppuration may be perpetuated. That this danger is real is shown by the number of cases in which ultimate breaking down of the wound occurs. This in some cases takes place shortly after the operation; in others only after a much longer period. These considerations have brought the blood-clot theory as applied to mastoid surgery into disrepute.

While the blood-clot theory as such has never appealed to me, there can be no question as to the important influence which the operation, as originally described under that name, has exerted on the surgical methods and growth of the past decade. It at least proved definitely and beyond dispute the possibility of quicker and on the whole better average results than those obtained by the older methods. Apparently a direct result of the Blake-Reik operation was to stimulate general interest among American surgeons in any rational modification of established surgical methods aiming at quicker average results. Unfortunately the time at my disposal will not permit of even a brief review of the various modified operations which have contributed to our technical knowledge. All that I shall attempt is a brief outline of a simple end operation now in use by many practical surgeons.

Care of the Periosteum.—The initial incision behind the ear should in its central part be placed at least three eighths of an inch behind the auricular attachment. In elevating the flaps an effort to save the periosteum from injury is distinctly worth while. In children and women this is usually not difficult over the upper two thirds of the mastoid. On the other hand, in strong, muscular men, the frequently rough cortex and extensive muscular attachment may make some injury to periosteum even over the upper half of the mastoid inevitable. In any case, attention to this point is of importance, since an intact and unlacerated periosteum is distinctly favorable to postoperative healing.

Treatment of Soft Parts; Drainage.—In healthy wounds, that is, those lined with apparently sound bone and in which no dura has been exposed or even those in which a moderate exposure of healthy dura has been made, the following technic may be followed: A wick of gauze, so infolded that no ravel threads may be left when it is withdrawn, is placed in the depth of the wound with one end at the aditus, the other emerging at the lower end of the wound. Over this the flaps are approximated and the wound united from its upper extremity to within half an inch of its lower, or tip, end by interrupted silkworm-gut sutures. The sutures are carried preferably through the entire thickness of each flap so as to approximate not only the skin, but also the periosteal, edges. This is not assured by metal clips. A gauze wick fills the auditory canal, and the wound is covered by the usual gauze dressing.

Postoperative Treatment. — The dressings are changed daily. On the day following the operation the wick is withdrawn and very gentle pressure with a pad of sterile cotton is applied over the suture line to express serum or pus through the lower (open) end of the wound. The wick removed is then replaced by a much smaller one, which is introduced only from three fourths of an inch to an inch into the wound. Thereafter the wicks are changed at each daily dressing until there is evidence that they are no longer required.

Dependence on the foregoing treatment is based on the hypothesis that the first wick used establishes a drain or pathway of least resistance along which pus escapes as long as drainage is necessary. The small wicks used in subsequent dressings merely maintain the opening at the lower end of the suture line.

There are two fairly reliable signs that this treatment is progressing favorably, namely, (1) progressive and fairly rapid return of drum membrane and tympanic structures to their normal appearance, and (2) progressive diminution of discharge.

I would abandon this treatment and open the wound in any case in which the tympanic structures did not show progressive improvement. On the other hand, I might persist during a considerable period in spite of a fairly profuse, if diminishing, discharge.

Interpretation of Pus.—It is almost a habit of mind to think of pus as a danger symptom, since it always indicates a focus of infection, present or preexisting. In reality, pus per se represents danger only if confined or if its secretion or production is more rapid than its elimination. A raw or granulating wound without secretion is, of course, a surgical impossibility. Given, therefore, a partially closed wound from which we have reason to believe that we have eliminated the primary focus of infection, we need not be too ready to take alarm at a discharge which may represent only a stage of the process of repair.

I have known wounds treated by this method to have every appearance of being practically healed within ten days. More wounds are healed within three to five weeks. Some for one reason or another do not progress satisfactorily, but after removal of sutures and separation of the flaps, there follows a more rapid process of healing than by the older method.

Theoretically this plan of treatment seems to meet the following requirements: It provides reasonable and adequate drainage; it utilizes every normal structure, bone and soft parts, in the process of repair; it secures the maximum vascular supply of the parts; it subjects the wound in process of repair to the least possible mechanical disturbance.

Contraindications.—That there are contraindications to this method goes without saying. As such I would consider surgical injuries to the sigmoid sinus, physical signs of disease in an exposed sinus wall, and unusual extension of bone necrosis.

Pronounced constitutional symptoms of septic absorption would also call for an open wound, since in such cases the systemic disorder, and not the local lesion, would be the first consideration.

Another condition which, though not a contraindication, should be mentioned in this connection is the presence of large tonsils and adenoids, that is, of the obstructive type. Two cases from my own experience will illustrate what I mean.

In February last I saw, with Dr. Howard Gillespie Myers of New York, a child of 3 suffering from bilateral suppurative otitis media. Both membranes were bulging, though presenting small perforations. The mother had been repeatedly advised to have the tonsils and adenoids removed. Double myringotomy did not bring relief, even in reducing temperature. Ten days after the myringotomy a double mastoidectomy was performed. Following this the temperature returned to normal, but the ears continued to discharge. Two months after the operation, the aural discharge still persisting, the tonsils and adenoids were removed. Within one week after this operation the aural discharge ceased and both mastoid wounds were healed, leaving, however, a perforation in the left drum membrane which may be permanent.

In April last I was called to see R. M., a boy of 4 years, whose condition may be summarized as follows: Large tonsils and adenoids of obstructive type; acutely inflamed right drum membrane with discharge through small perforation; marked tenderness over right mastoid process.

In this case I decided as a first step to remove the tonsils and adenoids, the drum membrane, of course, being incised at the same time. Five days later, edema over the mastoid developed, and a mastoid operation after the method here outlined was performed. In this case the drum membrane healed promptly and the mastoid wound was completely healed with only a fine linear scar, just three weeks after the mastoid operation.

Probably the correct deduction from such cases would be, not that the presence of tonsils and adenoids is a contraindication to any operative method, but rather that tonsils and adenoids of the obstructive type should be removed either as a preliminary step or at the same time as the mastoid operation. The latter may seem harsh treatment, but children stand it, and the results justify the additional strain.

If the question were asked in what essential feature the operative method here outlined differs from that originally described as the blood clot operation, I should say that a blood clot, allowed entirely to fill the mastoid cavity, may act as an obstacle to pus seeking escape; whereas I should regard as unsurgical any operation which does not take account of and provide adequate drainage.

In conclusion, I need not say that I make no pretense to having described a new or original technic. The method I have described is that followed by many surgeons today. What I have attempted is to show the value of the soft parts and particularly the periosteum in mastoid surgery, and to point out wherein the latter methods are in better accord with sound surgical law.

As to comparative results, my own experience may be stated as follows: quicker average healing and lessened suffering to the patient; better cosmetic results, that is, practical elimination of unsightly depressions; smaller percentage of failures.

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ABSTRACT OF DISCUSSION

Dr. R. B. Canfield, Ann Arbor, Mich.: All the records and experiments will show the tremendous difficulties we have to overcome in attempting to remove diseased bone in and about the mastoid process. Still, it seems to me that the advance that has been made in the distinctly surgical technic of the operation on the mastoid during the past ten years has been along the line of more and more removing as much of the diseased bone and tissue as we can. As far as the after-treatment is concerned, the end-result of the successful case is more or less always the same, no matter whether we use one treatment or another, and the after-treatment which interferes the least with Nature is the best. Therefore, in deciding on what technic should be used and what advance has been made, we should operate as radically as we can without producing too much deformity, and during the after-treatment leave the case alone, to the benefit of the patient. We must remember that all healing takes place in the soft parts, not in the bone, and the condition of the bone of these mastoids which we have to reopen or which we see three to six weeks after operation is a sad commentary on our after-treatment. If the mastoid process has been excavated, the bone looks best immediately after the operation; it gets into a less and less satisfactory condition the more we treat it. I had an opportunity to compile statistics on the first series of blood clot cases, and although I tried to compile these statistics honestly it seemed to me the paper read much more satisfactorily and gave the idea that blood clot operations are much more satisfactory than an examination of the cases would lead us to believe. I have seen fatal complications arise—cases in which the blood clot was removed better without operation, and it is decidedly a nonsurgical procedure. The best surgical technic is that which removes the greatest percentage of disease, and that after-treatment is best which interferes the least with Nature's healing of the wound.

Dr. Cullen F. Welty, San Francisco: I do not think that Dr. Kerrison has placed sufficient emphasis on the removal of the individual cells. The removal of every individual cell that can be found by the Jansen searcher has contributed more to the rapid healing than anything else in the whole field of otology. To speak for myself, I rarely operate on a patient the second time. That was not so ten years ago. In the Politzer clinic twelve years ago, more than 5 per cent. required a secondary operation. The more thoroughly the cells are removed, the more sure you are of a complete cure. By removing every individual cell to hard bone, I am again assured of the fact that the healing is retarded and there will be more or less depression; granulation tissue does not spring up as readily. My cases heal in from three weeks to two months. This is not ideal surgery because of the long duration of healing.

I do not believe in the blood clot operation because an occasional case will develop a serious brain lesion that would have gone along without any trouble by the open method. Some four or five years ago, a New York otologist reported seven deaths following the acute mastoid operation by the blood clot procedure. On the other hand, I wish to report 120 cases of my own of acute mastoid operation by the open method without mortality; furthermore, these cases were not selected. However, I do feel that some one will devise a safe procedure that will shorten the after-treatment of acute mastoid operations, and it seems to me that it will be along the line of what is now designated as the closed operation.

Dr. Joseph C. Beck, Chicago: Dr. Kerrison's review referring to the last ten years' work on the mastoid is very instructive to those who have had anything to do with mastoid surgery. You heal a number of patients quickly, and then there will be a few that will not get along, although the same technic was employed. It must be something else than the technic employed. I am confident that it is a causative factor such as bacteria that originally produces the disease, and the secondary changes of the bones that have to do with the way these conditions heal up. There are various types of bone disease and each individual type heals differently. Whether this or that method is used the result is usually the same. It does, however, matter whether we have tuberculosis, syphilis, or chronic osteitis of purulent character with or without cholesteatoma. In discussing this subject of healing we ought to separate acute from chronic cases. In the last ten years I have employed a definite technic in a simple mastoid. With an uncomplicated case, in which no vital structures are exposed, such as the dura, the sinuses or the labyrinth, the wound is cleaned out completely—I am not particularly enthusiastic about polishing the bone by means of a burr, but after the cavity is clean, the wound is packed loosely with a strip of gauze, a rubber tube is inserted in the opening of the antrum and the drainage gauze and tube allowed to come out through a stab wound. The main incision is primarily closed. Just as soon as the discharge from the external auditory canal stops the drain material is removed and the cavity of the mastoid allowed to close just as any other. I am now speaking of uncomplicated cases, and I mean by that that the discharge and the hearing correspondingly improved. Just as long as there is discharge from the auditory canal I allow drainage from the wound. In the radical mastoid the cavity is never packed primarily, and only when that little space between the facial spur and the upper portion of the tegmen begins to narrow, then we sometimes pack lightly. We do not now make use of any skin grafting.

Dr. Wendell C. Phillips, New York: I am very often asked the question by students and other observers what I consider should be the extent of the mastoid operation, and my invariable reply is that there is no limit to the operation, except the limitations of the disease, and that ought to be the rule that is followed by every operator. Unfortunately, the disease so frequently does extend even beyond the confines of the temporal bone that men of limited experience do not completely excavate the diseased bone and thus bring about conditions that require a second mastoid operation. I have no doubt that Dr. Kerrison meant to imply that the extent of the operation is the limitation of the diseased area. I remove the entire area of diseased bone and all granulations excepting at one point, and that is in the tympanic portion of the mastoid antrum. I do think it is dangerous to do much curetting around here on account of the danger of disturbing the incus. Experience has proved that Nature will attend to the granulations in this area. I wish also to say that one of the points where men fail in the simple mastoid operation to get the diseased bone removed is in the region of the zygoma. In most of my operations I find it necessary to cut away the cortex over the zygoma as far forward as the middle line of the external auditory canal in order to get to the point of limitation of the disease. Regarding the healing process, I quite agree with Dr. Canfield that it is not so much the method we follow in the after-treatment as the method we follow in the operation itself. You can close the wound largely and drain it with a strip of gauze, and then you will have a sinus that will remain for six or eight weeks before it will heal; or you can leave it wide open and pack it.

I must take issue with Dr. Welty if I understood him correctly when he inferred that all postoperative temperatures are due to the fact that all the diseased bone has not been removed. We know that we have postoperative temperature where the bone has been completely removed, and there are various reasons for it. I wish to emphasize one more point in connection with the healing process. We all have delayed cases, in which the granulations do not come toward the center, where secretion persists, where there are flabby granulations, especially when an extensive operation has been done. Under these circumstances we must look elsewhere for the cause and we all know that there are underlying dyscrasias which may account for it. Here it is wise to call in the family physician and get him to examine the urine, the intestinal organs, and find out if there is not something wrong with the general physical condition of the patient, and it is marvelous what results we get and how rapidly they improve when these conditions are corrected. Sometimes as simple a remedy as bicarbonate of soda will have a marvelous effect on the healing process.

Dr. Philip D. Kerrison, New York: Dr. Beck's reference to bacteria is important—a point I did not take up. My paper was intended simply to give certain rational grounds for making a better attempt to utilize the soft parts than has been done in the past. My own experience is that this can be done with perfect safety, and with a quicker and a better cosmetic result. The soft parts play a more prominent part in the process of repair than aural surgeons generally have considered to be the fact.

RENAL FUNCTION IN NEPHRITIS *

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In the last few years a vast amount has been written on the subject of renal function and the various methods of its estimation. Reviews of the literature have appeared frequently.

The present paper is the report of a clinical study of renal function, involving 150 determinations by one of the newer methods — by an index of urea excretion which has been derived from Ambard's laws[1] by F. C. McLean.[2]

Ambard found that:

1. When the concentration of the urea in the urine is constant, the rate of excretion varies directly as the square of the concentration of urea in the blood. This law is expressed:

$$\frac{(\text{Urea in blood})^2}{\text{Rate of excretion}} = \text{Constant}$$

2. When the concentration of urea in the blood is the same, the rate of excretion varies inversely as the square root of the concentration in the urine.

$$\frac{\text{Rate of excretion I}}{\text{Rate of excretion II}} = \frac{\sqrt{\text{Concentration II}}}{\sqrt{\text{Concentration I}}}$$

$$\text{or, Rate I }\sqrt{\text{Concentration I}} = \text{Rate II }\sqrt{\text{Concentration II}}$$

Introducing this factor into the first law we have:

$$\frac{\text{Urea in blood}}{\sqrt{\text{Rate of excretion }\sqrt{\text{Concentration in urine}}}} = \text{Constant}$$

3. Other factors remaining constant, the rate of excretion varies directly with the weight of the individual.

$$\frac{\text{Rate}}{\text{Weight}} = \text{Constant.}$$

Combining this with the previous formula, we have:

$$\frac{\text{Concentration of urea in blood}}{\sqrt{\frac{\text{Rate}}{\text{Weight}}\ \sqrt{\text{Concentration in urine}}}} = \text{Constant}$$

This formula expresses all of Ambard's laws in the simplest form. In order to standardize the formula for use in human subjects, Ambard expresses it as follows:

$$\frac{\text{Ur}}{\sqrt{\text{D} \times \frac{70}{\text{Wt}}\sqrt{\frac{\text{C}}{25}}}} = \text{Constant } (\mathbf{k})$$

Ur = Grams of urea per liter of blood.
D = Grams of urea excreted per twenty-four hours.
Wt = Weight of individual in kilograms.
C = Grams of urea per liter of urine.

This formula is known as Ambard's coefficient, and the value of K usually found in the normal human subject is 0.08 (McLean). The introduction of a standard weight of 70 kg., a standard concentration of 25 gm. per liter of urine and the expression of excretion as the rate per twenty-four hours are purely arbitrary, and do not affect the general relationship between the variable factors. When these arbitrary factors are kept constant, they, in conjunction with the constant relationship between the four variable factors, tend to keep K constant, and the actual numerical value of K is determined by these arbitrary additions to the formula.

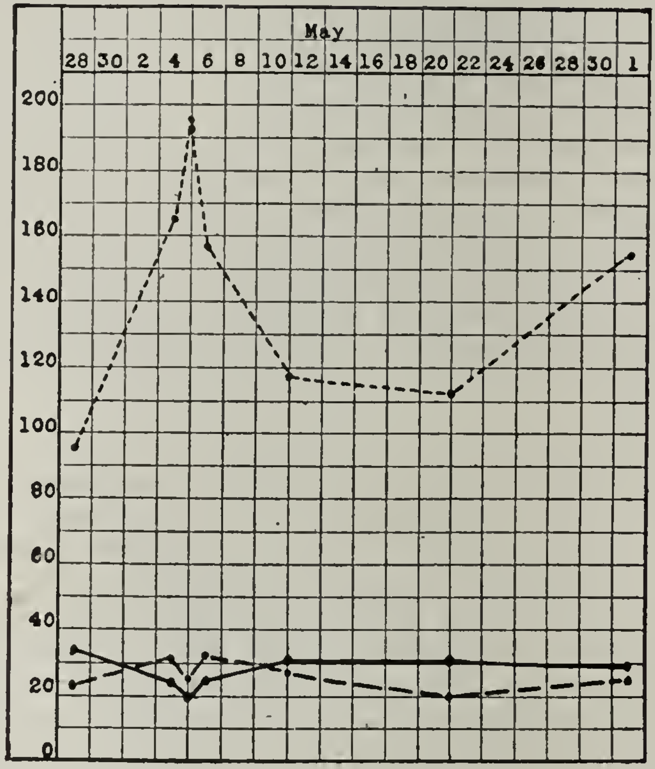

Chart 1.—Normal: solid line, milligrams of urea per hundred c.c. of blood; broken line, grams of urea excreted per twenty-four hours; dotted line, index of urea excretion. This chart shows the variations as found by McLean in a healthy adult.

Index of Urea Excretion.—To obviate the necessity of an arbitrary scale for the interpretation of Ambard's coefficient, McLean[2] has adapted a formula from Ambard's laws, based on a scale of 100 so that the rate of urea excretion is given in per cent. of the normal, an index of 100 corresponding to a value of 0.08 for Ambard's coefficient.

The derivation of the index is as follows:

$$\text{Index} = \frac{\text{Rate of excretion}}{\text{Standard normal rate}} \times 100$$

From Ambard's laws:

$$1.\quad \text{K} = \frac{\text{Ur}}{\sqrt{\text{Rate}}} \qquad \therefore\ \text{Rate} = \left[\frac{\text{Ur}}{0.08}\right]^2$$

$$2.\quad 0.08 = \frac{\text{Ur}}{\sqrt{\text{Normal rate}}} \qquad \therefore\ \text{Normal rate} = \left[\frac{\text{Ur}}{0.08}\right]^2$$

$$3.\quad \frac{\text{Rate}}{\text{Normal rate}} = \frac{\left[\frac{\text{Ur}}{\text{K}}\right]^2}{\left[\frac{\text{Ur}}{0.08}\right]^2} = \left[\frac{0.08}{\text{K}}\right]^2$$

$$4.\quad \text{Index} = 100 \times \left[\frac{0.08}{\text{K}}\right]^2 = \left[\frac{0.08}{\text{K}}\right]^2$$

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* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

[1] Ambard, L.: Rapports entre le taux de l'urée dans le sang et l'élimination de l'urée dans l'urine, Compt. rend. Soc. de biol., Nov. 19, 1910, p. 411; Rapports de la quantité et du taux de l'urée dans l'urine, la concentration de l'urée du sang étant constant, ibid., Dec. 3, 1910, p. 506; Physiologie normale et pathologie des reins, Paris, 1914.

[2] McLean and Selling: Urea and Total Non-Protein Nitrogen in Normal Human Blood: Relation of Their Concentration to Rate of Elimination, Jour. Biol. Chem., 1914, **19**, 31. McLean, F. C.: The Numerical Laws Governing the Rate of Excretion of Urea and Chlorides in Man, Jour. Exper. Med., 1915, **22**, 212, 366; Clinical Determination of Renal Function by an Index of Urea Excretion, The Journal A. M. A., Feb. 5, 1916, p. 415.

Substituting for K (Ambard's coefficient) and simplifying,

$$\text{Index} = \frac{\text{Gm. urea per 24 hrs.} \ \sqrt{\text{Gm. urea per liter urine}} \times 8.96}{\text{Wt. in kg.} \times (\text{Gm. urea per liter of blood})^2}$$

When K = 0.08 the standard normal. Index = 100.

Methods.—Specimens: The methods recommended by McLean[2] have been used with slight modification. The observations may be made at any time, since the application of the laws is independent of the nitrogen intake. However, it has been considered preferable as a routine to make the observations in the forenoon, no food or water being taken during the period.

The patient is given 300 c.c. of water to drink. One half hour later the bladder is emptied, by catheter if necessary, and the time noted. Then after one or two hours the bladder is again emptied, the time carefully noted, and the amount of urine measured to within 1 c.c. The shorter period is used when the patient is secreting a fairly large amount of urine. At about the middle of the period, 10 c.c. of blood are drawn from a vein into a dry tube containing about 1 grain of potassium oxalate, with which it is mixed to prevent clotting.

Analysis: The urease method introduced by Marshall[3] has been used. This depends on the breaking down of urea into ammonia and carbon dioxid by the specific enzyme found in soy bean and the subsequent determination of the ammonia. The permanent preparation of urease described by Van Slyke and Cullen[4] has been used throughout. Three analyses were made in each case: blood urea, urine urea and urine ammonia. The urine ammonia is determined in order to correct the urea figure, for preformed ammonia, which is also determined in the urea method.

Calculation of the Index: From the results of the determinations the following calculations are made:

1. Grams of urea excreted per 24 hours = D.
2. Grams of urea per liter of urine = C.
3. Grams of urea per liter of blood = Ur.

These values in the body weight in kilos are substituted in the formula for the index as given above, and the value of the index calculated by aid of a slide rule. With the modified slide rule described by McLean it may easily be calculated in fifteen seconds.

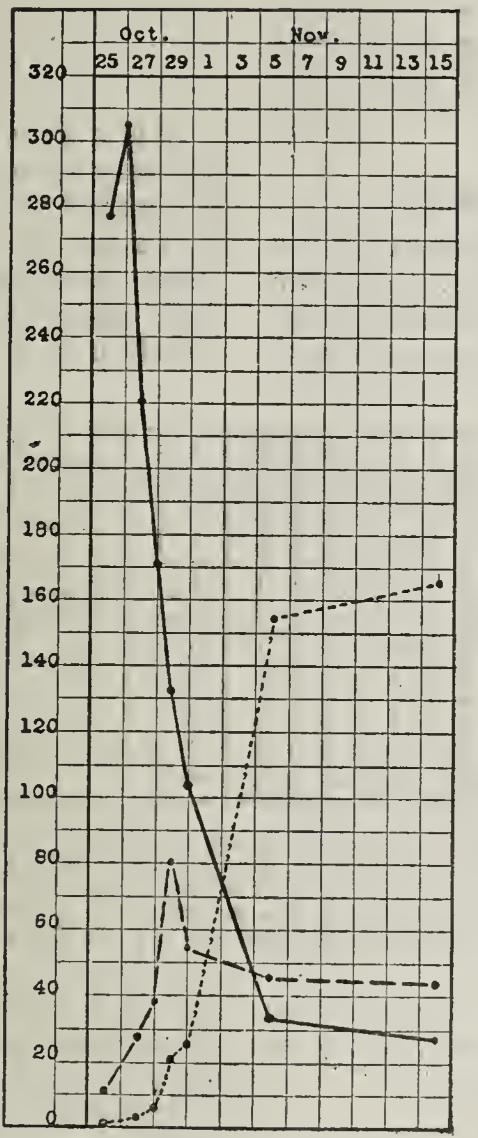

Chart 2.—Uremia: solid line, milligrams of urea per hundred c.c. of blood; broken line, grams of urea excreted per twenty-four hours; dotted line, index of urea excretion.

Nitrogen Intake.—It has been clearly demonstrated[2] that while the nitrogen intake has a direct and marked influence on the concentration of blood urea, it has no effect on the index of urea excretion.

The character of the diet in this series has been included in the tables after each observation. The diet noted as "nephritic" is one which is low in protein and sodium chlorid.

UREA EXCRETION

Urea Excretion in Chronic Nephritis With Hypertension.—Series 1 contains seventy-seven observations made in cases of chronic nephritis with hypertension. It is to be noted that the blood urea ranges from 0.2 to 3.98 gm. per liter. In 62 per cent. of the patients the blood urea is within normal limits (from 0.2 to 0.5 gm.), yet every observation gave an index of urea excretion below normal. The excretion of phenolsulphonephthalein was low or delayed in nearly every instance in which the test was made.

This series[2] again demonstrates the fact that except in extreme conditions the blood urea figure alone does not show the degree of renal impairment; in fact, it is deceptive, as in over 60 per cent. of the cases in Series 1 the blood urea figure is within normal limits. In spite of this large percentage of patients with normal concentration of blood urea, we know that every one in the series had a definite and permanent impairment of renal function. It is only in the individuals with marked renal impairment, who have a low index of urea excretion and a low phenolsulphonephthalein output, that the blood urea figure rises above the upper limit of normal.

It is significant that 100 per cent. of the patients with chronic nephritis and hypertension had an index of urea excretion below normal.

Urea Excretion in Chronic Nephritis With Normal Blood Pressure.—Series 2 contains eighteen observations made on patients with chronic nephritis and normal blood pressure. Of the eight with normal concentration of blood urea, two had a normal index of urea excretion (above 80), four had a slightly lowered (from 50 to 80) and two had an index below 50, which indicates a considerable impairment of renal function. All cases with a blood urea concentration above normal had a low index of urea excretion, that is, one indicating a marked degree of renal impairment. This series is in sharp contrast to the one of chronic nephritis with hypertension in which all cases, regardless of the blood urea figure, have an index of urea excretion below normal. The individuals in this series with normal blood urea tend to have a normal or moderately reduced index of urea excretion, whereas the ones with blood urea concentration above normal all have a low index of urea excretion.

Urea Excretion in a Series of Miscellaneous Cases.—Series 3 contains nineteen observations made on eighteen miscellaneous hospital patients. The cases of plumbism, pernicious anemia and diabetes mellitus had an index of urea excretion below 50. One case of acute plumbism shows the marked reduction of blood urea, from 1.3 to 0.74 gm. per liter, which occurred during the course of twenty-three days of treatment. A corresponding rise (from 1 to 12) is noted in the index of urea excretion.

Urea Excretion in Uremia.—Chart 2 gives in detail a case of uremia in which the patient recovered.

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[3] Marshall, E. K., Jr.: A Rapid Clinical Method for the Estimation of Urea in Urine, Jour. Biol. Chem., 1913, **14**, 283; A New Method for the Determination of Urea in Blood, ibid., 1913, **15**, 487; The Determination of Urea in Urine, ibid., 1913, **15**, 495.

[4] Van Slyke, D. D., and Cullen, G. E.: A Permanent Preparation of Urease and Its Use in the Determination of Urea, Jour. Biol. Chem., 1914, **19**, 211; id., The Journal A. M. A., May 16, 1914, p. 1558.

H. S., man, aged 32, whose case was diagnosed as chronic gonorrhea, multiple strictures, retention of urine, uremia, gluteal abscesses (colon), and colon bacillus septicemia, came under observation Oct. 25, 1915, at which time the pulse was 120, temperature 101 F. and respirations 40 per minute. He was cyanotic and irrational and had retention of urine. The retention was relieved, but the patient continued to grow worse during the day, and 500 c.c. of blood were withdrawn by venesection. The following day (October 26) the patient's condition was apparently the same, although the blood urea concentration was higher. October 27 there was a definite improvement in the general condition, and the blood urea had fallen to 2.21 gm. per liter. From this time on the blood urea continued to fall. The urea excretion was at no time low, being at the rate of 11 gm. per twenty-four hours, when the patient came under observation. It rose to 80 gm., October 29, and then gradually returned to normal. The blood urea concentration diminished rapidly after October 26, and the index of urea excretion rose to normal. There was a much greater improvement in the general condition of the patient during the time the index of urea excretion increased from 0.5 to 26 than in the time it changed from 26 to 166. The amount of urine voided was at all times large, varying from 1,650 to 4,600 c.c. in twenty-four hours.

UREA INDEX AND PHENOLSULPHONEPHTHALEIN

Although the question as to the agreement of the phenolsulphonephthalein test and the index of urea excretion does not come within the scope of this paper, it is interesting to note that in general the two tests give parallel results. There are striking instances, however, in which the tests do not agree. A case illustrating this is seen in Chart 3. Clinically this is a case of chronic diffuse nephritis with hypertension. The presence of marked impairment of renal function was demonstrated by the presence of a high blood urea concentration and a low index of urea excretion, and the fact that improvement under prolonged hospital treatment was slight and transitory. The phenolsulphonephthalein excretion for two hours was 55 per cent. While 55 per cent. may be considered a little low, it does not indicate the degree of renal impairment that actually existed.

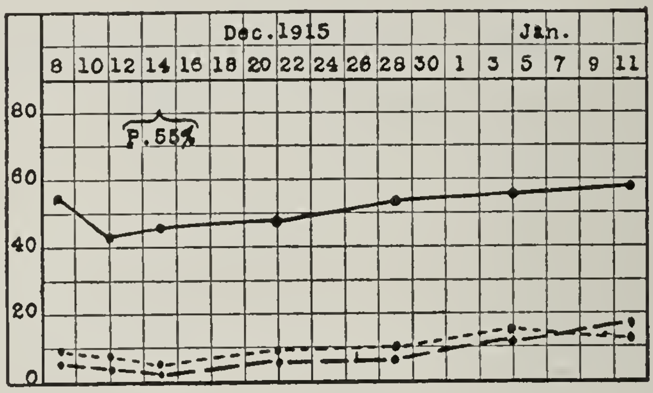

Chart 3.—Chronic diffuse nephritis: solid line, milligrams of urea per hundred c.c. of blood; broken line, grams of urea excreted per twenty-four hours; dotted line, index of urea excretion; P, percentage of phenolsulphonephthalein excreted in two hours.

CONCLUSIONS

1. The index of urea excretion gives much more information as to the degree of renal impairment and the prognosis, than does the blood urea determination alone.

2. All cases of chronic nephritis with hypertension here studied have impairment of renal function sufficient to alter definitely the relation that normally exists between the urea concentration of the blood and the rate of urea excretion, that is, have a low index of urea excretion.

3. The majority of these cases of chronic nephritis with hypertension have a blood urea concentration within normal limits (from 0.2 to 0.5 gm. per liter).

4. Chronic nephritis with normal blood pressure may or may not have sufficient renal impairment to alter the relation which normally exists between the blood urea concentration and the urea excretion, that is, it may have a normal or a low index of urea excretion.

5. In general the phenolsulphonephthalein test parallels the index of urea excretion; but there are marked exceptions to this rule in which the phenolsulphonephthalein test apparently gives an erroneous idea of the degree of renal impairment.

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OBSERVATIONS ON IMMUNITY OF MONKEYS TO EXPERIMENTAL POLIOMYELITIS *

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It is a generally accepted fact that a monkey, after recovery from an attack of experimental poliomyelitis, is immune to subsequent injection with virulent virus. It is a question whether an inoculation which does not cause paralysis confers immunity. Römer believes that immunity follows unsuccessful intracerebral injection in some cases. But there are in the literature many instances in which experimental poliomyelitis has been produced in monkeys which had shown no evidence of infection from a previous inoculation.

We wish to record an experiment which appears to indicate that immunity was conferred on three monkeys by inoculations which were not followed by obvious evidence of infection. One of the apparently immune animals had previously received an intracerebral injection of a culture of pleomorphic streptococci, the second had received emulsion of central nervous system of animals paralyzed by cultures of streptococci, and the third had received virus in the usual way.

Material used for test inoculation.—A virus which had been passed successively through four monkeys was employed. A 5 per cent. emulsion in physiologic sodium chlorid solution of the brain and cord of the fourth animal (Monkey 26) was made immediately after necropsy, November 3. This was ground thoroughly with sterile quartz sand, and shaken for twenty minutes. Eight rhesus monkeys were injected in the left frontal lobe with this emulsion. Two of these were controls; five had received previous inoculations with virus, filtrate of virus, or culture; and the eighth had received a mixture of the test virus and blood serum from monkeys suspected of being immune. Seven of the monkeys which were of approximately the same weight were given 1 c.c. of the test virus; and the eighth, which was a large, old animal, was given 3 c.c.

The accompanying table records briefly the results of this experiment. For details of the source of material used in the previous injections, reference should be made to the protocols.

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* From the Mayo Foundation.

PROTOCOLS

Experiment 1.—*Control.*—Monkey 33, *Macacus rhesus,* 2.6 kg.

Nov. 3, 1916: Etherized; 1 c.c. of Virus 751^5 injected into left frontal lobe.

November 10 (seventh day): Tremor of arms and legs, rapidly followed by flaccid paralysis of left arm and marked weakness of muscles of the right arm, back and legs.

November 11: Prostrate. Killed with ether. Cyst size of pea, filled with clear fluid, was found at point of inoculation. Microscopic section of brain and cord showed marked typical lesions of experimental poliomyelitis.

Experiment 2.—*Control.*—Monkey 34, *M. rhesus,* 7.3 kg.

November 3: Three c.c. of Virus 751^5 injected into the left frontal lobe. Immediately after injection there was spastic weakness of the right arm.

November 7: Several convulsions. Right arm remained almost useless, and there was slight weakness of right face and leg. Acted sick and ate little.

November 10: Better; took food well and was active; the right arm still weak.

November 13 (tenth day): Irritable. Coarse tremor of left arm.

November 15: General tremor. Legs weak; could scarcely walk. Handling legs appeared to cause pain. Knee kicks exaggerated.

November 16: Legs flaccid; reflexes abolished. Left arm tremulous and weak; back muscles weak. Difficulty in swallowing. Killed with ether. A cyst about the size of an almond filled with clear, deep yellow fluid (old blood) was found at point of injection. Microscopic sections of brain and cord showed typical lesions of experimental poliomyelitis.

Experiment 3.—*Attempt to destroy activity of virus by mixture with serum of monkeys thought to be immune.*—Monkey 37, *M. rhesus,* 2.8 kg.

November 3: Virus-serum mixture made as follows: Blood was removed from the internal saphenous vein of Monkeys 19 and 21 (which see) previous to their inoculation with the test virus. The serums were mixed so that 1 c.c. contained approximately three parts from Monkey 19 and seven parts from Monkey 21. One c.c. of the serum mixture was added to 1 c.c. of the test virus. The mixture was filtered through paper, kept at a temperature of 35 C. for two and one-half hours, and then in the ice box for fifteen hours.

November 4: Etherized. Two c.c. of virus-serum mixture (containing 1 c.c. of Virus 751^5) injected into left frontal lobe.

November 19 (fifteenth day): Very excitable. Head inclined to the right; constant coarse tremor of right neck muscles.

November 20: Tremor has extended to muscles of right arm. Knee jerks brisk.

November 21: Flaccid paralysis of legs, back and right arm. Left arm weak and tremulous. Killed with ether. Small cyst containing clear fluid at the point of inoculation. Microscopic sections showed characteristic lesions of experimental poliomyelitis.

Experiment 4.—*A monkey previously injected intravenously with culture from pus about the teeth of a monkey which did not have pathologic lesions of poliomyelitis, was not immune to test virus.*—Monkey 21, *M. rhesus,* 2.5 kg.

Previous Inoculation, Sept. 16, 1916.—Injected intravenously with 4 c.c. of a suspension in physiologic sodium chlorid solution of the centrifugal growth from 60 c.c. of ascites dextrose broth culture of pus around the teeth of Monkey 18, Case 756. This organism appeared in smears from broth as a somewhat elongated diplococcus, occasionally in short chains; and on blood agar plate as small dry green-producing colonies. (Monkey 18 was a domesticated monkey with marked pyorrhea alveolaris; he became spontaneously paralyzed in the animal room. When muscle power began to come back he was killed with ether. Microscopic sections did not show lesions of poliomyelitis.)

September 17: Sick and irritable.

September 21: Appeared well. Etherized. Injected into frontal lobe 1.3 c.c. of physiologic sodium chlorid solution containing the growth from 20 c.c. of ascites dextrose broth culture 756.3 (Monkey 18, teeth). This was a second subculture of the culture injected September 16.

November 2: Had remained well. Blood for serum removed from saphenous vein (compare Monkey 37).

November 3: Etherized. One c.c. of Virus 751^5 injected into left frontal lobe.

November 19 (sixteenth day): Irritable and tremulous, with weakness of legs.

November 20: Flaccid paralysis of both legs. Wrist drop on right.

November 26: Right arm and back muscles gone. Left arm weak and ataxic, but could be used to take food. Good appetite.

December 5: Improving; able to sit up. Arms were stronger but markedly ataxic. Legs could be moved a little.

December 15: Got about quite well. Legs paretic and began to show contractures.

Experiment 5.—*A monkey, injected intracerebrally with filtrate of brain and cord of a monkey which did not have pathologic lesions of poliomyelitis, was not immune to test virus.*—Monkey 24, *M. rhesus,* 2.3 kg.

Previous Inoculation, October 5.—Etherized. One and five-tenths c.c. of Berkefeld N filtrate of Virus 737^2 (glycerinated brain and cord of Monkey 16) injected into left frontal lobe. (Monkey 16 was inoculated with a filtrate of mixed human and monkey virus and developed muscular weakness; but microscopic sections did not give the picture of experimental poliomyelitis.)

November 3: Had remained well. Etherized. One c.c. of Virus 751^5 injected into left frontal lobe.

November 10 (seventh day): Irritable, with rapid tremor of neck and shoulder muscles. Internal squint, apparently due to weakness of right sixth nerve. General muscular weakness.

November 13: Markedly ataxic. Left arm awkward.

November 17: Less tremor. Both arms weak, especially the right, which showed complete wrist drop. Right leg tired quickly. No knee jerk on right. Strabismus less marked. Photophobia.

November 26: Improving. Shaky and weak; took food well.

December 15: Very active; showed only some residual weakness of right arm; slight internal strabismus and photophobia.

Experiment 6.—*Example of apparent immunity conferred by inoculation with filtrate and virus seven weeks previously, without evidence of infection.*—Monkey 17, *M. rhesus,* 2.5 kg.

Previous Inoculation, September 13.—Etherized. Injected into frontal lobe 1.5 c.c. of Virus 737 (compare Monkey 24) which had been passed through a dense porcelain filter.

September 19: Had remained well. Etherized. Seventy-five hundredths c.c. of fresh human Virus 729 injected into frontal lobe.

November 3: Had remained well. Etherized. One c.c. of Virus 751^5 injected into left frontal lobe.

RESULTS OF TEST INJECTIONS OF A VIRULENT VIRUS

	1 Monkey 33 M. rhesus 2.6 kg. (Control)	2 Monkey 34 M. rhesus 7.3 kg. (Control)	3 Monkey 37 M. rhesus 2.8 kg.	4 Monkey 21 M. rhesus 2.3 kg.	5 Monkey 24 M. rhesus 2.3 kg.	6 Monkey 17 M. rhesus 2.5 kg.	7 Monkey 14 M. rhesus 2.1 kg.	8 Monkey 19 M. rhesus 2.8 kg.
Previous injection				Sept. 16 and 21, growth from 60 c.c. and 20 c.c. Broth Cult. 756 (Monkey 18, teeth) intravenously (not polio.)	Oct. 5, 1.5 c.c. Berk. N filt. Virus 737^2 (Monkey 16); intracerebrally (not poliomyelitis)	Sept. 13, 1.5 c.c. porcelain filt. Virus 737 intrac.; Sept. 19, 0.75 c.c. Virus 729 intracer.	Sept. 11 and 20, intrac. injec. filt. and Virus 714^5 (Monkeys 10 and 12, paralyzed with cultures)	Sept. 16, 1.5 c.c. Cultures 707.2 intracerebrally
Result of previous injection				Sept. 17, sick; well thereafter	Remained well	Remained well	Sept. 18, Rt. arm awkward; well thereafter	Sept. 16-18, sick; well thereafter
Virus 751^5 (Monkey 26)	Nov. 3, 1 c.c intracerebrally	Nov. 3, 3 c.c. intracerebrally	Nov. 4, 1 c.c Virus + 1 c.c. serum, Monkeys 19 and 21 (incubated 2½ hrs.) intracerebrally	Nov. 3, 1 c.c. intracerebrally	Nov. 3, 1 c.c. intracerebrally	Nov. 3, 1 c.c. intracerebrally	Nov. 3, 1 c.c. intracerebrally	Nov. 3, 1 c.c. intracerebrally
Result	Paralysis 7th day; killed with ether 8th day; typical lesions	Tremor 10th day; paralysis 13th day; killed with ether 14th day; typical lesions	Excitement and tremor 15th day; paralysis 17th day; killed with ether 17th day; typical lesions	Tremor 16th day; paraly. 17th day; prostrate 23d day; improved 32d day; weak legs with contractures 45th day.	Ataxia, squint and paresis 7th day; paralysis 14th day; improved 23rd day; weak arm and squint 45th day	No symptoms; well on 45th day	No symptoms; well on 45th day	No symptoms; well on 45th day

December 15: Had continued to be perfectly normal.

Experiment 7.—*Example of apparent immunity conferred by inoculation with virus from two monkeys which were paralyzed with virus and culture from a paralyzed rabbit.* Monkey 14, *M. rhesus*, 2.1 kg.

Previous Inoculation, September 11.—Etherized. One and five-tenths c.c. of a Berkefeld filtrate of fresh emulsion of brain of Monkey 19 (see below) injected into frontal lobe.

September 18: Right arm used rather awkwardly. No other symptoms.

September 20: Well; no weakness of right arm detected. Etherized. One c.c. of emulsion of glycerinated brain and cord of Monkeys 10 and 12 injected into frontal lobe. (Monkey 10 received an intracerebral injection of an emulsion of brain of Rabbit 1017; Monkey 12[1] was twice injected intravenously with a pure culture of streptococci grown from the brain of Rabbit 1017. This was the third of a series of rabbits in which a strain of streptococcus recovered from a human poliomyelitis brain caused flaccid paralysis. Both monkeys came down with flaccid paralysis, and microscopic sections showed marked cord lesions, without, however, the perivascular infiltration which is considered typical of experimental poliomyelitis in monkeys.)

November 3: Had remained well. Etherized. One c.c. of Virus 751[5] injected into left frontal lobe.

November 17: No symptoms.

December 15: Had remained well.

Experiment 8.—*Example of apparent immunity conferred by intracerebral injection of a culture of streptococci isolated from a human cord.*—Monkey 19, *M. rhesus*, 2.8 kg.

Previous Inoculation, September 16.—Etherized. One and five-tenths c.c. of suspension of Culture 707.2 injected into frontal lobe. (This strain came from a single colony of pleomorphic streptococci 2 cm. from the top of a four-day ascites-dextrose agar shake culture of an emulsion of fresh human poliomyelitis spinal cord. This colony was subcultured in tubes and bottles of ascites fluid plus sterile rabbit kidney, and ascites broth plus sterile kidney. September 16, these subcultures had been growing twenty-three days, and smears showed an extremely pleomorphic organism; lanceolate diplococci, round cocci in short chains, flat-sided meningococcus-like diplococci, and very small globoid chains. Chains could be found in which each of these types were present. On aerobic blood agar plate these cultures grew pure as fine dry green-producing colonies.)

September 17: Sick since injection; quiet, would not eat. No muscular weakness.

September 18: Better; began to eat. Arms and legs strong, reflexes normal.

October 2: Had remained well.

November 2: Had remained well. Blood removed from saphenous vein.

November 3: Etherized. One c.c. of Virus 751[5] injected into left frontal lobe.

December 15: Daily observations had shown no abnormality.

COMMENT

Three unused and five used monkeys were injected with a monkey virus. The test virus had been carried through monkeys to a stage of virulence at which it should, according to the experience of investigators, cause experimental poliomyelitis in all nonimmune monkeys injected. The two control monkeys became severely paralyzed and were killed. The third (Monkey 37) also became a good control, as the experiment proved that the animal from which 70 per cent. of the serum was obtained (Monkey 21) was not an immune monkey.

Monkeys 21 and 24, which came down with typical poliomyelitis symptoms and recovered, are of considerable interest in that they show that inoculation with cultures or filtrate of virus from nonpoliomyelitis sources, as determined by pathologic findings, does not confer immunity to a virulent virus.

There remain the three monkeys which showed no symptoms following the test injection and were normal forty-five days after. The question whether or not these animals showed any symptoms of infection after their previous inoculation is difficult to determine. Monkey 14 had a definitely clumsy right arm for about twenty-four hours at a period seven days after his first injection; but no weakness could be made out. His awkwardness rapidly disappeared, and he showed none of the usual symptoms of irritability and tremor. No symptoms were observed in the other two monkeys.

The important point of the experiment is that two of the three monkeys which were not affected by the test virus had previously been injected with material obtained from cultures of human poliomyelitis nervous tissue. Monkey 14 received filtrate and emulsion of brain and cord of monkeys which had been paralyzed with rabbit virus and culture; the successive passages of this strain through three rabbits in the form of large lanceolate diplococci grown aerobically would seem to exclude any possibility that the small anaerobic organism described by Flexner and Noguchi could have been carried over. Similarly, the culture used in Monkey 19 came from a single colony near the top of an agar shake culture. Flexner and Noguchi[2] state that they have never obtained from poliomyelitic material in solid medium an initial growth of the small organism, aside from contaminations.

We wish to record these observations as suggestive of the importance of immunologic studies with the pleomorphic streptococcus which has been isolated from the central nervous system in cases of human and experimental poliomyelitis.

END-RESULTS OF THE TREATMENT OF TUBERCULOSIS OF THE SPINE, HIP, KNEE AND ANKLE JOINTS

FROM THE RECORDS OF THE NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL [*]

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NEW YORK

During the past twenty years treatment of joint tuberculosis at the New York Orthopedic Dispensary and Hospital has been for the most part conservative, the main object being to procure as near as possible immobilization of the diseased joints.

Weight bearing has been considered advantageous when it did not interfere with fixation, as in the knee and ankle joints, but of considerable disadvantage when it did interfere with fixation, as in the hip and spine.

Ankle joint disease has been treated by fixation with a stiff ankle brace having a molded foot piece which fits inside the shoe, plaster having been used as temporary dressing only. The use of crutches has been necessary at times when the disease has been too acute to permit of weight-bearing.

In the treatment of knee joint disease a stiff leg support has been used; this is fastened to the shoe and extends to the groin, with a leather backing extending from the thigh band to the calf band, thus forming a trough in which the leg is firmly held by a muslin bandage, extending from the middle of the calf to the top of the brace. The bandage is changed daily, thus assuring constant fixation, and ready accessibility to inspection by the surgeon. The only exception to this rule has been in those cases with marked flexion deformity. This has been reduced with a plaster cast supplemented by traction, the cast being changed weekly.

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[1] Rosenow, E. C.; Towne, E. B., and Wheeler, G. W.: The Etiology of Epidemic Poliomyelitis, Preliminary Note, The Journal A. M. A., Oct. 21, 1916, p. 1202.

[2] Flexner, S., and Noguchi, H.: Experiments on the Cultivation of the Micro-Organism Causing Epidemic Poliomyelitis, Jour. Exper. Med., 1913, **18**, 465.

[*] Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

TABLE 1.—ANKLE JOINT DISEASE

Total number of cases of ankle joint disease treated	50
Number of boys treated	28
Number of girls treated	22
Number of cases with right ankle involved	31
Number of cases with left ankle involved	19
Average age on admission, years	5½
Duration of disease on admission, months	7½
Average duration of treatment, years	4⅙
Number patients cured	23
Number under treatment at present time	0
Number died	6
Number could not be located	21
Of the patients cured, number with free motion with no deformity of foot	15
Number with limited motion with no deformity of foot	6
Number with limited motion and deformity of foot	2

The management of hip joint disease brings other factors into consideration. Owing to the conformation of this joint, it is difficult under any circumstances to eliminate all motion. This is at once rendered impossible when weight-bearing is allowed. The Taylor hip splint has been used almost exclusively for this condition, since it eliminates weight-bearing by its crutch action. While the traction on the thigh supplied by this apparatus does not separate the joint surfaces, as was formerly supposed, it does render valuable aid to joint immobilization.

Up to the year of 1910 the Taylor spinal assistant was used entirely in the treatment of Pott's disease. It is easy to apply, can be accurately adjusted, is not liable to cause excoriation, is sanitary and renders the spine constantly accessible for inspection by the surgeon. In spite of the careful treatment given each patient, it has been impossible to prevent increase of deformity in a large percentage of cases. This is especially true when the disease involves the dorsal region, because owing to the movement of the thorax during respiration, no form of apparatus yet devised is capable of accurately fixing this area. It is true that in some cases of cervical and lumbar disease deformity can be prevented by mechanical apparatus.

TABLE 2.—KNEE JOINT DISEASE

Total number of cases of knee joint disease treated	156
Number of boys treated	87
Number of girls treated	69
Number of cases with right knee involved	83
Number of cases with left knee involved	73
Average age on admission, years	6½
Average duration of disease on admission, years	2
Average duration of treatment, years	7
Number patients cured	106
Number under treatment at present time	7
Number died	7
Number could not be located	43
Of the patients cured, number with lengthening of limb	10
Number with no change in length of limb	73
Number with less than 1 inch shortening	7
Number with less than 2 inches shortening	14
Number with more than 2 inches shortening	2
Number with flexion deformity without ankylosis	5
Number with flexion deformity with ankylosis	13
Number with ankylosis without deformity	13
Number with fifteen to ninety degrees flexion from full extension	36
Number with more than 90 degrees flexion from full extension	39

Because of the inability accurately to fix the spine, and thus prevent deformity, it occurred to Dr. Hibbs that it might be possible by operative procedure to produce a fusion over the posterior aspect of the diseased and adjacent vertebrae, thus eliminating motion, limiting deformity, and giving nature a better opportunity of combating the disease.

With this end in view, the first osteoplastic operation on the spine was performed Jan. 9, 1911. The results obtained in those patients operated on in the early part of 1911 were so gratifying that for the past four years operation has been advised as a routine in all cases except those in which complication rendered the prognosis hopeless. This treatment has been supplemented by a spinal assistant worn from six to eighteen months after operation. Operative treatment is particularly advantageous in early cases, as it offers a means of limiting deformity and shortening duration of treatment.

The accompanying tables report only those cases of joint tuberculosis in which the patients were under 16 years of age at the time treatment was begun, who came to the dispensary between the years of 1895 and 1910, and whose treatment was continued two or more years.

TABLE 3.—HIP JOINT DISEASE

Total number of cases of hip joint disease treated	461
Number of boys treated	236
Number of girls treated	225
Number of cases with right hip involved	242
Number of cases with left hip involved	219
Average duration of disease on admission, years	2
Average age on admission, years	7
Average duration of treatment, years	7½
Number patients cured	171
Number under treatment at present time	44
Number died	60
Number could not be located	215
Of cases cured, number with less than 1 inch shortening	40
Number with less than 2 inches shortening	59
Number with less than 3 inches shortening	60
Number with more than 3 inches shortening	21
Number with adduction and flexion deformity combined	36
Number with flexion without adduction deformity	17
Number with bony ankylosis	13
Number with fibrous ankylosis	49
Number with no destruction of femoral head (Roentgen examination)	32
Number with partial destruction of femoral head (Roentgen examination)	86
Number with complete destruction of femoral head (Roentgen examination)	88
Number with partial acetabular destruction but no evidence of disease of femoral head (Roentgen examination)	6
Number with dislocation (Roentgen examination)	3
Number with thigh flexion from 15 to 90 degrees	73
Number with more than 90 degrees thigh flexion	45
Number with perfect function without deformity	35
Number with relaxation of knee joint	20

CONCLUSIONS

From the foregoing statistics it would seem that the following conclusions are justified:

1. The regions most frequently involved in joint tuberculosis in order of frequency are the spine, hip joint, knee joint and ankle joint.

2. The disease is more frequent in boys than in girls.

TABLE 4.—POTT'S DISEASE

Total number of cases of Pott's disease treated	517
Number of boys treated	284
Number of girls treated	233
Location of disease: Cervical	47
Upper dorsal	71
Middorsal	118
Lower dorsal	105
Dorsal-lumbar	100
Lumbar	76
Average age on admission, years	5⅘
Average duration of disease on admission, years	1½
Average duration of treatment, years	7½
Number patients cured	125
Number under treatment at present time	7
Number died	112
Number could not be located	227
Of the patients cured, number with marked increase in deformity	50
Number with slight increase in deformity	42
Number with no increase in deformity	28
Number with no deformity	5
Number of patients operated on	48
Number of patients not operated on	77
Number of cases in which deformity increased, following operation	10
Number of cases in which deformity did not increase after operation	38

3. The disease affects the joints of the right side more frequently than those of the left.

4. The average duration of treatment of all joint disease patients was six and one-half years.

5. Joint tuberculosis is usually well advanced before diagnosis is made, the average duration of the disease on admission being one and one-half years.

6. The average age of patients when admitted for treatment was six and one-fourth years.

7. Ankle joint disease can be cured in most instances with little or no deformity.

8. Of the knee joint cases seen, 15 per cent. had more than 1 inch shortening; 25 per cent. had ankylosis; 75 per cent. had more than 15 degrees motion from full extension; 38 per cent. had more than 90 degrees motion from full extension.

9. Of the hip joint cases cured, 34 per cent. had less than 1 inch shortening; 24 per cent. had varying degrees of flexion and adduction deformity; 28 per cent. had bony or fibrous ankylosis; 55 per cent. had none or only partial destruction of the heads of the femora; 55 per cent. had more than 15 degrees flexion from full extension; 9 per cent. had some degrees of relaxation of knee joint.

10. In Pott's disease the dorsal region is much more frequently involved than all the other regions combined; 73 per cent. of all cases of Pott's disease had perceptible increase of deformity during the course of treatment.

Of the patients operated on, 20 per cent. had some increase in deformity following the operation, but in no case was there actual increase in deformity of the area operated on.

104 East Fortieth Street—2 West Sixty-Fifth Street.

ABSTRACT OF DISCUSSION

Dr. John Ridlon, Chicago: The results of this work are remarkably good. Of the twenty-three cases of ankle joint disease cured, fifteen had free motion, with no deformity of the foot. It has been a belief of mine for many years that ankle-joint disease is the most favorable kind of chronic tuberculous joint disease we have to handle. I have seen a tuberculous ankle joint go through several years of disease, have abscesses and sinuses develop, and go on to spontaneous opening and healing, without having been treated or having been seen by a doctor during the course of the disease, recovery taking place without deformity and with almost a normal range of motion. This may be the explanation why such remarkably large and good results followed in the cases of the disease reported in the paper. In the knee-joint disease, there were eleven in which there was actual lengthening of the limb. I have seen this in only one or two, or two or three cases, perhaps; and it is my conviction that these are the cases in which the knee-joint disease is a syphilitic inherited disease and in which the disease is located, not within the joint itself, but at the epiphyseal line of the femur, as was the case in such instances of lengthening as I have seen. There were five that had flexion deformity without ankylosis, and thirteen that had flexion deformity with ankylosis at the knee joint. I believe that if we can control our cases, we ought to be able to cure all without flexion deformity. Of the hip-joint patients, 171 were cured.

Only thirty-six had adduction and flexion deformity and seventeen had flexion deformity without adduction deformity, making a total of fifty-three treated by the long traction hip-splint of Taylor. I have used that splint all my life, and have never been able to get anything like such good results from it. I am amazed that such a large proportion can be cured without adduction deformity. It shows the careful attention that the patients have had, and is a wonderful result. Eighty-eight had complete destruction of the femoral head, and only a partial acetabular destruction. My experience, when I have had the advantage of Roentgen-ray examination, is that I have found a larger number showing destruction of the acetabulum than of the head; and unless these have all been carefully checked up and the sockets compared with the sockets on the other side by Roentgen-ray examination, I should doubt that result. Of the 171 patients, 153 were cured without motion. These are beautiful results, and show how absurd is Lorenz' position that patients should be treated to secure ankylosis as soon as possible, and that it is impossible to cure these patients with motion. We know it is possible to get a large number of patients cured with motion, and here are the results. Twenty were found, after cure, with relaxation of the knee joint. That has been one of the unpleasant results that I have had from the use of the long traction splint, and I have ceased to use it as soon as I find the knee joint begins to be lax. I have used it in the past longer and in more cases than necessary, and I believe that we should have obtained as good motion and less deformity, with no relaxation of the knee joint, if we had discontinued its use and put the patients in some form of immobilizing apparatus, allowing them to walk on these limbs.

Dr. Reginald H. Sayre, New York: The institution is to be congratulated on the results shown in the paper, but the statistics do not give very much information. Here are sixty-three patients getting well of hip disease with flexion and adduction deformity, but there is nothing to show how much of that was due to faulty care in the institution, and how much to inattention on the part of the parents and their lack of taking care of the children as they should. There is nothing in the statistics to show how much deformity the patients had when they came under observation, as compared with what they had when they went out from under observation. This is true of the statistics of most of our institutions. I feel somewhat as Dr. Ridlon does regarding the difficulty of preventing flexion deformity in the hip by means of the hip splint with simply a pelvic belt. For years I have been using a thorax belt, as well; and since I have adopted this, the patients have not had flexion deformity, if there was regularity in the attendance of the patient. I think that Dr. Phelps was right in his contention that we should make the splints as nearly fool-proof as possible in dispensaries, and also in private practice. In regard to the relaxed knees, I believe that they are caused by our own inattention, and that we often pull on the shin instead of on the thigh. Frequently, when the patients' legs itch, they pull the plaster off the thigh; and we pull on the shin, instead of the thigh, without noticing it. Berkley Hill of London about forty years ago drew my father's attention to the possibility of doing that, and getting relaxed knees in the treatment of hip diseases by the Sayre splint. My father said, "You get relaxation of the knee joint from it; because you pull on the shin, instead of on the thigh." That is the trouble in many of the relaxed knee joint cases. This report distinctly shows that ankylosis is not the thing to be desired in joint disease. I believe that the nearer you get to a normal joint, the more desirable the result will be. That is not the German idea, and I know that some of my American friends think that you should strive for ankylosis of these joints. I know, however, that I can frequently obtain movable joints; and as long as I can do so, I will follow the efforts to get them.

Dr. Charles M. Jacobs, Chicago: I should like to have Dr. Humphries tell us whether he uses only long traction hip splints in all his hip cases; and if not, what are his results with the use of the plaster casts.

Dr. Robert E. Humphries, New York: Dr. Ridlon says that he has found a greater percentage of cases with acetabular destruction than this report indicates. The cases considered in this report as having had acetabular destruction showed no evidence of disease in the head of the femur on Roentgen-ray examination. Many cases showed destruction of both the head of the femur and the acetabulum and are therefore only considered under the heading of destruction of the head of the femur. The good results obtained were due mainly to two factors: first, a large outpatient nursing staff which keeps in constant touch with the patient, instructing the parents in the adjustment of braces and in the hygienic care of their children and also seeing that the patients are brought regularly to the dispensary; second, a country hospital where many of the cases reported were treated. Patients with joint tuberculosis cannot be cared for properly at home without frequent visits by nurses and they can be taken care of very much better in a country hospital devoted solely to the treatment of joint tuberculosis. The point advanced by Dr. Sayre, that statistics are always inaccurate because one cannot tell what percentage of poor results are due to inefficiency on the part of the surgeon and what is due to the neglect by the parents, is a good one; however, I do not see how this can be ruled out. Plaster of paris is never used except as a temporary dressing, consequently it is impossible at this time to compare this form of treatment with that of plaster.

A PRIMIPARA AT 46

Seeley Andrews, M.D., Minden, Neb.

The patient, a blonde, small boned, normal weight 115 pounds, was born in Denmark, June 17, 1870. She was a domestic until ten years ago, then clerked in a store, and was married two years ago. Her last menstruation occurred, Feb. 1, 1916. Pregnancy was uninterrupted except for threatened miscarriages in June and September, 1916, when she had several pains, and a good deal of hemorrhage. Since the fourth month she had considerable albuminuria, and the blood pressure had constantly been above 150. She had had dropsical conditions of the lower limbs and violent headaches at times.

Two days before confinement I examined the patient, and found her in normal condition except for a funnel-shaped pelvis, with a diameter of 8 cm. The coccyx was movable and could be pushed well back. Pains began at 12 p. m., November 16; labor terminated at 9 p. m., November 17. Preparations were made for cesarean section because of conclusions from the prior examination. Labor was normal, the head engaged, and then delivery was accomplished after the medium forceps operation. There was a slight laceration which was repaired at the time.

I have been unable to find in the literature a record of a patient anywhere near this age at first confinement.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 199)

RENAL CALCULI

Renal calculi vary from small particles of precipitated salts—enough to make a granular sediment in the urine, passed without pain or knowledge, to concretions large enough to cause colics, or to remain in the pelvis of the kidney. Although it was thought that uric acid stones were very frequently found in the urine and that calcium oxalate stones seldom appeared, it has been shown recently that the latter occur most frequently, and form the largest element in the composition of renal calculi. It has been shown also that these calcium oxalate calculi are not necessarily hard.[59] As uric acid calculi may be very hard, and calcium oxalate calculi may be soft, Rowlands believes that the hardness of calculi depends on the rapidity of their formation — the slower the formation the harder the calculus.

Most renal calculi contain uric acid or urates in small amounts. However, these ingredients can be determined only by chemical analysis, as one cannot decide the character of a calculus from its color, shape and hardness. Renal calculi may occur with or without gout, that is, gout and the formation of calculi are not closely related, according to Kahn. The tophi in gout may be composed of sodium and ammonium biurate or possibly of calcium oxalate. It is by no means to be taken for granted that they always contain uric acid or urates.

Phosphatic calculi frequently have a uric acid nucleus. Theoretically calcium oxalate and uric acid calculi should not be redissolved in the kidney or bladder after having once been formed; nevertheless, urate and phosphate deposits evidently do dissolve or break down repeatedly. However, it has recently been shown by Haskins[60] that all neutral, alkaline or slightly acid urines will absorb uric acid; that the less acid the urine, the more uric acid will generally be dissolved, and that a dilute urine will usually dissolve more uric acid than a concentrated urine. Therefore, a freshly formed uric acid concretion may dissolve in the kidney or bladder, provided the urine is not too acid or too concentrated.

The phosphate calculi are usually mixtures of ammoniomagnesium phosphate and calcium phosphate. Calcium carbonate is rarely found; xanthin and cystin deposits occasionally occur. Some irritation in the pelvis of the kidney is generally the primary cause of this deposit, a mucous shred, or a clump of bacteria with its surrounding leukocytes forming a nucleus.

SYMPTOMS

While patients can pass a large amount of gravel with little pain, the presence of these crystals in the urine is frequently accompanied by backache or pains shooting down the ureters, irritability of the bladder, and occasionally urethral stinging from the urine. If a calculus is present in the pelvis of the kidney, repeated examinations of the urine and of the centrifuged portions will usually prove that there are more red blood corpuscles than normal. The urine may show macroscopic blood and shreds of mucus streaked with blood. Of course, blood in the urine does not prove that a calculus is the cause; but with other symptoms of calculi, with pain referred to one side, with ureteral catheterization showing blood coming from one kidney, and with the positive evidence of a roentgenogram, the diagnosis can be made. It should, of course, be recognized that kidney pain and even kidney colic may not be caused by a calculus impinged in the orifice of the ureter. The cause of this usually intermittent pain may be discovered by deduction or by the examinations just suggested.

Sometimes this kidney pain is not referred to the back, but to the center of the abdomen, upward toward the liver, to the right side, or to the appendix region. If the calculus has entered the ureter, the pain is referred down its length toward the bladder; soon pain is felt in the testicles in the male, and in the vulva in the female, and later, in the male, there is pain referred to the end of the penis. It should be noted that renal calculi occur more frequently in men than in women.

Besides blood, albumin may occur in the urine, and hyaline casts may be found, owing to reflex irritation caused by the calculus. If the pelvic irritation continues, inflammation may result with increased mucous secretion, followed by pus.

Generally careful palpation of the suspected kidney will show that it is tender to pressure; it may be enlarged.

A true renal colic comes on suddenly, often without previous symptoms, and is as likely to occur when the patient is in bed as when he is undergoing physical exertion. In about half of the cases, pain starts in the lumbar region of the affected side, comes gradually around toward the abdomen, and shoots down toward the bladder, as described. The pain is generally accompanied by nausea and vomiting, a feeling of faintness, and a weak pulse. Sometimes the skin is covered with cold, clammy perspiration, and the patient is on the verge of collapse. At times the patient lies down with his pain; sometimes he is bent over with pain, and sometimes he writhes in agony. There is often a desire to urinate frequently, sometimes without the ability to do so. The temperature seldom rises. Blood may pass into the bladder, the urine becoming discolored even before the calculus has passed. When the calculus reaches the bladder, the cessation of pain is almost instantaneous. During its passage down the ureter the patient is generally aware of its location, the pain leaving the back and being referred more and more toward the bladder and down into the genitals.

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[59] Rowlands: Biochem. Jour., 1908, 3, 346. Mackarill, Moore and Thomas: Biochem. Jour., 1910, 5, 161. Kahn, Max: Study of the Chemistry of Renal Calculi, Arch. Int. Med., January, 1913, p. 92.

[60] Haskins: Jour. Biol. Chem., August, 1916.

As soon as it has been determined that the calculus has reached the bladder, the patient is told to hold the urine for a while and then pass it as rapidly as possible from the urethra, so as to flood out the calculus from the bladder. Until the calculus is found, the urine should be passed either into a jar or through a strainer, and neither physician nor patient should be content until the calculus is found, or until it has been decided that the calculus has disintegrated somewhere during its passage. Such a disintegration often occurs if the calculus has been rapidly formed and is soft, especially if it is of the urate variety.

Recurrent attacks of renal pain, and often apparently ureteral pain, may occur without the passage of a calculus. Such attacks are often accompanied by fever, and may be preceded by a chill. If the pain is not very severe, it may be termed a backache, and the patient be told that he has malarial intermittent fever. It is inexcusable, however, for such a diagnosis to be made, as the malarial element can be excluded by examination of the blood; and a careful examination of the urine, localization of the symptoms and roentgenoscopy should make the diagnosis conclusive. In these instances not only does a large amount of mucus appear in the urine, but soon small amounts of pus are apt to appear, with signs and symptoms later of actual inflammation of the pelvis of the kidney.

TREATMENT

The immediate treatment is the same as that of colic of the kidney. The pain must be stopped and the tissues relaxed if possible. No manipulations of the kidney or urethra should be attempted, as this will do more harm than good. The patient should receive a hypodermic injection of ¼ grain of morphin with $\frac{1}{100}$ grain of atropin, and, if possible, should sit in a bathtub filled with warm water up to his waist. The relaxation caused by the water may stop spasm and aid the passage of the calculus. Of course if the pain is intense and he is faint and vomits, or if the pain persists for an extended period of time, such bath treatment is impossible and inadvisable. Under such conditions, hot, moist fomentations over the affected side will afford some relief.

If the morphin has no effect within from a half to three quarters of an hour, another injection must be given, the character of the pain and the size of the person determining the dosage. Another ¼ grain or ⅙ grain of morphin should be given, not combined with atropin, as it is unwise to repeat the dose of atropin. Atropin acts slowly and persistently, and a large dose may cause stimulation of the heart and central nervous system instead of sedation of the peripheral nerves. If the patient has been seen previously and is known to be very tolerant to morphin, the first dose may be much larger than the ¼ grain advised; large doses of morphin should not be given, however, since as soon as the calculus is either forced back into the pelvis of the kidney, or passes into the bladder, the intense pain immediately ceases, and the whole activity of the morphin is in evidence. In fact, whenever large doses of morphin have been administered for acute pain and the pain has ceased, the patient should not be allowed to sleep for some hours, the nurse or attendant keeping him awake until part of the morphin has been eliminated. The patient should be encouraged to pass the urine as soon as the bladder is considered full, and large drafts of water should be taken to wash out the stomach. Black coffee may also be given to stimulate the nervous system and to counteract the effect of the morphin on the respiratory center, and later, the patient should be given a cathartic to relieve constipation caused by the morphin. Food should not be given for some hours.

In order to avoid an overdose of morphin, the patient may be given a few whiffs of chloroform to bring about the relaxation desired and to allow the morphin to show its effect. Sometimes the action of chloroform administered after a morphin injection is successful, the pain not recurring with such intensity, and the patient becoming quiet, although he knows that the stone has not passed. Much chloroform should not be given, nor should it be given too frequently, as cardiac debility may be caused by the repeated use of even small inhalations. No other drugs are of any assistance whatever in the treatment of renal colic.

After-Treatment.—The calculus should be examined in order to discover its component parts, as its constituency may indicate the character of the food to be avoided. It should be remembered that at the time of the deposit of one calculus there may have been others, and prophylactic measures should be taken, as other colics may occur. The patient should drink large amounts of distilled water, or, if the urine shows high acidity, particularly if the calculus was found to be of the uric acid variety, he should be given alkalies and large amounts of sodium bicarbonate or good sized doses of potassium citrate. The frequency and size of the dose depends on how much it takes to cause the urine to become alkaline. On the other hand, if the calculus was found to be phosphatic and the urine only faintly acid, or alkaline, alkalies should not be given, but rather something to make the urine acid — as hexamethylenamin or dilute hydrochloric acid — to be taken after meals.

The diet depends on the character of the concretion and the condition of the urine. Meat should for a time be avoided, provided the urine is highly acid and the calculus was composed of uric acid, calcium oxalate or urates. If the urine is alkaline and the calculus was composed of alkaline salts, meat should be allowed. Ordinarily, a milk and cereal diet is proper, the diet depending more or less on the amount of intestinal indigestion caused. Such indigestion is to be guarded against both by the administration of laxatives and by arrangement of the diet, as the formation and absorption of by-products or toxins, and the presence of indicanuria have a tendency to cause more urinary deposits. Needless to say, alcohol, excessive tea and coffee drinking, rich foods and fancy dishes should be prohibited. Pure water is of great importance, and the patient should drink it liberally unless some affection of the heart or kidneys compels him to drink it in moderate quantities. There is no artificial water, no mineral water, no lithia water which will dissolve as much salts as will distilled or ordinary pure water. Consequently, nothing is attained by buying expensive bottled waters.

In the presence of the conditions that cause urinary concretions, it is self-evident that a sojourn at some mineral spring, "cure" or sanatorium at which the diet, the exercise, and the hours of sleep and rest are all under supervision, will benefit such patients; but let it be emphasized that it has not been proved that lithia waters will dissolve renal or gallbladder calculi, while lithia in almost any form, in any tangible amount, tends to cause gastro-intestinal indigestion.

The subject of urinary solvents has recently been reviewed by Haskins,[61] whose findings may be thus summarized: Piperazin may cause the urine to dissolve more uric acid, which may be further increased by giving with it sodium citrate or bicarbonate. The best results occur when diuresis is not caused. Lysidin increases the uric acid solution, but is not a very good agent, as large doses are required. Lithium carbonate is of value only in large and dangerous doses, and is no better than sodium citrate or bicarbonate; in fact, sodium citrate, sodium bicarbonate or potassium citrate are very satisfactory uric acid solvents when given in sufficient doses to alkalize the urine. In other words, there is no necessity for administering any but these last three well known, simple drugs, especially when combined with the use of distilled or pure water.

Unless it is desired to increase the uric acid excretion it is not advisable to administer atophan or novatophan in cases with calculi. If it seems advisable to give these drugs, they should be combined with sodium bicarbonate and given in small doses, such as 0.3 gm. (5 grains) two or three times a day. Large doses of atophan may cause gravel, and sometimes colic.

Normal urine should be acid, and to keep it alkaline for any length of time is generally bad treatment. Therefore alkalies should not be administered over an extended period of time as such procedure may result in cystitis, pyelitis or possibly the precipitation of phosphate calculi. Furthermore, any bacteria that may be lodged in the pelvis of the kidney or in the bladder, caused by the irritation of the previous calculus, will grow more rapidly in this alkaline medium.

If before or after the passage of calculus, or while a calculus is suspected or known to be located in the pelvis of the kidney, the urine is alkaline or ammoniacal without treatment, hexamethylenamin and dilute hydrochloric acid should be given as suggested above. If there is no marked bleeding from the kidneys or in the urine, the dose of hexamethylenamin should be 0.3 gm. (5 grains), dissolved in half a glass of water, four or five times a day, or 0.6 gm. (10 grains) in a glass of water, three times a day, for one or two weeks; the treatment should then be suspended, and perhaps later begun again. Very large doses of hexamethylenamin are not necessary. If the urine nevertheless remains alkaline, the hexamethylenamin is of no value, and one may conclude that the inflammation is serious, probably requiring surgical interference. With many bacteria in the urine the hexamethylenamin treatment is the correct one. Alkalies should not be given.

In some instances the pain is referred to the region of the gallbladder; in others, particularly in colic of the right side, to the appendix. Diagnosis in these cases is difficult, especially when not accompanied by hematuria.

Therefore, before operative interference is decided on for possible appendicitis or gallbladder trouble, roentgenograms should be made. It should be noted that not every calculus (even in the bladder) will cast a shadow; also that calcareous deposits in a tuberculous kidney may cast a shadow not unlike calculi. When there is doubt, and when the pain is a chronic, one-sided pain, particularly of the right side, cystoscopy and ureteral catheterization should be performed, and in some instances a dilating wax-tipped bougie may be passed into the pelvis of the suspected kidney. Pyelography may be utilized for diagnosis, as with a stone in the kidney it has been asserted that the pelvis is generally more or less enlarged. In acute cases without pus in the urine, and with a suspected appendix inflammation, a blood count showing a leukocytosis should indicate appendicitis. When gallbladder inflammation is suspected, there should be increased temperature, probably leukocytosis, staining of tissues with bile — which may also be found in the urine, and possibly distinct evidences of jaundice. In chronic cases in which there may be a stone in the kidney, and operative interference necessary, not only the foregoing examinations, but also functional tests of the kidneys, and blood tests for nitrogen retention should be made. If there has been a calculus in the kidney for some time, the function of that kidney is usually impaired, and there may be pus. If the stone is not passed within a month after the renal colic, radiograms of the kidney should be made. If no stone is thus located, it may be hoped it has dissolved or become disintegrated; if it is located, it should be surgically removed before the kidney is injured. The kind of operation to be performed on a kidney found to harbor a calculus depends on the condition of that kidney, and on the functional ability of the other kidney. This will be referred to later under another heading. Blood in the urine, more than a few corpuscles which may always be present, points distinctly to a pathologic condition in the urinary tract, and is rarely coincident with appendicitis or gallbladder trouble.

(To be continued)

Second Illness Census in Health District No. 1.—In the November *Bulletin* of the New York City Department of Health appear the results of two illness censuses taken in the experimental health district. The first was taken in August, 1915, and the second in February, 1916. Comparatively few deaths were caused by respiratory diseases, but the mortality from these diseases is excessively high in the negro and Italian districts. The incidence of illness is higher at the extremes of life, and the percentage of increase in illness during the winter months is greater in infancy and old age. Up to the fifteenth year males appear to be more susceptible to disease than females; after the fifteenth year the reverse obtains. The lowest illness rate was observed among clerks, and is due to their favorable age as well as to their sheltered occupation. The family income is an important factor in morbidity and mortality. The incidence of illness from all causes was found to decrease as the density per room decreased, excepting when a great proportion of elderly persons entered into the calculations. The conclusion is reached that these illness censuses have demonstrated the value of such intensive study. It is therefore proposed to take a census of illness in those districts of the city in which the mortality is unusually high.

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[61] Haskins, H. D.: The Uric Acid Solvent Power of Urine After Administration of Piperazin, Lysidin, Lithium Carbonate and Other Alkalies, Arch. Int. Med., March, 1916, p. 405.

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SATURDAY, JANUARY 27, 1917

INFECTIOUS JAUNDICE — WEIL'S DISEASE — SPIROCHAETOSIS ICTEROHAEMORRHAGICA

In 1886, Weil[1] described the disease which subsequently more or less consistently has been called Weil's disease. In case this term has come to include diseases of different etiology, which seems altogether likely, it naturally will require a more exact knowledge of the etiology than we now possess before the diseases in question can be fully and satisfactorily understood. The recent discovery both in Japan and Germany of a spirochete as the cause of acute febrile jaundice, believed to correspond fully to what is meant by the term "Weil's disease," marks a long advance in the direction just indicated. In Germany Huebener and Reiter,[2] and a few days later Uhlenhuth and Fromme,[3] apparently wholly independently, not long since announced that in guinea-pigs the injection of the blood of patients in the early stages of Weil's disease causes symptoms and changes similar to those of the human disease — fever, jaundice, hemorrhages, albuminuria, degeneration of liver and kidneys, etc. The blood and urine of such guinea-pigs are pathogenic and transmit the disease to other guinea-pigs on injection or oral and rectal introduction, but not through the healthy skin. The investigators mentioned also found organisms in the blood and organs, especially in the blood and then in the liver, of injected guinea-pigs and of patients with Weil's disease, which Uhlenhuth and Fromme[4] described as delicate, motile spirochetes. The first description of Huebener and Reiter was less definite, but subsequently[5] they also regarded the organism as a spirochete and named it *Spirochaeta nodosa*. It was found that, as the symptoms subside, specific spirocheticidal substances appear in the blood, and the serum becomes both protective and curative; hence the outlook for the development of a successful serum therapy would seem encouraging. Following Ungermann, Reiter[6] announced that the spirochete can be grown on artificial mediums, the best medium being rabbit serum diluted with salt solution and covered with oil to exclude air. His efforts to demonstrate by experiment that certain biting insects may transmit the spirochete do not seem to have yielded any decisive results.

Turning now to the Japanese work, we find that Inada, Ido and their associates are studying a disease which occurs in various parts of Japan, especially in certain coal mines, and which corresponds in description to the description of Weil's disease, the death rate being about 32 per cent. We find also that successful inoculation of guinea-pigs and demonstration of spirochetes were accomplished a year or more before the Germans announced their discoveries. The most important results of the Japanese work are available in an English summary[7] which shows that guinea-pigs were inoculated in 1913 and spirochetes found in 1914. Here, too, are reported successful methods for growing the microbes on artificial mediums. In human beings the spirochetes are most numerous in the blood on about the fourth and fifth days, and are easily demonstrable in the liver and elsewhere when death occurs early; but inoculation experiments and efforts to demonstrate the organisms in the tissues fail after the twelfth day or so. In the urine, however, virulent spirochetes continue to appear much longer, sometimes for from forty to fifty days or more; they are also found sometimes in the sputum and feces. Martin and Pettit[8] also have found the urine in Weil's disease infectious. The disappearance of spirochetes from the blood and the organs (except possibly the kidneys) is associated with the development of specific antispirochetal substances, the action of which is shown by appropriate tests (Pfeiffer's phenomenon). The Japanese investigators[9] have immunized horses with cultures of the spirochetes and obtained immune serum with definite action, which serum is being tested in the human disease.

Whether or not the spirochete described by the German workers is exactly the same as the one described by Inada and his co-workers is hard to say and need not be discussed any further now. It is noteworthy that the main results of this highly interesting work in the two far separated countries on what for short we call Weil's disease correspond closely — demonstration of spirochetes in the blood and tissues of patients, demonstration of the production in guinea-pigs of a condition like the human disease with the presence of spirochetes by the injection of infectious blood, and demonstration of an antispirochetal immunity. The results of the Japanese investigations, which are the earlier and the more complete, differ from the German in that they show rats and mice to be susceptible, and this is a point which should be carefully studied in the future, especially because, in a recent article by Ido[10] and others, evidence is brought forward that both house and what they call brown or ditch rats may harbor virulent spirochetes in their kidneys and thus play an important part in spreading the disease. The Japanese also assert that in guinea-pigs the spirochetes may enter through the unbroken skin. Finally, it may be pointed out that in the event the spirochetes described in Japan and in Germany as the cause of icteric infections — spirochaetosis icterohaemorrhagica (Inada)—prove to be the same, the name proposed by the Japanese, *Spirochaeta icterohaemorrhagiae,* by virtue of priority, will replace *Spirochaeta nodosa,* suggested by Huebener and Reiter. The further developments from the study of icteric infections by the methods just discussed may be awaited with much interest.

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[1] Weil: Ueber eine eigenthümliche, mit Milztumor, Ikterus und Nephritis einhergehende Infektionskrankheit, Deutsch. Arch. f. klin. Med., 1886, **39**, 209.

[2] Huebener and Reiter: Deutsch. med. Wchnschr., 1915, **41**, 1275.

[3] Uhlenhuth and Fromme: Med. Klin., 1915, **11**, 1202.

[4] Uhlenhuth and Fromme: Med. Klin., 1915, **11**, 1264, 1296, 1375.

[5] Huebener and Reiter: Deutsch. med. Wchnschr., 1916, **42**, 1.

[6] Reiter: Deutsch. med. Wchnschr., 1916, **42**, 1283.

[7] Inada, Ido, Hoki, Kaneko and Ito: The Etiology, Mode of Infection, and Specific Therapy of Weil's Disease (Spirochaetosis Icterohaemorrhagica), Jour. Exper. Med., 1916, **23**, 377.

[8] Martin and Pettit: Bull. de l'Acad. de méd. de Paris, Oct. 10, 1916.

[9] Jour. Exper. Med., 1916, **24**, 485.

FOOD FAT AND MILK FAT

So long as Virchow looked on both the fat globules and other constituents of milk as the direct products of a fatty degeneration or disintegration of the cells of the mammary gland, there was little consideration of the possible interrelations of the food fats and those which appeared in the mammary secretion. Later, when pathologists like Arnold of Heidelberg concluded that even the freest secretion of milk may take place without any degeneration of the cells of the mammary glands, no emphasis was given to the direct interdependence of food and milk fats. It was believed at that time that the components of the fat are brought to the lactating cells from without in a water-soluble form, and that the fat is newly constructed from such material within the cellular protoplasm by functioning vital processes.

There can be no doubt today that various ingested substances — for example, drugs — may pass as such into the milk. Intoxication of infants through poisonous substances taken by the mother and transferred into her milk are not unknown. For the most part, however, these are accidental constituents of milk, and represent distinctly foreign substances. If they are fairly soluble they are likely to travel to all of the tissues and secretions before they can be completely eliminated by the parent organism. The appearance of such traces of foreign derivatives in milk, therefore, is presumably largely fortuitous rather than due to a special selective secretory activity on the part of the glands producing it.

The problem of the appearance of the fats of the food in the fat of the milk offers somewhat different aspects from the foregoing, in view of the fact that fats in general are not essentially "foreign" to milk. Here again, however, prevailing views of metabolism have influenced the decision as to the transport of food fat. So long as it was believed that fats are absorbed as such and carried in the circulation in the form of emulsified particles to various regions of the body, there was no obvious limitation to a rather direct transfer of fat from food to milk. It was in this belief that investigations with a large number of fats not characteristic of the lactating animal were made. The feeding of such extraneous fats as cottonseed oil, sunflower oil, peanut oil, cocoa butter, linseed oil, sesame oil, almond oil, palm oil, etc., seemed to remove all doubt of their transfer in part into the milk.

Latterly several circumstances have served to present the question of the origin of milk fats in a still different light. The demonstration of the actual digestion of ingested fats prior to their distribution and utilization in the body is now generally accepted. Fats are not absorbed unchanged, though they may be reconverted to their original form after passage out of the alimentary canal. The conviction that lipoids such as lecithin and cholesterol may play a significant part in the metabolism of the fats has gained ground, especially through the studies of Bloor.[1] But in addition to this, account must now be taken of the growing belief that we must distinguish between cell fat and stored fat, such as is found in the fat depots of the body. Leathes and his collaborators, in particular, are largely responsible for the doctrine that the fatty acids derived either from the foods or from the stores in the body are prepared, so to speak, for metabolism by a preliminary chemical change in the liver. Here mobilized fat, like fat absorbed from the intestine is, in the first instance, said to be altered so that it is composed to a much larger extent of unsaturated fatty acids. This "desaturation" of fatty acids is believed to produce new fats which offer less resistance to the combustion processes which furnish energy to the organism. The unsaturated unions are the weak links in the carbon chains of the fatty acids, and form the presumable points of attack in the catabolic disintegration of the fats. Thus fat from the connective tissues where it is stored differs from that which has passed through the liver as a preparation for subsequent oxidation.

In the light of the foregoing, it is not unreasonable to inquire whether milk fat, too, represents a specially prepared sort of fat, uniquely valuable as a ready source of energy, or whether it corresponds more closely with the less differentiated fats which find their way temporarily into the connective tissue fat depots of the organism. If milk fat is formed entirely de novo in the mammary gland, it may be expected to be specific in character and constant in composition independently of the food factor; but even if the milk fat represents in whole or in part the dietary fats, it is quite conceivable that the latter may have been "worked over" in the liver or some other glandular structure so as to become specifically like the fat characteristic of milk. The final alternative is that the milk fat is essentially a mixture of imported contributions varying largely with the fat of the diet. Breed characteristics, such as the indisputable differences between Holstein and Jersey or Guernsey milk, might, in this event, merely affect the quantity rather than the quality of the fat secreted in milk.

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[10] Jour. Exper. Med., 1916, **24**, 471.

[1] The Lipoids ("Fats") of Human Blood, editorial, The Journal A. M. A., Sept. 23, 1916, p. 956; Blood Lipoids and Diabetes, Nov. 25, 1916, p. 1602.

In attempting a reinvestigation of the old question as to the extent to which fat present in the food of the cow imparts certain of its own properties to the milk fat, the officers of the Georgia Experiment Station have reverted to the feeding of cottonseed oil, a fat mixture of distinctive character.[2] They have found that when cows were fed cottonseed oil, the properties of the butter fat differed from those of a butter fat produced when the animals were not receiving the cottonseed oil. The change was greater with the feeding of a large amount of oil. It did not occur with maximum intensity immediately, but showed a gradual increase until the seventh day of continued feeding. Certain constituents of cottonseed oil could be detected in the butter fat within from twelve to thirty-six hours after feeding the oil.

Such were the experimental facts. It must not be assumed, however, that a simple transfer of cottonseed oil to the milk fat had occurred. In general, the change in properties on feeding oil were the same as those observed on an advance of several weeks in the period of lactation. Cottonseed oil, when fed in small quantities, was not transferred in any considerable amounts directly to the milk fat. Some of the substances of which the oil is composed apparently were transferred in a greater amount than others. The constituents of the oil did not reach the milk fat in the same combinations or proportions in which they exist in cottonseed oil. The Georgia investigators accordingly suggest that cottonseed oil and other oils are not transferred, in any considerable quantity, unchanged in composition to the milk fat, but either undergo a kind of "selective absorption" by the animal body, or certain of its constituents are considerably changed before reaching the cells of the milk gland.

The evaluation of the Georgia data will doubtless vary with the minds of different readers. There are not a few who might look on them as evidence of a marked qualitative variability of milk, and consequently look on the character of the fat supply to a lactating female as a matter of supreme importance. Von Fürth[3] has presented this point of view by the remark that often the trouble met in changing wet-nurses may in the last count be connected with the biochemistry of fat. He adds that there is justice in the demand that in the first place the milk of nursing women be kept constant by selection of an appropriate fat mixture; and again that by proper feeding of cows a milk be produced with fat similar to the fat of human milk. We are more inclined, however, to see in the Georgia and other experiments an indication of a vigorous tendency on the part of the body as a whole and the mammary gland in particular to prepare a fat product of fairly uniform character. The small variations incident to enormous alterations in the diet tend, in our belief, to substantiate the probability of the essential though not absolute independence of the quality of milk fat from its food precursors. Sometimes, in large excursions from the usual dietary conditions, the transforming biochemical mechanisms, if they may so be designated, may be almost overwhelmed by the task of modifying food fat sources for mammary output. Small quantities of unusual adventitious products may escape; but this does not appear to represent the usual or seriously significant occurrence. Furthermore, it remains to be demonstrated that milk fat containing incidental traces of less common fat residues is in any way detrimental to health. The natural yellow color of butter fat is varied by dietary factors without at present exciting any suspicions of undesirability.

TEMPERANCE DRINKS AND THE SODA FOUNTAIN

Millions of dollars, representing the return to the government as revenue from the manufacture and sale of alcoholic beverages, attest the enormous consumption of the latter in this country each year. Whether it is attributable to the wave of prohibition which is slowly sweeping over this country, or to the development of new tastes side by side with the long standing demand for spirituous liquors, or to both factors combined, in any event a rapidly developing trade in so-called temperance beverages has manifested itself for some time. In part this has represented an augmented consumption of drinks like ginger ale and root beer, which have long enjoyed a limited popularity in the United States. In larger measure the new trade involves a growing sale of products scarcely used at all in a commercial way a decade or two ago. Thus, referring to the grape juice industry, a recent writer[1] reports some astonishing figures for the stimulation of trade in this beverage. The production of American unfermented grape juice in the year 1914 amounted to nearly five million gallons in the Chautauqua belt alone.

The consumption of what is commonly termed soda water in this country must be much larger. The United States has been called the greatest soda fountain country in the world. In fact, soda water of the sort dispensed flavored with fruit syrups as a fountain beverage is distinctly an American drink which has found popularity in few other countries, with the possible exception of Australia, where the soda water business is said to be conducted much as it is here. The habit of drinking soda water at a "stand" of some sort in summer has gradually stimulated a demand for "hot drinks" at the same establishments in winter, so that hot coffee, chocolate, malted milk, bouillon, etc., have likewise come into vogue for sale to those who drink cold nonalcoholic beverages in summer.

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[2] Smith, F. H.; Wells, C. A., and Ewing, P. V.: The Changes in Composition of Butter Fat Produced by Feeding Cottonseed Oil, Bull. 122, Georgia Expt. Sta., June, 1916.

[3] Von Fürth, O.: Chemistry of Metabolism, translated by A. J. Smith, Philadelphia, 1916, p. 425.

[1] Mendel, L. B.: Changes in the Food Supply and Their Relation to Nutrition, Yale University Press, New Haven, 1916, p. 41.

It is not easy to estimate the magnitude of the current enterprise in this field. The retail value of the sodas, "sundaes" and other fountain beverages or refreshments for 1916 has been placed at $500,000,000. For ice cream it was estimated by a statistician of the National Association of Ice Cream Manufacturers that 200,000,000 gallons would be consumed in this country in 1916. At 40 cents a gallon, which is about the minimum price at which ice cream is sold, the American public would be expending no less than $80,000,000 for this delicacy.

During all the years in which the liquor saloon has been in existence, scarcely any attempt has been made to regulate its practices in the interest of public or personal hygiene. On the other hand, public sanitary regulation of the operation of the soda fountain business has already been introduced within the few years in which the new trade has begun to thrive so prominently. In some places the regulations have become more stringent than the restrictions on restaurants, or saloons in which eating and drinking utensils are used. For example, in one region the health authorities have decreed that all glasses, cups, spoons, etc., used at fountains must be sterilized after each service. Another state has ordered the use of individual paper cups unless all glasses are sterilized. Similar legislation having in view the prevention of the spread of communicable disease through the use of unclean glasses has been adopted by local health boards or sanitary authorities in various places. Furthermore, provision has been made here and there for medical examination of employees so that the beverages shall not be dispensed by persons liable to spread disease in their occupation. How difficult it would be either to secure or to put into practice comparable sanitary regulations in the liquor saloon, where under the existing conditions of the traffic the hygienic hazards must be decidedly more prominent.

DUST AND ITS DANGERS

In the clinic of occupational diseases it is well recognized that dust of various sorts is a menace to the health of a large number of wage earners. For 1915 it has been estimated by Frederick L. Hoffman that at least 10 per cent. of workers labored under conditions more or less detrimental to health and life on account of atmospheric pollution commonly classed as dust.[1] This impurity may be of the most diverse sorts. There are insoluble inorganic dusts, including metals in a state of fine division, silica, sand, coal, marble and similar powders. Potter's asthma, grinder's phthisis, and the siderosis among metal polishers and others engaged in metal working are familiar illustrations of the harm done by this class of dusts, which usually produce irritation through being inhaled. Others represent soluble inorganic impurities which are more readily absorbed after being swallowed, and are dangerous because of their inherently poisonous qualities. A third class, the organic dusts, comprises such widely varying materials as "sawdust, fur, skins, feathers, broom and straw, grains and flours, jute, flax, hemp, cotton, wool, carpet dust, street sweepings, tobacco-box dust, hides and leather, felts, rags, paper, horsehair, etc. Typical of the diseases caused by organic dusts are: flax dressers' disease, a kind of pneumonia due to the inhalation of particles of flax; alkaloidal poisoning from African boxwood by workmen engaged in shuttle making, and malignant pustule and a febrile disease among rag sorters."[2]

Most persons contemplating the subject of dust and its hygienic aspects for the first time assume that the dangerous factor lies in the distribution of microorganisms in the atmospheric contamination. Dust thus is a convenient term which may include a large variety of atmospheric impurities. The dust of the home, the schoolroom, the theater or the street can scarcely be of the same character, even if in attenuated amounts, as that which obtains in the distinctively dusty trades. Of what does it consist? A recent analysis of the "dust" collected in a vacuum cleaner from the book shelves of the library of an educational institution[3] disclosed, on microscopic examination, hair, green wool, white wool, cotton fibers, fly wings, sand grains, wood, paper, string, celluloid, pieces of finger nails, metallic iron and leather. The hair was probably derived from soft hats; the wool and cotton fibers from clothing; sand from the mud tracked in on shoes and the gradual pulverizing of the floor; fly wings from dead flies, and paper from book leaves. The remaining articles present explain themselves. In a water suspension of this dust, no life could be detected with a lens magnifying 320 diameters.

A qualitative examination of the "library dust" showed the presence of the elements iron, aluminum, sodium and calcium, which are easily accounted for by the wear and tear of materials of obvious proximity. One of the chief points of interest was the finding of the *Bacillus coli communis*. Rees suggests that it may come from several sources, the most probable one being the hands while handling books. The bacillus might also be present because of the coughing, sneezing and possible expectoration of people using the library. The total number of bacteria in the dust of such a confined space as a library would naturally be high, as the dust would catch the bacteria and have a tendency to hold them.

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[1] Hoffman, F. L.: Statistical Studies Relating to Occupational Diseases, in Kober, G. M., and Hanson, W. C.: Diseases of Occupation and Vocational Hygiene, Philadelphia, 1916, p. 777.

[2] Baskerville, C.: New York Med. Jour., Nov. 23 and 30, 1912.

[3] Rees, R. R.: The Analysis of "Dust" Collected in a Vacuum Cleaner from the Book Shelves of the Rensselaer Polytechnic Institute Library, Science, Oct. 27, 1916, p. 618.

It might be argued, as Rees does, that where the colon bacillus survives, more harmful bacteria might also remain, such as those producing typhoid fever, cholera, diphtheria and especially tuberculosis, which latter disease is caused by a bacillus especially able to resist the sterilizing influence of drying. But the experience of the comparative freedom of paper money, books, and many other articles frequently handled by man, from extensive contamination with harmful micro-organisms gives a feeling of a security from such possible sources of bacterial danger which may or may not be entirely justified. Only extensive researches can determine the real limits of safety from the commonest dangers of dust in everyday life.

Current Comment

COMPULSORY HEALTH INSURANCE

The United States is practically the only large industrial nation which has not adopted compulsory health insurance. A number of states have enacted workmen's compensation laws, which may be regarded as the entering wedge; this will undoubtedly be followed by similar legislation which will provide compensation for medical care during disability from sickness, and include not only the breadwinner but also the dependent members of the family. While the medical profession has a very practical interest in the subject, because of the duties and responsibilities assigned to it in the carrying out of these laws, few physicians have recognized its importance. The mass of the members of our profession seem not to have awakened to the fact that the interests of the public, as well as their own, require them to become informed on the question and to take an intelligent, active part in framing legislation which is already being considered in a number of states. In The Journal, May 6, 1916, it was announced that a committee under the chairmanship of Dr. Alexander Lambert, chairman of the Judicial Council, had been appointed to compile information in regard to social insurance and the relation of physicians thereto. This committee submitted a report to the House of Delegates[1] at the Detroit session. The American Association for Labor Legislation prepared a preliminary draft of a model bill on social insurance in which it has properly left blank the section providing for medical services, while asking the assistance of the medical profession to work out this phase of the problem. In this issue is a paper on "Health Insurance and the Medical Profession"[2] by Dr. Lambert, in which suggestions are made for defining the conditions for medical service under social insurance. Like the model bill of the American Association for Labor Legislation, Dr. Lambert's paper is not to be regarded as the final word on the question, but as suggesting a basis for discussing the conditions under which medical services may be rendered in the proposed scheme of health insurance. The Journal again emphasizes that the time for the medical profession to interest itself in social insurance legislation is now, while legislation is in a formative stage. It is hoped that the publication of Dr. Lambert's paper will be followed by a constructive discussion of health insurance in the columns of The Journal by its readers.

A MEDICAL COMMISSION, BUT NO MEDICAL MAN ON IT

According to the newspapers, President Wilson has nominated as members of the workmen's compensation commission, to administer the federal Employees' Liability Act, the Reverend R. McMillan Little of Swarthmore, Pa., a preacher in the United Presbyterian church; a Mrs. Axtell of Bellingham, Wash., a social worker and a defeated candidate for Congress, and a J. J. Keegan of Indianapolis, a member of the International Association of Machinists, formerly a member of the state legislature, and more recently a commissioner of conciliation in the Department of Labor. The first of those mentioned above is stated to be a Republican, the second a Progressive, and the third a Democrat; none is a physician. Probably 90 per cent. of the work of the commission will be medical in character.

POISON THE FLY

Although this is not "fly season" in most parts of the United States, the desirability of preparedness may serve as an excuse to refer to antifly measures at this time. In *Public Health Reports* it was pertinently remarked:

> The practice of swatting, despite the faulty biologic reasoning so often urged by its enthusiastic supporters, whereby the effectiveness of a single swat is multiplied many million-fold, certainly does possess the advantage of a definite 100 per cent. efficiency. Its disadvantage lies chiefly in the effort and earnestness which it demands, factors which are apt to be affected by rising temperature inversely as the multiplication rate among the flies.[1]

The problem of destroying the fly larvae in their breeding places, notably in horse manure, is complicated by the fact that many efficient larvicides ultimately produce an injurious effect on the manure so that it cannot be applied in agricultural practice without damage to plant growth. This has greatly restricted the promise which borax early gave as a suitable and comparatively inexpensive larvicide. The cost of any treatment which must be extensive is also a restrictive item with respect to the application of some otherwise efficient agents. Products like cyanids, Paris green and other arsenicals are potent but too toxic for general use on a large scale. The newest recommendation of the Department of Agriculture is powdered hellebore, an effective larvicide without action on plant growth.[2] For killing flies which have escaped destruction in the larval stage, the Hygienic Laboratory of the Public Health Service has found an eminently satisfactory new agent in salicylic acid. In 1 per cent. solution it destroys flies which consume it. Salicylic acid, unlike the more potent 1 per cent. solution of formaldehyd, is not an objectionable substance to handle, and there is little danger of toxic effects from accidental consumption of considerable doses of it. With such powerful chemical guns ready to be trained on both the larvae and the adult flies, the antifly campaign of the coming season ought to be memorable for the beneficent effects of its potent instruments of destruction.

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[1] Report of the Committee on Social Insurance, The Journal A. M. A., June 17, 1916, p. 1951.

[2] See page 257.

[1] Phelps, E. B., and Stevenson, A. F.: Fly Poisons, Pub. Health Rep., 1916, **31**, 3033.

CHEAP ALUM FOR WATER PURIFICATION

Any development of the process of water purification that diminishes cost is worthy of consideration from the public health standpoint. Such an improvement appears to be the new method of making alum recently devised by a well known water purification chemist in this country. The process is already in use in four water-filter plants in the United States and one in Canada. The chemical improvement is described in a recent number of *Engineering News*,[3] and the notable advantages it presents are there set forth in detail. Not only is the alum produced at a low cost, but also it is more effective as a coagulant. The advantages are thus summed up:

> Alum is made regularly at the several works, by means of simple and low-cost installations. It is made up daily—"as you wait," almost—by the ordinary force and under the direction of the chemist or other head of the purification works. The resulting product is not only much cheaper than commercial alum but is also far better suited to use as a coagulant—one reason why it is cheaper.

Proposed Investigation of Habit-Forming Drugs.—In a twenty-page pamphlet for the information of Congress, for consideration in connection with pending amendments to the Harrison Narcotic Law, Charles B. Towns, New York, urges that Congress empower the president to appoint a committee, with adequate authority and money, to conduct hearings and make investigations on the drug problem. The findings of such a committee, it is said, would enable the states to enact properly correlated legislation. According to Mr. Towns, not more than 10 per cent. of those addicted to drug habits are excusable because of physical disabilities. Pointing out defects in the Harrison Narcotic Law, Mr. Towns claims that any person may have as many physicians as he chooses prescribing for him at the same time, and says: "The doctor does not have to find out whether or not the patient is a confirmed drug taker; he can take the man's word for it and prescribe just what the patient asks for." He suggests that the manufacturing, selling, prescribing and administering of opiates be strictly limited to crude opium, laudanum and paregoric (he does not mention apomorphin), which would not inconvenience the medical profession, and would eliminate every unfavorable hazard incident to the use of habit-forming drugs. The physician is to be held to an accounting for such opium, laudanum and paregoric as he personally prescribes or administers. The regulation of the sale of hypodermic syringes is recommended. The nurse is not to be allowed possession of a hypodermic needle except on a physician's order, and then the dose administered is to be at all times strictly regulated by the physician.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

New State Health Officer.—Dr. William H. Sanders, Montgomery, who has served the state for nearly twenty-one years as state health officer, retired, January 9, on account of ill health. Dr. Samuel W. Welch, Talladega, has been appointed health officer.——Dr. William W. Dinsmore, Montgomery, will become state prison inspector, about April 17, succeeding Dr. William H. Oates, Montgomery.

CALIFORNIA

New Buildings at County Hospital.—Bids have been received by the Los Angeles County Board of Supervisors for the construction at the County Hospital of seven additional units: five tuberculosis wards, each averaging 44 by 150 feet, a dining hall and a maternity building.

Proposes Merger of Health Board.—A bill is to be introduced in the legislature by Senator Edgar A. Luce, San Diego, which provides for the merger of the state boards of health, medical examiners, dental examiners, optometry and embalmers in a single board to consist of three members.

State Examiners' Board Elects Officers.—At the annual meeting of the State Board of Medical Examiners, held in Sacramento, January 9, Dr. Arthur M. Smith, Oakland, was elected president; Dr. Percy T. Phillips, Santa Cruz, vice president, and Dr. Charles B. Pinkham, San Francisco, secretary-treasurer (reelected). At this meeting the board is said to have revoked the license of Dr. Calvin L. Case, Oakland, charged with having prescribed morphin for a drug addict not under his continuous care.

Memorial Hospital.—Plans have been prepared for the new John P. Scripps Memorial Hospital for working men and women in San Diego. As a preliminary step, the San Diego Diagnostic Group Clinic for John P. Scripps Foundation is at once to be put into operation in the Scripps residence, which has been donated for that purpose. Mr. Scripps guarantees a sum up to $250,000 for the clinic and the erection, furnishing and equipment of the hospital. He also agrees for a term of years to meet, up to the sum of $30,000, any deficit in the amount required for the maintenance of the institution. Drs. Bernard J. O'Neill, Harry C. Loos, John E. Jennison, Vernon G. Clark and Harold A. Thompson comprise the executive committee of the institution.

CONNECTICUT

Personal.—Dr. Edward J. Murray, Meriden, has been appointed superintendent of the Southwestern Minnesota Tuberculosis Sanatorium, Worthington, Minn.

Hartford Physicians Elect.—At the seventieth annual meeting of the Hartford Medical Society, January 2, Dr. Charles C. Beach was elected president; Dr. Charles E. Taft, vice president; Dr. Amos T. Harrington, secretary, and Dr. Philip D. Bunce, treasurer. The Hartford Medical Society Cup was awarded to Dr. Everett J. McKnight.

ILLINOIS

Personal.—Dr. Charles B. Johnson, Champaign, has been appointed a director of the Champaign County Tuberculosis Sanatorium, which was authorized at the November election. ——At the annual meeting of the staff of St. Francis' Hospital, Kewanee, January 11, Dr. Peter J. McDermott was elected president; Dr. Gideon H. Hoffman, vice president, and Dr. H. Nelson Heflin, secretary, all of Kewanee.——Dr. William L. Hanson, Belleville, is on his way to England, where he will enter the Military Hospital Service.——Prof. Julius O. Stieglitz has been elected president of the American Chemical Society for 1917.

Chicago

Smallpox.—Two cases of smallpox were found, January 14, one in St. Luke's Hospital, and the other in Cook County Hospital. Both patients were taken to the new Isolation Hospital.

New Superintendent of Hospital.—Sister Mary Rita of the Order of Mercy has assumed the duties of superintendent of the Mercy Hospital, succeeding Sister Mary Raphael McGill, deceased.

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[2] Cook, F. C., and Hutchison, R. H.: Experiments During 1915 in the Destruction of Fly Larvae in Horse Manure, Bull. 408, U. S. Dept. Agric., Oct. 28, 1916.

[3] Engin. News, Jan. 4, 1917, p. 36.

Convalescent Home for Wesley Hospital.—Mrs. Sarah Wheeler has donated her home and property in Lake Bluff, valued at $50,000, to the Wesley Memorial Hospital. The property will be known as the Wheeler Convalescent Home.

New Officers.—Chicago Society of Internal Medicine, January 22: president, Dr. Robert B. Preble; vice president, Dr. Rollin T. Woodyatt, and secretary-treasurer, Dr. Charles A. Elliott (reelected).——Chicago Ophthalmological Society, January 15: president, Dr. Paul Guilford; vice president, Dr. Francis Lane, and secretary-treasurer, Dr. Major H. Worthington.

Laboratory Building for County Hospital.—A subcommittee of the executive committee of the Cook County Hospital staff recently prepared a memorandum which was submitted to Mr. Peter Reinberg, president of the Cook County Commissioners, concerning the provision of a laboratory building for the Cook County Hospital. The committee consisted of Dr. Edwin R. LeCount, chairman, and Drs. J. Rawson Pennington, Maximilian Herzog, David J. Davis and Robert F. Zeit. The committee notes that there is great need of a new building for laboratory service on the Cook County Hospital ground and that the temporary quarters now occupied are crowded and wholly inadequate. An investigation was made several years ago concerning the need of the institution for a laboratory building, and this need is now much greater. The original report of the committee appeared in the transactions of the county board, and it is proposed to elaborate the report and bring it up to date if the commissioners decide to take action in the matter.

Personal.—Dr. William Healy, who has been head of the Chicago Juvenile Psychopathic Institute for the last seven years, has resigned to accept the position of director of the Harvey H. Baker Foundation, Boston. This foundation was established in memory of the late Judge Baker of the Juvenile Court, to aid that court by making psychopathic examinations of infant children. Dr. Healy will be given a complimentary dinner, January 30, by the Chicago Ethical Society at the City Club.——Dr. George G. Davis, lieutenant colonel of the Royal Army Reserve Medical Corps, spoke before the Chicago Alumni Club, January 20, on his experiences in a British base hospital in France.——Dr. Roscoe C. Giles heads the list of eligibles for appointments on the staff of the Municipal Tuberculosis Sanatorium.——Dr. Arthur Schuettler was operated on for appendicitis in the Ravenswood Hospital, January 18.——Dr. Arthur C. Beyerlein, Colon, Panama, is visiting his parents in Chicago.——Dr. William D. Napheys has been appointed a member of the staff of the Government Hospital for the Insane, Washington, D. C.——Dr. Allen B. Kanavel delivered three addresses on cancer in Lincoln, Neb., January 6, speaking before the Women's Club, the physicians of the city and the public.

KANSAS

Personal.—Dr. Bert L. Stinson, Great Bend, has been elected health officer of Great Bend and physician of Barton County.——Dr. Charles M. Siever, Holton, has been elected physician to the Kansas State Agricultural College, Manhattan.

Asks Large Appropriation for Sanatorium.—Dr. Chauncey S. Kenney, superintendent of the State Tuberculosis Sanatorium, Norton, has asked an appropriation of $180,000 for new buildings and improvements, and one of $120,000 for maintenance and salaries for the next two years. Dr. Kenney claims that these appropriations will permit the construction of six new pavilions accommodating twenty patients each, an administration building, water works and fire protection, and enough help to farm the 240 acres of land at the institution.

MAINE

Licenses Revoked.—An official communication states that at the meeting of Maine Board of Registration of Medicine, held Nov. 14 and 15, 1916, the licenses of Clarence J. Prickett and Reuben Calhoun Clinkscales were revoked on account of fraud in connection with the obtaining of their licenses, both having claimed to have graduated from the extinct Southern College of Medicine and Surgery of Atlanta, Ga.

New Officers.—York County Medical Society, eighty-seventh quarterly meeting, at Biddeford: president, Dr. Charles E. Cook, South Berwick; vice president, Dr. Clarence F. Kendall, Biddeford, and secretary, Dr. A. Leon Jones, Old Orchard.——Kennebec County Medical Society, at Augusta, December 7: president, Dr. Oscar C. S. Davies, Augusta; vice president, Dr. Arthur U. Desjardins, Waterville, and secretary, Dr. Sylvester J. Beach, Augusta.

MARYLAND

Hospital and Ambulance Companies Mustered Out.—Field Hospital Company No. 1 and Ambulance Company No. 1, commanded by Major J. Harry Ullrich, M. C., Md. N. G., which have been on duty at Eagle Pass for six months, were mustered out of the United States service, January 6.

Meetings.—At the annual meeting of the Baltimore County Medical Society, held January 17, officers were elected as follows: president, Dr. Martin F. Sloan, Towson; vice president, Dr. J. Percy Wade, Catonsville, and secretary-treasurer, Dr. Frank W. Keating, Owings Mills. It was decided to devote the next meeting to mental diseases of children and to invite the Baltimore and the Howard County Medical associations to meet with them.

Personal.—Senior Surg. Henry R. Carter, U. S. P. H. S., Baltimore, superintendent of the Marine Hospital, is at Columbia, S. C., where he will superintend sanitary work on the new filtration plant in that city. In his absence Dr. Charles Vogel, Baltimore, will have charge of the hospital.——Dr. William E. Martin, Harrisonville, narrowly escaped being killed recently when his automobile skidded on the ice and rolled over an embankment. He escaped with body bruises.——Drs. Herbert Schoenrich and G. Milton Linthicum, Baltimore, who have been serving with the Fifth Infantry, have resigned.——Dr. Archibald C. Harrison, Baltimore, was operated on recently for appendicitis at St. Joseph's Hospital.——Dr. John F. Hogan has been placed in charge of the recently organized Bureau of Communicable Diseases, Baltimore. Under this bureau are included health wardens, nursing, the tuberculosis dispensary, school physicians, vital statistics, fumigation, complaints, tenement houses and the Sydenham Hospital.——Dr. Stacy T. Noland, Cambridge, assistant physician at the Eastern Shore State Hospital, has resigned to accept a similar position at the Montana State Hospital for insane.——Dr. Richard E. Yellott, Fallston, is reported to be seriously ill at the Hebrew Hospital, Baltimore.

MASSACHUSETTS

New College of Pharmacy Building.—Through the generosity of George Robert White, Boston, the Massachusetts College of Pharmacy is to have a new building located on Longwood Avenue, Roxbury.

New Bills Regarding Tuberculosis.—The Massachusetts Association of Boards of Health has submitted two bills to the Massachusetts legislature: The first is an act relative to the removal of certain persons affected with tuberculosis, and the second an act to provide for the care and treatment of wilfully careless and incorrigible tuberculosis patients.

Asks Time to Study Insurance Problem.—Dr. Samuel D. Woodward, president of the Massachusetts Medical Society, has presented a petition asking the special recess committee on social insurance of the state legislature not to recommend any legislation on health insurance until the medical profession and the public have had more time to study the question.

Health Boards Meet.—The annual meeting of the Massachusetts Association of Boards of Health was held at the Brunswick Hotel, Boston, January 25. Dr. Donald B. Armstrong, Framingham, presented a paper on "The Community Health and Tuberculosis Demonstration in Framingham," and Dr. Thomas F. Harrington, Boston, medical deputy commissioner of the state board of labor and industries, delivered an address on "Industrial Health."

Personal.—Dr. Orran G. Gilley, physician at the Charles Street Jail, Boston, for nearly five years, has resigned and has been succeeded by Dr. Harry H. Colburn.——Dr. Thomas B. McQuaid has been appointed city physician of Everett, succeeding Dr. Ralph W. McAllester.——Dr. Richard H. Morris has been appointed a member of the board of health of Everett.——Dr. Scott W. Mooring has been elected a member of the board of health of Gloucester, succeeding Dr. Charles H. Morrow, retired after ten years' service.——Dr. Howard A. Streeter, Marblehead, has been appointed district health officer in Berkshire District, succeeding Dr. Stanley H. Osborn, North Adams.——Dr. William J. Brickley, for six years resident surgeon at the Haymarket Square Relief Hospital, Boston, has resigned to enter private practice.——Dr. Henry S. Rowen, Brighton, has been appointed a trustee of the Boston City Hospital, succeeding the late Dr. Francis J. Keany.

MICHIGAN

Effect of General Vaccination.—The general vaccination order issued by the health commissioner of Escanaba a year ago resulted in entire freedom of the city from smallpox during 1916. Surrounding towns are said to have had many cases.

State Board Asks Funds.—The state board of health, in its annual report, asks for an increased appropriation owing to the expense of the new laboratory in the Upper Peninsula. It recommends that the state be divided into districts, and that the counties should organize as units for tuberculosis work. A special appropriation for tuberculosis is asked for, and the need for two state sanatoriums for the treatment of tuberculosis is emphasized.

MINNESOTA

Hospital Opened.—The Lake City Hospital was opened New Year's Day.

Personal.—At the annual meeting of the state board of health, Dr. William A. Jones, Minneapolis, was reelected president; Dr. Christopher Graham, Rochester, vice president, and the executive committee was also reappointed without change.——Dr. Harry M. Guilford has been appointed commissioner of health of Minneapolis.

New Sanatorium Opened.—The sanatorium of the Southwestern Minnesota Tuberculosis Association, near Worthington, opened, January 14, cost $100,000, one half provided by the state and the other half by the counties of Rock, Pipestone, Lincoln, Lyon, Murray, Nobles, Jackson and Cottonwood. The institution accommodates fifty patients.

NEW YORK

Health Department Banquet.—The tenth annual banquet of the health department of Buffalo was held, January 17, at the Hotel Statler. The principal address was delivered by Dr. William A. Evans, Chicago, on "Health Insurance." Dr. William G. Bissell, Buffalo, was chairman of the committee of arrangements.

Personal.—Dr. S. Meredith Strong, Flushing, has been appointed president of the staff of the Flushing Hospital, succeeding Dr. Charles B. Story, Bayside.——Dr. Anthony F. de Graffenried, Bayside, has been elected secretary of the staff of the hospital, succeeding Dr. George J. Lawrence, Flushing, who is on duty on the southern frontier.——Dr. James E. Mansfield has succeeded Dr. Maurice J. McGrath as local surgeon of the New York Central Lines, at Oswego. ——Dr. Barton D. Skinner, Greenport, was struck on the head by a falling limb of a tree, January 4, and rendered unconscious.

New York City

New Officers.—Bronx County Medical Society, December 20: president, Dr. J. Lewis Amster; vice presidents, Drs. John J. Decker and Maximilian Ziegler; secretary, Dr. Isidore J. Lansman, and treasurer, Dr. Philip A. Eichler.

Harvey Society Lecture.—The next lecture of the present course will be given at the New York Academy of Medicine on the evening of February 3 by Prof. James W. Jobling, Vanderbilt University. His subject will be "The Influence of Nonspecific Substances on Infections."

Personal.—Dr. William S. Stone has been appointed assistant director of cancer research in the Memorial Hospital. ——Dr. Simon Flexner has been elected foreign associate member of the Paris Academy of Medicine.——Dr. Henry Kendall has been appointed assistant visiting physician to the Sydenham Hospital.

Annual Report of Academy.—The report of the president of the New York Academy of Medicine shows that in the last twenty-five years the activities of the academy have increased five-fold, and that at present the library, reading room and journal room are greatly overtaxed. Two solutions of this difficulty are discussed. One is the sale of the present property and the erection of a new plant elsewhere; the other is the erection of an addition to the present building on the adjacent 25-foot lot running through from Forty-Third to Forty-Fourth Street and already in possession of the academy. The second plan seems most practical and would probably provide abundant facilities for the next twenty years.——The council reports the successful formation of a new section on historical medicine. The trustees report that during the past year the endowment fund has been increased by $1,600 and the general permanent fund by $100.——The academy extension fund has received paid subscriptions amounting to $112,328.——The committee on library reports the receipt of $100 from the First District Dental Society for the purchase of books and journals on dentistry.——From Dec. 9, 1915, to Dec. 10, 1916, there were added to the library 3,911 volumes and 3,372 pamphlets.

NORTH DAKOTA

New Hospital for Minot.—Articles of incorporation have been filed with the secretary of state by the Minot General Hospital Company with a capital stock of $200,000.——John Maloney, Minot, has offered to donate 4 acres of land for a site on which to erect this hospital. He also agrees to excavate the basement and to provide pure drinking water for the institution.

Appropriation Asked for Health Laboratory.—For the protection of the health of the people and to aid in the reduction of the death rate, the state public health laboratory has asked an appropriation of $12,000 from the legislature. The main laboratory is situated at the University of North Dakota, Grand Forks, and there are three branches, one each at Fargo, Minot and Bismarck.——The new quarters of the branch of the public health laboratory at Minot are in the Anderson Building, and the laboratory is in charge of Dr. Albert M. Larson.

PENNSYLVANIA

New Officers.—At the annual meeting and banquet of the Allegheny County Medical Society, held at Pittsburgh, January 9, the chief address was given by Dr. William S. O'Neill Sherman of the United States Steel Corporation on the treatment of wounds in war. Dr. John M. Thorne was elected president; Dr. Ellis S. Montgomery, vice president; Dr. Carey J. Vaux, secretary, and Dr. William C. Bryant, treasurer.

Personal.—Dr. Jacob T. Butz, for twelve years secretary of the Lehigh County Medical Society, was presented with a black alligator skin traveling bag and a traveling toilet set by the society.——Dr. Walter Lathrop has been reelected surgeon in chief and superintendent of the Hazelton State Hospital for the twentieth consecutive term.——Dr. Charles E. Hannon has been elected president of the staff of Mercy Hospital, Johnstown.——Dr. Lawrence A. Sheridan, Wilkes-Barre, has been elected president of the medical and surgical staff of Mercy Hospital.——Dr. Wilson H. Rothermel, Reading, who has been ill and confined to his house for seven weeks, has resumed his professional duties.——Dr. Harry J. Kirby, Ellsworth, is reported to be critically ill in a Harrisburg hospital, the result of an automobile accident.——Dr. Eugene B. Campbell, Williamsport, is reported to be seriously ill.——Dr. Samuel S. Shields, Carbondale, fell on an icy sidewalk, January 6, fracturing his left arm at the wrist.

Philadelphia

Medical Club Election.—The Medical Club of Philadelphia held its annual meeting, January 19, and elected Dr. Charles K. Mills, president; Drs. Gassaway O. Ring and William Martin, vice presidents; Dr. William S. Wray, secretary, and Dr. Lewis H. Adler, treasurer.

Symposium on Military Surgery.—The program of the College of Physicians of Philadelphia for January 22 was devoted to "Military Surgery, Based on Experiences in the American Ambulance." Dr. Fred T. Murphy, St. Louis, read a paper on "The Result of Operations on Bones"; Dr. Robert D. Osgood, Boston, discussed the "Orthopedic Phases of Military Surgery"; Dr. Charles F. Mitchell read a paper on "Compound Fractures," and Dr. Richard H. Harte one on "Plastic Operations."

Personal.—Dr. William W. Keen was the guest of honor at a dinner given by the faculty of Brown University at the University Club, Providence, R. I., January 16.——Dr. W. Wayne Babcock, chief of the surgical staff of the Samaritan Hospital, who underwent an operation for appendicitis, December 15, returned home convalescent, January 6.——Dr. R. Tait McKenzie, who recently returned from England, delivered an address before the Los Angeles County Medical Society, December 29.

TEXAS

Health Campaign in Polk County.—To demonstrate the feasibility of preventing uncinariasis, typhoid fever, paratyphoid, malaria and pellagra, a four months' campaign has been commenced in east Texas under the direction of Dr. Wesley C. Becker, field director of the International Health Board of the Rockefeller Foundation. This board, with the cooperation of the state board of health, is financing this campaign.

Personal.—Dr. Lee O. Foster, Fort Worth, was run over by an automobile, December 23, and severely injured.——State Health Officer William B. Collins has returned from a tour of the principal ports of Central America and the West Indies.——Dr. Philip Douglas Spohn, Corpus Christi, has been appointed a surgeon in the hospital service of England and has left for his new post of duty.——Dr. Samuel E. Thompson, medical director of the State Tuberculosis Sanatorium, Carlsbad, has resigned.——Dr. Marcus M. Carr, superintendent of the Parkland Hospital, Dallas, has resigned.

CANADA

Prevalence of Syphilis.—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, headed a deputation to Ottawa last week which appeared before the Canadian Conservation Commission and presented startling figures to that commission. It stated that more than 12 per cent. of the patients admitted to the public wards of the Toronto General Hospital for various diseases, medical and surgical, have syphilis. Dr. Clarke considers this a greater menace than tuberculosis. Dr. William Boldie asserted that Dominion control was necessary owing to the immigration laws being made by the Dominion Parliament. Others who accompanied the delegation were Prof. Benjamin P. Watson, Prof. John J. Mackenzie, Dr. Charles H. Hair, chief of the special treatment clinic at the Toronto General Hospital, and Dr. Herbert K. Detweiler, all of Toronto.

Hospital News.—The Laval Hospital Unit is being established temporarily in Paris with 1,400 beds. Its own building, which is now under construction, will be ready in May. ——The Canadian Pacific Railway Company has agreed to transform six sleeping cars into hospital cars for the Canadian Military Hospitals Commission. This will make a total of sixteen cars under the control of the commission. These cars will be used between Winnipeg and the Pacific Coast, while the ten government cars will be used between Halifax and Winnipeg.——The Canadian Hospitals Commission is advocating the sending of all military medical men in Canadian hospitals overseas, filling their places by returned surgeons.——A deputation headed by Sir Adam Beck came down to Toronto recently from London, Ont., to request the Ontario government to establish a hospital in London for returned soldiers. It was suggested that a new building be erected on the grounds of the Hospital for Mental Diseases and that later on it could be utilized for hospital purposes for those afflicted with mental disease.

Personal.—Dr. Melville H. Embee has returned to Toronto from overseas on leave.——Capt. Alexander H. Taylor, medical officer, Twenty-Fourth Battalion Victoria Rifles, has been awarded the Military Cross for conspicuous bravery. ——Dr. H. R. Smith, Toronto, medical officer, First King's Own Royal Lancasters, was severely wounded in December and when last heard from was in the Rouen Hospital.——Dr. William A. Macdonald, Windsor, Ont., has moved to Toronto, where he is attached to Exhibition Camp Base Hospital as an officer in the C. A. M. C.——Dr. F. R. Nicolle (captain), Chatham, Ont., contracted trench fever some months ago. He has been in King's Hospital, London, England, since November.——Dr. Charles Stuart Wynne, sometime house physician at the Toronto General Hospital, has been awarded the Military Cross, "for working all night dressing and attending the wounded in the open, thereby saving many lives."——Capt. Leeming A. Carr, Hamilton, son of Dr. Leeming Carr, has been awarded the Military Cross for continually leading stretcher bearers under heavy fire, and on many occasions himself rescuing wounded men. ——Col. Charles W. F. Gorrell, Ottawa, formerly commanding officer, Taplow Hospital, resigned his position some time ago, and when last heard from was ill in a private hospital in London, England.——As a result of representations made to the British Embassy at Washington, Hon. Dr. Henri S. Beland, formerly postmaster general of Canada, who was made a prisoner of war in Belgium early in the campaign, will soon be liberated.——Col. Herbert A. Bruce is not returning to Toronto at the present time. He has accepted from the Royal Army Medical Service the appointment of surgeon in chief to twelve large British hospitals in France, and will likely remain at this post until the end of the war. ——Major John A. Amyot, Toronto, formerly director of the Ontario Board of Health laboratories and professor of hygiene and public medicine in the University of Toronto, has been appointed sanitary adviser in England to the Canadian forces.

GENERAL

Grayson Now Rear Admiral.—January 18, President Wilson nominated as one of the five new rear admirals of the navy, two of whom are taken from the Medical Corps, Passed Asst. Surg. Cary T. Grayson, naval aid and personal physician to the president. This promotion advances Dr. Grayson 114 numbers. Dr. Grayson, who was born Oct. 11, 1878, in Virginia, was graduated from the University of the South, Sewanee, Tenn., in 1903, and entered the navy June 28, 1904, as assistant surgeon. He was promoted to passed assistant surgeon three years later, and had had up to the beginning of 1916 a little more than five years' sea service and more than six years' shore or other duty. He was first assigned to duty at the White House during the administration of President Taft and was continued in that position by President Wilson when he assumed the presidency.

American Academy of Public Health.—At a meeting held in Cincinnati, October 23, by twenty-nine physicians interested in public health matters, it was decided to establish an organization to be known as the American Academy of Public Health. Qualifications for membership are to be based on achievements in public health work and scholarship in public health science. The meetings of the organization will be devoted to the submitting of reports on public health problems and general discussion by the members. According to the constitution adopted, the membership for the first year is limited to fifty and five new members may be added each year. The following officers were elected pro tem: president, Carl L. Alsberg, Washington, D. C.; vice president, Prof. H. W. Conn, and secretary, Dr. Charles E. North, 30 Church Street, New York.

Bequests and Donations.—The following bequests and donations have recently been announced:

Servants for the Relief of Incurable Cancer, New York, $5,000, and St. Mary's Hospital for Crippled Children, $2,000, by the will of Miss Eliza Haynes.

St. Vincent's Hospital, New York, $260,000 for a cancer hospital to be operated as a branch of the institution.

Germantown (Philadelphia) Hospital, a donation of $110,000 as a memorial for her daughters, Mrs. Charles W. Harkness, New York, and Mrs. Anna W. Darnell, by Mrs. William G. Warder, Germantown.

Dr. Clarence P. Foss, Brunswick, Me., the entire estate of Mrs. Susan York, Brunswick, valued at $20,000.

Montefiore Home and Hospital, New York, a donation of $100,000, by Jacob H. Schiff.

Hahnemann Hospital, New York, $72,494, by the will of Juliet C. Percival.

Mercy Hospital, Chicago, Mercy Orphan Asylum and St. Charles, Illinois, School Board, the estate of Robert J. Haynes, valued at more than half a million dollars, subject to the upholding by the court of the decision of Master in Chancery Hamlin.

Massachusetts Homeopathic Hospital, Boston, $25,000 as a trust fund to be known as the Kate A. Morrell Fund, by the will of George Morrell.

Universal Military Training.—On December 27 letters were mailed to the presidents and to certain past presidents of the American Medical Association and of other national medical organizations of a special character, and to the same officers of state societies inviting them to occupy the time at the hearing before the Senate Committee on Military Affairs which had been assigned to Dr. Lucien Howe, Buffalo, or to join in a letter to the chairman of the committee approving of universal military training. Out of a total of 117 replies received previous to the hearing, 112, including presidents or past presidents of thirty-two state associations, gave their unqualified approval as indicated in the letter; four were doubtful or hesitated to commit themselves and one was opposed to the military aspects of the bill. Several letters came too late to be presented. At the hearing, Dr. Howe made clear the positions of those who signed the letter to the committee, read abstracts from a number of the letters, and presented them to the committee. In presenting these letters, stress was laid on the fact that each signer expressed only his individual opinion, and not that of any organization with which he was then or had been associated. The bill was advocated because of two provisions which would tend to improve the health of boys or young men. These were: first, a uniform and thorough examination of boys or young men, such as would reveal any physical imperfections, and therefore lead to the adoption of means for their correction, and second, the gymnastic exercises and military training would tend to improvement of the general health. Dr. Hugh H. Young, Baltimore, then presented to the committee other physicians who joined in the plea for universal training—beginning with simple exercises at home for boys of about 12, or if that plan were deemed impracticable by the committee, they advocated intensive military training for young men of about 18.

FOREIGN

Extra Sugar for Infants in Berlin.—A card is now issued in Berlin entitling infants under 1 year old to an extra half pound of sugar per month.

Exchange of Medical Prisoners of War.—The *Münchener medizinische Wochenschrift* states that Germany and Russia have come to an agreement respecting the exchange of physicians who have been taken prisoners in the war. One physician is to be retained for each 2,500 war prisoners, and all the rest are to be allowed to return to their homes.

Universal Patriotic Service. — The German Reichstag recently passed a bill imposing universal patriotic service on every male German between the ages of 7 and 60. According to the new law, if one locality is overabundantly supplied with physicians, while another has too few, some of the physicians can be transferred. The *Deutsche medizinische Wochenschrift,* commenting on the bill, remarks that it is to be hoped that such measures will be enforced only in cooperation with medical organizations, and will not be carried out arbitrarily. Physicians will probably be called on to report on the conditions of health of persons affected by the law. Medical students can be called to care for the sick and wounded, and the time thus spent will be credited to them as those on active service now are being credited.

Child Welfare Work.—The Prussian minister of the interior has recently notified the provincial authorities (*Regierungspräsidenten*) to take active measures at once to train the older girls and the mothers in means to combat infant mortality, and in child welfare work of all kinds. Besides courses of lectures on the care of infants and young children, public lectures, mother's evenings and similar measures are to be inaugurated. He urged that the woman's organizations, the Red Cross and other benevolent associations endeavor to increase their efficiency. He also suggested that health officers, communal physicians, pediatrists and women physicians, teachers, ministers and others help, either personally or by providing lecturers. In several communities, courses of lectures are being held for young girls and mothers, who meet two or three evenings a week for this purpose, and occasionally visit infant asylums and day nurseries for practical demonstrations. The minister of the interior also urged distribution of pamphlets and circulars on the care of young children.

Deaths in the Profession Abroad.—The first woman physician in Switzerland in modern times, and hence the first in Europe, has recently died at Zurich, Dr. Marie Heim-Vögtlin, aged 71. She had been practicing in Zurich since 1874, and had written a number of popular scientific works, especially on the care of infants.——Bruns, professor of neurology at he University of Hannover and chief of the hospital for children's diseases, aged 58.——P. Herzberg of Berlin, aged 70, the pioneer in Germany for the movement in favor of cremation, long president of the Verein für Feuerbestattung.——J. Benario, long a co-worker with Ehrlich, aged 48.——E. Hagenbach-Burckhardt, professor of diseases of children at the University of Basel, aged 76.——Achille De Giovanni, senator of the realm and director of the general medical clinic of the University of Padua, Italy, aged 78. He was well known as a pathologist, clinician, biologist and philosopher, and had published works in these various lines, especially on the relations between the morphology of the human body and the predisposition to disease. In the last few years he had taken a leading part in the attempt to control the spread of tuberculosis.——E. Gaupp, professor of anatomy at the University of Breslau, aged 56.

Prophylaxis of Venereal Diseases in Prussia.—The *Allgemeine medizinische Central-Zeitung* states that the various health insurance organizations of Prussia have established seventy free consulting dispensaries for sexual diseases. A conference was held recently at the Berlin Central Office for Social Insurance which was attended by representatives of the various insurance organizations and of the larger medical associations. Realizing that defective or unsuitable treatment of venereal diseases is a danger not only to the diseased themselves but also a menace to the general welfare, the conference unanimously voted in favor of continuing, after the war, the measures enforced during the war, by the orders of the military commanders, against quackery in the treatment of venereal disease. The conference declared that these diseases can be successfully controlled only when quackery is legally excluded. It should be illegal for any person, not a registered physician, to treat sexual diseases in any way, regardless of the site of the disease. Laws should also be passed prohibiting the dispensing of remedies against sexual diseases by drug stores and other establishments without a physician's prescription, and prohibiting the distribution of circulars and pamphlets which encourage self-treatment of sexual diseases, even in veiled terms, as testimonials, expressions of gratitude, recommendations and advice. All distant treatment of sexual diseases, as well as every public offer to treat patients of this class, should be absolutely prohibited.

WAR NOTES

Contributions to British Red Cross.—The *Times* Red Cross Fund which is being supported also by other newspapers passed the $30,000,000 mark, January 17.

Italian Field Hospital Shelled.—An official communication from Rome, January 12, states that Austrian batteries shelled one of the field hospitals at Andrami in the Upper Cordevole, although it was visibly marked with a Red Cross.

Relief Party Reaches Saloniki.—A telegram from Saloniki, January 11, states that twenty-eight Americans, comprising Section Ten of the American Field Ambulance in France, have arrived at Saloniki on their way to the French front in Macedonia to relieve another section which has been in service since October.

The American Red Cross and European War Relief.—The American Red Cross has issued a statement to the public showing what it has accomplished in European War Relief. From Aug. 6, 1914, to Sept. 30, 1916, there were received contributions of $2,144,968.17, of which $2,007,584.62 was disbursed. Of the money received $412,635.04 was designated and used for certain specific purposes. Supplies valued at $978,309.54 were also donated during this period. During the first months of the war the Military Relief Work of the Red Cross involved the sending of sixteen hospital units to the seven countries engaged in war, at an expense of $352,000. It also joined with the Rockefeller Foundation to send a sanitary expedition to Serbia, which was then suffering from typhus fever. The cost of this expedition was about $180,000. For Serbian relief a quantity of food supplies was shipped across the Roumanian border by way of Hungary to Belgrade. In this way 318 carloads of food supplies were shipped up to the end of August. Food supplies were sent into Serbia from the United States and Switzerland, the approximate cost of this relief being $120,000. Red Cross representatives are now

RED CROSS RELIEF TO THE ALLIED POWERS

Countries	No. of Shipments	No. of Packages	Purchased Supplies	Donated Supplies Designated	Donated Supplies Undesignated	Total Value
Belgium	38	1,694	$ 34,590.17	$ 30,059.11	$ 13,101.65	$ 77,750.93
Belgium via Holland	6	507	19,971.10	16,993.40	4,800.00	41,764.50
England	44	2,676	51,332.45	34,544.55	44,733.65	130,610.65
France	78	12,028	123,720.48	241,583.77	79,860.35	445,164.60
Italy	26	655	16,141.32	16,754.55	14,992.70	47,888.57
Montenegro	6	372	2,708.15	9,950.00	6,852.60	19,510.75
Russia	32	2,740	50,392.43	34,931.85	39,548.50	124,872.78
Serbia	34	14,381	116,818.24	83,348.23	34,037.00	234,203.47
Total	264	35,053	$415,674.34	$468,165.46	$237,926.45	**$1,121,766.25**

TO THE CENTRAL POWERS

Countries	No. of Shipments	No. of Packages	Purchased Supplies	Donated Supplies Designated	Donated Supplies Undesignated	Total Value
Austria	14	1,891	$ 18,409.54	$ 58,153.55	$ 18,773.00	$ 95,336.09
Bulgaria	1	51	996.25	....	2,395.15	3,391.40
Germany	12	2,512	29,481.56	73,729.34	18,818.40	122,029.30
Turkey	3	309	7,025.86	....	7,403.96	14,489.82
Prisoners in South Africa and Siberia	23	6,123	20,538.64	92,884.23	....	113,422.87
Total	53	10,886	$ 76,451.85	$224,767.12	$ 47,450.51	$ 348,669.48

in Greece, ready with emergency relief funds and supplies for use in Serbia. In conjunction with the Armenian and Syrian Relief Committee a cargo of food, clothing and medical supplies is on its way to Beirut, where it will be distributed jointly by local Red Cross chapters and the Turkish Red Crescent. For many months a Red Cross Committee has provided relief for 5,000 refugees brought from Armenia to Egypt. Working through Vladivostok, Tientsin and Peking, the American Red Cross has done much to help the thousands of prisoners of war and interned civilians in the interior of Siberia. On the preceding page is a summary of the work of the American Red Cross from the outbreak of hostilities until Sept. 30, 1916.

LONDON LETTER

London, Jan. 1, 1917.

The State and the Treatment of Venereal Diseases

A memorandum has just been issued by the Local Government Board to county and borough councils setting out the returns required to be made by the authorities of institutions approved by the board under the regulations for the diagnosis or treatment of venereal diseases. The board has also prescribed a form of register to be kept by the pathologists of approved laboratories, and it has prepared for the consideration of hospitals and other institutions a suggested system of case papers and registers. A number of leaflets have been prepared for use, certain of them for the information of patients, and suggestions to local authorities for publicly announcing the facilities to be provided for treatment. Incidentally, mention is made of the fact that at present the board has approved of kharsivan, arsenobillon and novarsenobillon as substitutes for salvarsan. The board recommends that the necessary outfits for the collection of pathologic specimens should be supplied gratuitously to physicians, and it also suggests that a uniform payment of 72 cents per specimen should be made to cover out-of-pocket expenses in the transmission of specimens to laboratories.

A large number of prominent women, including the leading women physicians, continue to advocate in the press compulsory notification of all persons infected with venereal disease, and they point out that compulsory notification exists in Denmark. They say that it has never been found possible to protect the community from the ravages of infectious and contagious diseases by educative means alone; compulsion has always been necessary and has proved the best education. So far the medical profession has opposed compulsory notification on the ground that it would lead to concealment and treatment by quacks, and the government has accepted this decision.

Trinitrotoluene Poisoning

The manufacture of the high explosive trinitrotoluene on a large scale has led to the discovery that it may be dangerous to the workers. So far there have been fifty fatal cases—a very small percentage when the number of workers is considered. Absorption by the skin appears to be the chief channel by which the vapor becomes poisonous. This absorption is shown by the characteristic yellow staining of the face and hair lasting for some weeks, to which munition workers handling the explosive are exposed. A further stage in this discoloration is the advent of dermatitis, due to the direct irritant action of the poison. Next in order of frequency come digestive troubles in varying degree, and more seriously degenerative blood changes. Worst of all, there is a direct destructive effect on the liver. To the latter change is attributable the toxic jaundice from which the fatalities have ensued. In other cases, the extent of the toxemia is manifested by "the pallor of the face, and the ashen grey color of the lips." The fact has been elicited by the inquiry that some workers are susceptible to the poison and others not. The latter are by far the larger class, and these apparently remain immune, even after long exposure to the poison. On the other hand, any degree of susceptibility is a source of danger to a worker, for among these jaundice has been found to develop rapidly—within the limits of the fifth and sixteenth weeks of exposure. Age, too, seems to be a factor of incidence of the symptoms, as in eight deaths out of eleven, due to jaundice, the sufferers were less than 18 years old. In a matter of such national concern it was imperative to devise means for the protection of the workers, and strenuous efforts are being made to check the evil. A scheme of preventive measures has been elaborated. Only persons of sound health, between the ages of 20 and 50, are employed. All the workers once a week are subjected to medical inspection. Every fortnight they are removed from the trinitrotoluene zone for employment in other departments. Means are resorted to for preventing the formation of trinitrotoluene dust, and for getting rid of fumes. Absolute cleanliness of the face and hands before meals and before leaving the factory is insisted on, and plunge and shower baths are provided.

The Color Bar at a London Hospital

Probably no civilized country is so free from racial prejudices as England, and it is only on the rarest occasions that a "color line" is ever in evidence, as is illustrated by a recent advertisement in the *Lancet* of the Paddington Green Children's Hospital for house physician and surgeon. The advertisement stated that "as this is a children's hospital, applications from Indian or Egyptian students cannot be entertained." This aroused protests in the columns of the *Lancet* from Indian physicians in this country. One pointed out that he is resident medical officer at East London Hospital for Children, and that the house physician there is an Indian, too. At the same time he held that there is a prejudice against Indians. Another sarcastically asked why the children's hospital is put forward as an excuse for excluding Indians. Does it mean that Indians are objectionable to children and their mothers? He gives his own experience and that of other Indians which shows that this is not true. He adds that the patients have far less prejudice against Indians than the heads of institutions. This is no doubt true. The London poor are quite without racial prejudices. Several Indian physicians practice among them and are most popular. Indeed, their race is in one way an advantage as people have the impression that they are possessed of some special skill denied to the ordinary Englishman. This may be compared to the prejudice in favor of foreigners which exists in several directions. Thus, English musicians have found it an advantage to pose as foreigners.

The National Institute of Mothercraft

A projected national institute of mothercraft is gradually progressing toward the final realization of an important and far-reaching scheme. The committee includes leading pediatricians and medical women. A site has not yet been found, owing to the difficulty of getting a suitable one in a central position. It is important that the institute should be easily accessible from all parts of London. It is not intended to be a vast school for mothers, but to be the headquarters of all information and material for the training of students and workers concerned in the welfare of mothers and children. On the ground floor will be a day nursery, nursery schools for children of from 3 to 4 and 4 to 5 years, a school for mothers, and an infant clinic. The first floor will be for administration purposes. On the second floor will be the museum and exhibition, the reference and reading library, the observation ward for resident babies, and the students' training department. The third floor will be devoted to laboratory and research work. The aim of the originators of the institute is to make it, when it takes definite form, a place where every effective preventive agency shall be put into operation to combat infant, antenatal and maternal mortality. All the scattered activities will be collected under one roof, and every department will be organized by specialists and linked up in such a way that any provincial authority wishing to adopt, as best suited to its requirements, one branch of infant welfare will find at the institute a practical and complete model to draw on. The institute is intended to be a memorial to those who have fallen in the war, and the Duchess of Marlborough is asking for $1,000,000, the provisional estimate of its cost.

PARIS LETTER

Paris, Dec. 28, 1916.

Wounds of the Large Vessels Without Immediate Hemorrhage

This subject continues to command the attention of the Société de chirurgie de Paris. Dr. Planson reported two cases of so-called "dry" wounds of large vessels, that is, wounds not causing immediate hemorrhage (one case of complete division of the femoral artery and one case of almost complete division of the external carotid) following bullet wounds. These two cases differ from those previously reported by Dr. Pierre Duval and his collaborators (The Journal, Nov. 25, 1916, p. 1613) in the length of time (eight days) that elapsed between the receipt of the wound and the onset of the hemorrhage which led to the discovery of the wound. Although both patients recovered, Planson again calls attention (agreeing with Duval and Sencert) to the danger of death to which these lesions expose the patient, and the necessity of a thorough systematic exploration of the vessels when the site and the direction of the wound have excited suspicion as to the nature of the lesion.

Dr. Pothérat, surgeon at the hospitals of Paris, since the beginning of the war has frequently observed cases of these wounds—which he prefers to term "stanched wounds"—occurring on almost all the main trunks of the arteries. He thinks that many arterial hemorrhages which have been classified as "septic secondary hemorrhages" were in reality arterial hemorrhages caused by trauma but retarded in occurrence by a "stanching" or tamponing action. How long after the trauma does the arterial wound reveal itself by hemorrhage? It is quite variable. Several hours, several days, even several weeks elapse. Pothérat has seen a subclavian artery wound bleed nine days after its receipt—an axillary artery wound after seventeen days—and the artery was almost totally divided. How are we to explain these facts? The wound of the artery can be closed: 1. By the projectile itself or a vestimentary fragment, acting as a stopper. The moment the plug is removed the hemorrhage begins. 2. The edges of the torn artery and particularly the intima curl up into the lumen of the artery; a coagulum or clot is formed and stops the flow of blood; this clot disintegrates or becomes detached in the course of a dressing and hemorrhage ensues. 3. The arterial wound could have produced a localized hemorrhage of little importance, too slight to manifest itself externally but sufficient to produce a hematoma, which, being compressed against the vessel by the adjacent tissues, plugs the wound by compression, and delays the hemorrhage until such time as an inadvertent jar in the course of a dressing of the wound will detach this improvised tampon, and hemorrhage occurs.

To prevent accidents, sometimes fatal, to which these "stanched" wounds of the arteries expose the patients, it is absolutely necessary to make a thorough examination of every case in which the course of the projectile gives cause to suspect a blood vessel wound, even though there is no clinical evidence of this wound. If a vascular lesion is discovered, infinitesimal though it may be, immediate ligation of the artery on each side of the lesion should be done, *loco loeso*.

Dr. Routier observed a patient with a wound in the popliteal space, fracture of the inferior extremity of the femur, and intermittent hemorrhages. Amputation of the thigh at the middle had to be done on account of gangrene of the leg and foot. Dissection of the anatomic specimen revealed a tear in the wall of that portion of the femoral artery lying in Hunter's canal, this tear attaining half the caliber of the vessel. It probably had been caused by a spicule of bone from the femur. It is possible that the interruption of the hemorrhage was due to the artery catching on the point of the fragment, and that hemorrhage occurred at each displacement of the fragment.

Dr. Bazy some time ago observed a case of wound of the femoral artery caused by revolver shot, in which formidable hemorrhage did not occur until the third day after receipt of the wound. This hemorrhage was easily stopped by compression, and subsequent ligation of the vessel. The patient recovered.

Dr. Pierre Duval reported a case of complete section of the internal jugular and common carotid by a shell explosion which was operated on successfully by Dr. Fiolle.

The War

ACUTE ENDOCARDITIS AND PERICARDITIS AMONG THE SOLDIERS AT THE FRONT

Among 1,719 soldiers treated during fourteen months in the contagious disease division of the military health service, Drs. Nobécourt and Peyre observed that thirty-four (1.97 per cent.) were affected with endocarditis and pericarditis. Various infectious processes were responsible for one case of mitral endocarditis and three cases of pericarditis. Acute articular rheumatism was the cause of thirty of these cases of cardiopathy. The mitral valve was always affected and frequently (in nine cases) also the aortic valve. Pericarditis was present in nine patients and in five of these there was also an endocarditis. Age has had a manifest influence on the frequency of cases of cardiopathy; 62 per cent. of the cases occurred among men between 20 and 25, and 14 per cent. occurred among men between 32 and 34. Among soldiers between 20 and 22 years of age, rheumatism resulted in cardiopathy in 40 per cent. of the cases; between 23 and 30, in 25 per cent., and among older men, in 13 per cent. On an average of from five to six weeks after dismissal from the hospital these cases were checked up, with the following results: Out of seventeen cases of mitral endocarditis, eight gave normal sounds; nine showed some signs of mitral disease. Among nine cases of aortic endocarditis, five gave normal sounds, three gave harsh or clangorous sounds, and one showed the murmur of aortic insufficiency. Often cardiomalacia existed. Signs of pericarditis had disappeared in all cases. In about half the cases, the patients seemed cured; the others still showed signs of endocarditis.

UTILIZATION OF WOMEN'S SERVICES IN THE MANUFACTURE OF DENTAL SUPPLIES FOR THE MILITARY HEALTH SERVICE

Owing to the scarcity of male workmen and the necessity to provide prostheses as quickly as possible for soldiers accidentally edentated, the undersecretary of state of the military health service has drawn the attention of those in charge of this special phase of the service to the employment of women who have already rendered valuable aid in other departments. It was possible to entrust to women, after a period of apprenticeship lasting from ten to twenty days, many phases of the manufacture of prosthetic dental apparatus, such as the casting of plaster models and the making of dental modeling wax, registering teeth, filling casts, finishing and polishing. From experience it may be affirmed that a dental laboratory worker, assisted by two well trained women, can double his output of apparatus.

Necessity of Publishing the Composition of Pharmaceutical Specialties

Dr. Tiffeneau, associate professor at the Faculté de médecine de Paris, has drawn the attention of the Société de médecine légale to the fact that most manufacturers fail to publish the qualitative and quantitative composition of their products. The employment of these specialties constitutes a return to empiricism and, moreover, these products escape the control of the service for the repression of frauds. After discussion, the société ruled that the composition of these products be declared to a service or bureau designated by the public authorities before they are placed on sale.

Election of Two Foreign Associates to the Academy of Medicine

At a recent session, the Académie de médecine elected two foreign associates, Drs. Francisco Durante, professor of clinical surgery at the Faculté de médecine de Rome, and Simon Flexner, of the Rockefeller Institute, New York.

Personal

Dr. Ferdinand Widal, professor of internal pathology at the Faculté de médecine de Paris, has been called to take the place of the late Professor Bouchard in the superior council of public instruction.

Marriages

James Roy Freeland, M.D., Pittsburgh, to Miss Katherine Palmer Moore of New York City, December 28.

Sylvester Guy Pake, M.D., Superior, Wis., to Miss Rhea Janet McManus of Duluth, Minn., December 19.

Frederick Leonard McDaniel, M.D., to Miss Sue McCloskey, both of Osawatomie, Kan., January 15.

John Henry Traband, Jr., M.D., to Miss Laura Adelaide Hempel, both of Baltimore, January 9.

James Clyde Sargent, M.D., to Miss Mary Genevieve Cook, both of Minneapolis, January 3.

William A. Hall, M.D., Prairie du Chien, Wis., to Miss Lydia Hulse of St. Paul, January 4.

Julius T. Kane, M.D., Jamaica, N. Y., to Miss Margery L. Davis of Montreal, Que., January 6.

Russell Arthur Jewitt, M.D., Cleveland, to Miss Kate Freund of Chicago, January 16.

Edward Estill Johnston, M.D., to Miss Mary L. White, both of Indianapolis, January 3.

Dabney B. Reinhart, M.D., Merrill, Wis., to Miss Ann Toomey of Chicago, January 1.

Harry Edgar Dees, M.D., Bicknell, Ind., to Miss Naomi Robertine Cox, January 11.

William Joffee, M.D., to Miss Freda Abelson, both of Chicago, January 14.

Deaths

Charles Francis Withington, M.D., Boston; Harvard Medical School, 1881; aged 64; a Fellow of the American Medical Association, and at one time a member of the committee on national legislation; president in 1914 and 1915 of the Massachusetts Medical Society; visiting physician to the Boston City Hospital and a member of the consulting staff of the Boston Insane Hospital, Choate Memorial Hospital, Woburn, Mass., and the New England Hospital for Women and Children; a member of the Association of American Physicians; formerly instructor in clinical medicine in his alma mater and later lecturer of medicine in the Graduate School of Medicine in Harvard University; for several years associate editor of the *Boston Medical and Surgical Journal;* died at his home, January 7, from heart disease.

Charles Norman Ellinwood, M.D., San Francisco; Rush Medical College, 1858; aged 80; a Fellow of the American Medical Association; formerly surgeon to the San Francisco City and County Hospital; president and professor of physiology and clinical surgery in Cooper Medical College; surgeon of the Seventy-Fourth Illinois Infantry, U. S. Volunteers, and surgeon major in the army during the Civil War; for many years a surgeon in the United States Marine Hospital Service and one of the organizers of the United States Public Health Service; a member of the board of regents of the University of California, and surgeon in chief to the San Francisco and German hospitals; died at his home, January 4, from senile debility.

Chauncey D. Palmer, M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1862; aged 77; a member of the Ohio State Medical Association; assistant surgeon at Camp Dennison, Ohio, from 1862 to 1865; professor of obstetrics and gynecology in his alma mater from 1869 to 1875; professor of gynecology and clinical gynecology from 1875 to 1906, and emeritus professor of obstetrics, gynecology and clinical gynecology since 1906; clinician in obstetrics and gynecology at the Cincinnati Hospital, from 1883 to 1906; consulting gynecologist to the Presbyterian and Good Samaritan hospitals, Cincinnati; contributor to many textbooks on obstetrics and gynecology; died at his home in Avondale, Cincinnati, January 10.

Aaron J. Steele, M.D., St. Louis; Jefferson Medical College, 1859; aged 81; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association, and American Orthopedic Association; professor of orthopedic surgery in Washington University; orthopedic surgeon to the Missouri Baptist Sanitarium and consulting orthopedic surgeon to the Martha Parsons Children's Hospital, St. Louis; a veteran of the Civil War; died at his home, January 7.

John Arthur Cullum, M.D., Regina, Sask.; University of Toronto, Ont., 1905; L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.&S. (Glas.), 1906; aged 38; captain in the Canadian Army Medical Corps; who on account of gallantry had been recommended for the Victoria Cross, and had been awarded the Military Cross and the *Croix de Guerre;* died November 10, from wounds received while on active service with the Canadian expeditionary force on the western war front in France.

Pitt Yandell McCoy, M.D., Evansville, Ind.; Rush Medical College, 1863; aged 75; a Fellow of the American Medical Association, and a delegate from Kentucky to the Association at its meeting in St. Louis in 1873; formerly professor of surgery in Evansville Medical College; president of the staff of St. Mary's Hospital, and for thirty-five years division surgeon for the Louisville and Nashville System; died at his home, January 14, from heart disease.

George Albert Ickes, M.D., Altoona, Pa.; Jefferson Medical College, 1886; aged 61; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for many years a member of the city council, and president of that body in 1901; at one time coroner of Perry County; died in the Altoona Hospital, January 9, from pneumonia superinduced by a fall, December 31.

W. Franklin Coleman, M.D., Chicago; Queens University, Kingston, Ont., 1863; M.R.C.S. (Eng.), 1870; aged 79; formerly a Fellow of the American Medical Association; one of the founders and president of, and professor of ophthalmology in the Post-Graduate Medical School of Chicago; well known as a specialist in diseases of the eye, ear, nose and throat; died in Hastings, Fla., January 22.

Alfred Myers, M.D., York, Pa.; Jefferson Medical College, 1875; aged 62; a member of the Medical Society of the State of Pennsylvania; postmaster of Hampton, Pa., during the administration of President Benjamin Harrison; died in his laboratory, January 5, from cerebral hemorrhage. The York County Medical Society held a special meeting, January 6, to take action on the death of Dr. Myers.

Eugene Boyd Campbell, M.D., Williamsport, Pa.; Jefferson Medical College, 1873; aged 66; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for several years physician to the Williamsport City Hospital, and for four years president and for four years secretary of the hospital board; died at his home, January 6.

Albert A. Seem, M.D., Bangor, Pa.; Jefferson Medical College, 1865; aged 73; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; surgeon of U. S. Volunteers during the Civil War; chief burgess of Bangor; a member of the borough council and school board and for several years president of the Bangor Trust Company; died in Los Angeles, January 5.

Seth Louis Lloyd, Williamstown, Mass. (license, Massachusetts, years of practice, 1894); aged 51; for several terms a member of the board of selectmen and school committee of Williamstown and later a member of the board of commissioners of Berkshire County; superintendent of the Sand Springs Sanatorium; died at his home, January 7.

Charles Richard Charteris, M.D., Chatham, Ont.; University of the Victoria College, Coburg, Ont., 1887; aged 51; a member of the Ontario Health Association; acting medical officer of health of Chatham and Chatham Township; past president of the Chatham, Ont., public library board; died at his home, November 25, from angina pectoris.

Henry August Kornemann, M.D., Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1872; aged 83; a Fellow of the American Medical Association and a member of the American Public Health Association; for many years a member of the staff of the German Hospital, New York; died at his home, January 8.

Stephen Olney, M.D., Sioux Rapids, S. D.; Western Reserve University, Cleveland, 1868; aged 70; formerly a member of the South Dakota State Medical Association; a practitioner of Sioux Falls, from 1877 until his retirement in 1911; died at his apartment in the Hotel Kaiserhof, Sioux Falls, January 6, from acute dilatation of the heart.

Harry Burdell Sanford, M.D., Memphis, Tenn.; Memphis (Tenn.) Hospital Medical College, 1896; aged 40; formerly a member of the Tennessee State Medical Association, Mississippi Valley Medical Association and Tri-State Medical Association of Mississippi, Arkansas and Tennessee; died at his home, January 8, from tuberculosis.

Clinton G. Gray, M.D., Ironton, Ohio; Miami Medical College, Cincinnati, 1871; aged 71; formerly a member of the Ohio State Medical Association; a veteran of the Civil War; for nineteen years proprietor of Gray Gables Sanatorium, Hanging Rock; died in the Ohio State Hospital, Dayton, January 4.

Thomas B. Taylor, M.D., St. Louis; Washington University, St. Louis, 1876; aged 67; a member of the Missouri State Medical Association; formerly surgeon to the Mississippi River and Bonne Terre Railway at Festus, Mo., and coroner of Jefferson County; died in the Masonic Hospital, St. Louis, January 9.

Lester Elmer Peck, M.D., Buchanan, Mich.; University of Michigan, Homeopathic Medical School, Ann Arbor, 1894; aged 46; health officer for several years; a member of the village council for four years and president for three terms; died at his home, December 30, from carcinoma of the stomach.

Henry Laning, M.D., Chevy Chase, Md.; Albany (N. Y.) Medical College, 1864; aged 73; who had spent the greater part of his life since 1873 in Osaka, Japan, where he was for forty years head of St. Barnabas' Hospital; died at the home of his son-in Chevy Chase, January 1, from cerebral hemorrhage.

Frank Rattan, M.D., Martinez, Calif.; Cooper Medical College, San Francisco, 1885; aged 59; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; died at his home, January 3.

Ambrose Jones, M.D., Delton, Wis.; Rush Medical College, 1849; aged 96; a pioneer in telegraphy, who sent the first message between Milwaukee and Chicago on Jan. 15, 1848; assistant surgeon of the Fifth Wisconsin Volunteer Infantry during the Civil War; died at his home, January 11.

James H. Hedgpeth, M.D., Rockport, Mo.; College of Physicians and Surgeons, St. Joseph, Mo., 1882; aged 61; for several years coroner of Atchison County, Mo., and for eight years general manager of the Rockport, Langdon and Northern Railroad; died at his home, about January 5.

James Logan Brown, Pleasant Unity, Pa. (license, twenty years' practice, 1881; Westmoreland County, Pa.); aged 72; formerly a member of the Medical Society of the State of Pennsylvania, and for forty-five years a practitioner of Pleasant Unity; died at his home, January 13.

John H. Williams, M.D., Summerfield, Ohio; Columbus (Ohio) Medical College, 1885; aged 60; a member of the Ohio State Medical Association; after a violent quarrel with his wife, January 5, shot and killed her, and afterward shot himself, dying from his injuries, January 6.

Samuel Watson McConochie, M.D., Hamilton, Ont.; Trinity Medical College, Toronto, 1883; L.R.C.P. (Lond.), 1884; aged 60; died in the City Hospital, Hamilton, October 11, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent.

Noble Theodore Jerman, M.D., Holmesburg, Philadelphia; Hahnemann Medical College, Philadelphia, 1873; aged 66; formerly a member of the school board and founder and president of the Holmesburg Improvement Association; died at his home, January 8.

David Chancellor Boyce, M.D., Pittsburgh; University of Pennsylvania, Philadelphia, 1892; aged 49; a Fellow of the American Medical Association; surgeon of the Northwest division of the Pennsylvania Lines; died at his home, January 12, from pneumonia.

James T. Warren, M.D., Sprague, Mo.; Washington University, St. Louis, 1871; Jefferson Medical College, 1882; aged 69; a pioneer practitioner of Bates County, Mo.; died at the home of his daughter in Minneapolis, Kan., November 19, from arteriosclerosis.

George Albert Steele, M.D., Havana, N. D.; Rush Medical College, 1895; aged 44; formerly a Fellow of the American Medical Association; local surgeon of the Great Northern System; died on a train near Colorado Springs, January 10, from tuberculosis.

Thomas William Fingland Macknight, M.D., Tamworth, Ont.; Queens University, Kingston, Ont., 1913; aged 29; a Canadian medical volunteer officer on duty with the Royal Army Medical Corps in India; died in Bombay, September 4, from pyrexia.

Samuel Rideout Glover, M.D., Midway Mills, Va.; Medical College of Virginia, Richmond, 1907; aged 47; a member of the Medical Society of Virginia; died in the Stuart Circle Hospital, Richmond, December 5, from pernicious malaria.

Ellsworth Smith Adams, M.D., Beverly, N. J.; Jefferson Medical College, 1890; aged 42; formerly a member of the Medical Society of the State of New Jersey, and mayor of Beverly; died at his home, January 5, from heart disease.

Hannibal Landon, M.D., Remington, Ind.; Starling Medical College, Columbus, Ohio, 1865; Jefferson Medical College, 1866; aged 75; for forty years a practitioner of Jasper County, Ind.; died at his home, January 6, from asthma.

Clarence M. Kuykendal, M.D., Rock Hill, S. C.; University of Maryland, Baltimore, 1890; aged 48; who retired from practice several years ago to take charge of the Kuykendal Drug Company; died in Rock Hill, January 5.

Louis Watson Raison, M.D., Altoona, Pa.; Medical College of Ohio, Cincinnati, 1884; aged 63; for several years surgeon for the Baltimore and Ohio System, at Foxburg, Pa.; died at his home, January 5, from bronchopneumonia.

Herbert Hallet Marsh, M.D., Chillicothe, Ohio; Ohio Medical University, Columbus, 1896; aged 46; formerly a Fellow of the American Medical Association; died at his home, December 25, from pneumonia.

Elmer A. Clarke, M.D., Los Angeles; Homeopathic Hospital College, Cleveland, 1878; aged 68; a member of the board of health of Los Angeles in 1909; died at his home, December 31, from pneumonia.

Clinton E. Sapp, M.D., South Omaha, Neb.; Medical College of Ohio, Cincinnati, 1875; aged 64; formerly a Fellow of the American Medical Association; died at his home, October 11, from chronic nephritis.

Wyman H. Fisher, M.D., Wanatah, Ind.; Northwestern University Medical School, Chicago, 1880; aged 72; for forty years a practitioner of Laporte County, Ind.; died at his home, January 5, from nephritis.

John Adams Winters, M.D., LaCrosse, Wis.; Bellevue Hospital Medical College, 1883; aged 60; was found dead from heart disease in his office in the State Bank Building, LaCrosse, January 2.

Thomas George Rainey, M.D., Cleveland; University of Michigan, Ann Arbor, 1872; aged 71; died at his home, December 20, from injuries received in an automobile accident in September last.

Henry D. Fulton, M.D., Pittsburgh; Jefferson Medical College, 1883; aged 57; a member of the Medical Society of the State of Pennsylvania; died at his home, December 27, from pneumonia.

John Locke Hardeman, M.D., Portersville, Calif.; Washington University, St. Louis, 1878; aged 61; a pioneer orange grower of the Portersville district; died at his home, December 24, from valvular heart disease.

John Patrick Moore, M.D., Long Island City, N. Y.; University of Vermont, Burlington, 1894; aged 50; died at his home in Astoria, Long Island City, October 24, from uremia.

George A. Anderton, M.D., Greystone Park, N. J.; Baltimore Medical College, 1907; aged 35; assistant physician at the Morris Plains (N. J.) State Hospital; died, January 2.

Granville W. Traylor, M.D., McCune, Kan.; Kansas City (Mo.) Medical College, 1901; aged 39; a member of the Kansas Medical Society; died at his home, January 1.

James Willard Avery, M.D., Delaware, Ohio; Miami Medical College, Cincinnati, 1883; aged 58; died at the home of his sister in Delaware, December 31, from carcinoma.

Henry A. Lounsbury, M.D., Detroit; Detroit College of Medicine and Surgery, 1888; aged 53; died in the Receiving Hospital, Detroit, December 29, from pneumonia.

Oscar Jerome Shepardson, Chester, Mass. (license, Massachusetts, years of practice, 1894); aged 65; died in the Springfield Hospital, November 24, from brain tumor.

John W. Koelle, M.D., Jamestown, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1896; aged 47; died at his home, December 23, from pneumonia.

Nathan F. Canaday, M.D., Hagerstown, Ind.; Homeopathic Hospital College, Cleveland, 1870; aged 72; died at the home of his son, in Newcastle, Ind., January 5.

W. F. Rogers, Porterville, Miss. (license, Mississippi); aged 62; a trustee of the Matty Herse Hospital; died at his home, December 11, from pneumonia.

James Harmer Rile, M.D., Wilmington, Del.; Hahnemann Medical College, Philadelphia, 1879; aged 59; died at his home, January 2, from pneumonia.

N. Herbert Haight, M.D., Sacramento, Calif.; Hahnemann Medical College, Chicago, 1890; aged 53; died at his home, December 29, from heart disease.

George F. Smith, M.D., Carthage, Mo.; Louisville (Ky.) Medical College, 1871; aged 68; died in Nevada, Mo., December 8, from cerebral hemorrhage.

Amos Lewis Sweet, M.D., Geneva, N. Y.; New York University, New York, 1866; aged 73; died at the home of his son in New York, January 1.

Joseph J. Andzulatis, M.D., New Britain, Conn.; College of Physicians and Surgeons, Baltimore, 1894; aged 51; died at his home, December 29.

Peter S. Weidman, M.D., Edwardsville, Ill.; Albany (N. Y.) Medical College, 1855; aged 90; died in the Jacksonville State Hospital, January 3.

George W. Irick, M.D., Sheridan, Ark.; Physio-Medical College of Indiana, Indianapolis, 1890; aged 66; died at his home, December 21.

Bernard H. Walker, M.D., Norfolk, Va.; Jefferson Medical College, 1849; aged 91; died at the home of his son in Norfolk, Va., January 1.

Erasmus D. Hall, M.D., Knowlesville, N. Y.; Castleton (Vt.) Medical College, 1853; aged 85; died at his home, December 9.

George T. West, Bancroft, Iowa (license, years of practice, Iowa, 1866); aged 69; died at his home, December 11, from pleurisy.

Robert Thomson, M.D., Troy, N. Y.; Albany (N. Y.) Medical College, 1871; aged 70; died at his home, December 24.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

NORTH CAROLINA TO THE FORE

The New Governor Backs Up the State Board of Health in Its Fight on Fraudulent Nostrums

Conservation of the public health and protection against the menace of the fraudulent "patent medicine" business bid fair to be accomplished facts in North Carolina. The Board of Health of that state has for some time distinguished itself as being progressive in its attitude and aggressive in its methods. The Old North State now has the additional advantage of having in its governor's chair a man who realizes how great an asset to the commonwealth is the health of the people. Thomas Walter Bickett, a distinguished lawyer and the son of a country doctor, was, on Jan. 11, 1917, inducted into a four years' term as governor of North Carolina. Governor Bickett in his inaugural address displayed a conception of the work of modern medicine that it as gratifying as it is encouraging. His remarks relative to the State Board of Health and the efforts of the medical profession indicated an intimacy with the ideals of scientific medicine, preventive and curative. Especially interesting were Governor Bickett's remarks on the problem of fraudulent nostrums. To quote from a newspaper report of the address:

> "The State Board of Health deserves the unqualified support of the general assembly in its campaign against quacks and quackery. The law requires a man to have a diploma from a first class medical college, and to stand a rigid examination before the North Carolina Board of Medical Examiners before he is allowed to write a single prescription for a patient in North Carolina. And yet we permit the sale of nostrums to our people without any adequate knowledge of whether or not they are injurious to health, or have any medicinal value whatever.
>
> "I am in favor of a law making it a felony for any man to sell, offer for sale or advertise for sale in North Carolina any proprietary or patent medicine purporting to cure cancer, consumption, diabetes, paralysis, epilepsy, Bright's disease, or any other disease for which the North Carolina Medical Association and the American Medical Association declare that no cure has been discovered.
>
> "I am earnestly in favor of a law requiring all vendors of proprietary medicine to file with the State Board of Health a statement showing the exact composition of such medicines and that the State Board be empowered to forbid the sale of such proprietary medicines in the state of North Carolina, if in its opinion it is without curative value in the treatment of the disease it purports to cure.
>
> "A bill is being prepared by our health department that will deal fully and adequately with this subject, and I give to this bill my most emphatic endorsement."

A BAG OF FERTILIZER and A BOTTLE OF DOPE

One is for a plant.	The other, for a child.
One is required by law to print its ingredients on the package.	The other is not required to disclose its ingredients.
One can be used intelligently, in accordance with scientific knowledge regarding the effects of the substances on plants.	The other cannot be used intelligently, in accordance with scientific knowledge regarding the effects of the substances on human beings.
One thrives upon openness and public intelligence.	The other thrives upon secrecy and public ignorance.
One defrauds with difficulty.	The other defrauds with ease.
For the one, the Government, knowing its composition, can furnish the consumer exact information as to its effects.	For the other, the Government, not knowing its composition, cannot furnish the consumer any statement regarding its effects.

Is It Just and Right that the Farmer May Know What He Gives His Plants, and Unjust and Wrong to Allow the Parent to Know What He Gives His Child?

North Carolina in its January *Health Bulletin* presents the interesting parallel, given above, between the requirements in that state for selling fertilizers and "patent medicines," respectively.

Governor Bickett's statement that he favors a law that will permit the people of North Carolina to know what they are taking when they prescribe for themselves, is in line with the attitude already taken by the North Carolina State Board of Health. That board devoted its January, 1917, *Health Bulletin* to a discussion of "The 'Patent Medicine' Business or, Accurately Speaking, The Secret Remedy Business." This twenty-four page pamphlet contains so much of interest that it should be put into the hands of every citizen of North Carolina.[1] On the cover a parallel is drawn—we reproduce it on this page—between the North Carolina requirements for the sale, respectively, of fertilizers and "patent medicines." The Board of Health calls attention to the distinction between patented medicines and what are colloquially known as "patent medicines." It emphasizes the fact that a patented medicine is an open formula medicine, a product that is non-secret, while the "patent medicines" are almost invariably secret in composition and depend for their popularity on the mystery which this secrecy permits and encourages. The work of the "Select Committee on Patent Medicines" in Great Britain is summarized and some interesting extracts from the committee's report are published in detail. A chapter on "Tricks of the Trade" discusses such tricks as "The Story of Extraordinary Origin of an Ordinary Prescription," "The Aliases of Secret Remedy Venders," "The Cooperative Mailing List," "Blackmail in the Purchase of Abortion-Producing Remedies," and others.

In discussing the problem of the responsibility of newspapers for some of the evils of the "patent medicine" business, the Board of Health emphasizes the fact that abolishing secrecy will result in protecting the press. The chapter on the "Explanation of Public Confidence in the Secret Remedy" is thought-provoking and will give the layman some new viewpoints. The psychology of advertising, the deep seated superstitions, especially of the ignorant, which are played on through the secret and therefore mysterious nostrum, the tendency of human nature to confuse a sequence of events with cause and effect and, finally, the physiologic action of the powerful drugs that are to be found in some nostrums are all discussed in explaining why secret remedies are used to such an enormous extent.

In closing, the North Carolina State Board of Health calls attention to the fact that a law requiring the "patent medicine" manufacturer to put the names and quantities of the active ingredients of his product on the label will not spell the ruin that the "patent medicine" fraternity has declared, unless, indeed, the products are worthless and fraudulent. The *Health Bulletin* specifically mentions the case of the manufacturers of "Ayer's Sarsaparilla," etc., who for years have published a complete quantitative and qualitative formula on the labels of their products.

If the bill which is being prepared by the North Carolina State Board of Health requires that all "patent medicines" sold in North Carolina shall bear on their labels the names and amounts of their active ingredients there will be an interesting fight. The "patent medicine" interests may be counted on to oppose such a bill tooth and nail for reasons that we have repeatedly stated, viz., that the bulk of the "patent medicine" business is inherently fraudulent and cannot stand the light of publicity. If such a bill finally passes, North Carolina will have achieved the notable distinction of being the first state in the Union adequately to protect its citizens against the fraudulent nostrum business. New York City and the state of Louisiana have both attempted similar legislation, the former through its commissioner of health; the latter through the state board of health. The New York ordinance, while enacted more than a year ago, has been rendered practically inoperative by the legal fight made by the "patent medicine" interests on it. The ruling of the Louisiana Board of Health, apparently, never passed the academic stage.

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[1] The Bulletin will be sent free to any citizen of the state on request. Address Dr. W. S. Rankin, Secretary State Board of Health, Raleigh, N. C.

PIL. CASCARA COMPOUND-ROBINS

Report of the Council on Pharmacy and Chemistry

A circular issued by the A. H. Robins Company of Richmond, Va., contains the following statement:

> "PIL. CASCARA COMPOUND-ROBINS is a rational therapeutic formula, composed of CASCARA, PODOPHYLLIN, COLOCYNTH and HYOSCYAMUS, which promotes a natural flow of secretions, which is, in turn, the physiologic stimulant of peristalsis. Thus, a normal evacuation is produced without subsequent inhibition.
>
> "They contain no Mercury, Strychnia nor Belladonna.
>
> "An ideal aid to any remedial agent, when a Mild, Medium or Strong alimentary stimulant is needed [*sic*].
>
> "Made in two strengths, the dosage may be easily regulated so as to obtain the effects of an Anti-Dyspeptic, Aperient, Laxative or Cathartic, as desired. They never cause discomfort unless given in larger dose than needed."

This preparation is another example of the innumerable mixtures of well-known drugs having nothing in the way of originality or of special therapeutic value to recommend them.

The advertising implies that this particular combination has a special action on the secretions of the gastro-intestinal tract; otherwise it would be hard to explain the claim that the preparation is antidyspeptic, if that means anything more than a laxative or cathartic.

The claim is made that this preparation contains no belladonna—yet it admittedly contains hyoscyamus! This manifests either ignorance on the part of the manufacturers, or an effort to impose on the medical profession. Both belladonna and hyoscyamus contain variable amounts of similar alkaloids, chiefly hyoscyamin. Hyoscyamus is feebler than belladonna in its action, as it contains less alkaloid. The qualitative differences between the two drugs, with reference to their use as laxatives, is so slight as to make the company's claim for hyoscyamus appear either deliberately misleading or to be the result of crass ignorance. Promoting this mixture of well-known laxatives and cathartics as an "ideal aid to any remedial agent when a mild, medium or strong alimentary stimulant is needed" is a slur on the intelligence of physicians.

Pil. Cascara Compound-Robins is not acceptable for New and Nonofficial Remedies.

Editorial Note.—Advertisements of "Pil. Cascara Comp.-Robins" appeared in the following medical journals during 1916:

American Journal of Surgery
Maryland Medical Journal
Charlotte Medical Journal
Medical Council
Southern Practitioner
Virginia Medical Semi-Monthly
Texas Medical Journal
Medical Herald
Medical Brief

CASTA-FLORA

Report of the Council on Pharmacy and Chemistry

Casta-Flora is one of those complex preparations which are offered to the medical profession, with plausible arguments in support of the claims made. It is put out by the Wm. S. Merrell Chemical Co., Cincinnati. Each fluidounce is said to represent:

> "Castanea, fresh leaves, 40 gr.; Passiflora, fresh plant, 40 gr.; Gelsemium, green tincture, 8 minims; Inula, represented by the camphoraceous stearoptene Helenin, 20 grs.; Iodized Lime, 8 grs.; Menthol, 1-4 gr.; Aromatic Syrup Yerba Santa, 60 minims."

It is said to be:

> "A new combination of well-tried remedies of especial value in pertussis and other spasmodic coughs. It is composed of astringent, antispasmodic, sedative and expectorant agents, that control the paroxysms, relieve the irritation, promote expectoration, and give tone to mucous membranes involved."

Still more exaggerated claims are made for the individual constituents of Casta-Flora, partly by direct statement, partly by inference. For example:

> "Castanea is almost a specific in whooping cough and other spasmodic coughs.
>
> "Passiflora is a narcotic, sedative and antispasmodic without habit-forming properties, nor does it lock up the secretions and upset digestion like opiates.
>
> "Inula (elecampane) has been employed as a cough remedy in England for centuries. Its action is similar to guaiacol and creosote. Its active principle, helenin, is destructive of tubercle bacilli in dilutions of 1 to 10,000.
>
> "Iodized Lime, Menthol, and Yerba Santa are too well known as expectorants and antiseptics to require more than passing mention."

That Casta-Flora is a "new" combination may be admitted; it is improbable that exactly this combination of obsolete drugs was ever before selected for any purpose whatever, but the statement is misleading in that no new principle of therapeutics is involved. On the contrary, the combination is just what might be expected from haphazard choosing of discarded and nearly forgotten drugs. It seems incredible that a reputable firm of manufacturing pharmacists would make the positive statement that castanea is *almost* a specific in whooping cough. Why not say it is a specific? It would be about as true. A specific or "almost specific" for this disease would rank among great medical discoveries; but castanea is merely a slightly astringent drug neither better nor worse than scores of other astringent drugs that have been tried, found valueless and discarded.

Hardly less surprising are the statements regarding passiflora. This herb has been on the market about three quarters of a century. Not only has it never established itself in scientific medicine, but it is not even mentioned in modern standard works on therapeutics.

Of all the statements made in the circular perhaps the most remarkable, in that it is so dangerously misleading, is that regarding helenin, the active principle of elecampane. The statement that this principle (helenin) is destructive of tubercle bacilli in dilutions of 1-10,000 can only mean that it is of extraordinary value in the treatment of tuberculosis; in fact, it is definitely stated that the action of elecampane is similar to that of guaiacol and creosote.

It is obvious that any drug which would destroy the tubercle bacilli in the human lungs without exerting a toxic action on the patient would be a great contribution to medicine. But although elecampane may have been used for centuries it has proved to have little, if any, merit, and even the National Standard Dispensatory, p. 848, says: "Elecampane was formerly employed as a tonic, stimulant, diuretic, diaphoretic, expectorant, and emmenagogue, but has now largely fallen into disuse." One looks in vain in the standard textbooks on therapeutics for a description of the uses of inula (or elecampane), and of its so-called "active principle," helenin.

The circular to which reference has been made says, referring to the use of castanea and passiflora in the treatment of whooping cough:

> "Gelsemium, when made from the fresh, green plant—as is Merrell's—is an excellent adjuvant to the above drugs, and allays the nervous irritability so frequently present."

H. C. Wood, Jr. (Pharmacology and Therapeutics, 1916, p. 160), says of gelsemium: "Gelsemium was originally employed as an arterial sedative and febrifuge in the malarial fevers of the South, and subsequently in sthenic fevers. It appears in some way to depress the bodily temperature, but it does not appear probable that any advantage to be derived from it will counterbalance the danger attending its employment in the large doses required. In asthma, spasmodic laryngitis, whooping cough, and nervous cough it has been recommended by Bartholow, but is little used."

That is about as favorable a statement for the drug as is to be found in the textbooks, and it serves to illustrate how little new there is in this mixture of obsolete drugs that Merrell seeks to market as one possessing extraordinary therapeutic value.

Even though the ingredients, or certain of them, were singly useful in the treatment of those conditions for which Casta-Flora is recommended, no one could possibly foresee the effect in any given case of such a jumble of drugs, both active and inert, as is said to be represented in this preparation. The prescribing of such mixtures, the action of which cannot in any way be foreseen, is plain charlatanism.

In addition, the various drugs in Casta-Flora are present in such proportions that the dose of each of the several ingredients bears no relation to the commonly accepted dose.

Casta-Flora is not acceptable for New and Nonofficial Remedies.

Editorial Note.—Advertisements of "Casta-Flora" appeared in the following medical journals during 1916:

Medical Record
New York Medical Journal
Lancet-Clinic
Medical Summary

Correspondence

A Standard Size for Medical Books

To the Editor:—I am writing to make a suggestion in regard to the size of medical books. The first thing one notices on going into a lawyer's office is the uniform size of the books on his shelves. The first thing one notices on going into a physician's office is the jumbled up appearance of his books, owing to the fact that nearly all of them are of different heights and widths. I believe that the American Medical Association should take the lead and start a movement to have a standard established for the height and width of all medical books. They should be of one height and width, but may be thick or thin as necessary. This would give us a library which would make a decent appearance and would save our friends the bother of asking us, after looking at our books, whether we are moving in or moving out.

John D. Pollard, M.D., Chicago.

Yellow Petrolatum—Vesicorectal Reflex—The Treatment of Intestinal Stasis

To the Editor:—To those who believe, as I do, that some form of lubrication of the large intestine is desirable in the treatment of autointoxication from intestinal stasis, let me recommend common yellow petrolatum in place of oil injections or of liquid petrolatum by the mouth. From 1 to 4 heaping teaspoonfuls a day, by mouth, will generally produce soft or semiliquid stools without the least griping. It is decidedly more efficacious than the liquid petrolatum, which frequently passes right by fecal masses without mixing with them or causing their expulsion; while the yellow petrolatum mixes thoroughly with the bowel contents and is never expelled by itself. This also makes it a much more decent form of treatment than that by liquid petrolatum, which often causes a most disagreeable leakage. The yellow petrolatum has somewhat of the latter advantage over the oil injections, to say nothing of what it saves in fuss and expense. An oil enema is so elaborately disagreeable a function that I often wonder how many of the men who light-heartedly order their patients to inject half a pint of olive oil every night for a year or so have ever tried it themselves. As to the expense, a 5 pound can of the yellow petrolatum retails for a dollar, and this will last from two to three times as long as a gallon of cottonseed oil, costing about twice as much; or if olive oil is used, from three and a half to four times as much. The white petrolatum costs more than the yellow and is, I believe, less efficacious. The yellow is practically tasteless, and if approached without prejudice is really a rather pleasant dose. If so preferred, it can be taken in any hot liquid. The dose necessary at first can generally be reduced by half after a week or so.

Another aid in the treatment of constipation is the vesicorectal reflex. Some years ago I noticed that if, perforce, micturition had to be postponed until the desire was acute, the bowel often would also move if the opportunity were given it; and by making systematic use of this reflex I was able, after having been a slave of the pill for twenty years, to go without any laxative whatever. This reflex accounts for the efficacy of drinking a pint of water at bedtime. The common supposition seems to be that some of the water passes clear through and irrigates the colon from above; but this seems highly improbable. What the water does do is so to distend the bladder that the bowel is stimulated to unwonted activity. I think the same reflex even without the water drinking at night is one of the factors in the normal morning movement of the bowels. In practice, the best method of using it is to take 2 or 3 glassfuls of water at bedtime. Then on arising, instead of urinating at once, wait until the desire is quite strong when, if the attempt is made, the bladder and the bowels can generally be emptied together. So far as I can learn, physicians and physiologists have paid little or no attention to the vesicorectal reflex, but it certainly exists and can be utilized in the treatment of constipation, either by itself or in connection with other measures.

Harold Gifford, M.D., Omaha.

Request for Report of Results of Percy Method in Treatment of Uterine Carcinoma

To the Editor:—I am anxious to get reports from surgeons who have had experience with the Percy heat coagulation method in the treatment of inoperable uterine carcinoma. I expect to report my results in the use of this technic before the section on Obstetrics, Gynecology and Abdominal Surgery at the New York session of the American Medical Association. I shall be pleased to furnish blanks which cover the form of inquiry that I consider important in order to learn the true value of this treatment in uterine carcinoma. I shall highly appreciate any information that may be given me along the lines of this investigation.

J. F. Percy, M.D., 147 South Cherry Street, Galesburg, Ill.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE RELIEF OF CONSTIPATION

To the Editor:—In Queries and Minor Notes, please enlighten me on the following questions:

1. What is the best laxative to be taken continually by tuberculous patients who are confined most of the time in bed, when proper dieting does not seem to give a satisfactory evacuation each day?
2. Is it not better to give a laxative to most tuberculous bed patients as a routine than to run the risk of toxic symptoms of constipation and the chance of rectal troubles, as hemorrhoids, fissures and fistulas, which are common in this class of patients and which, when acquired, are hard to get rid of?
3. What is the best laxative in these cases? And should one be given continuously or alternated as, for example, agar for a while, and then liquid petrolatum?
4. I notice that some brands of liquid petrolatum retail for about half the price of others. Is there any difference in quality as to effect?
5. Are any pathologic changes produced from the continuous use of liquid petrolatum for months or years?

Kindly omit name and address. T. R. P.

Answer.—1. There is no "best laxative" to be taken in general by patients with any certain disease. Laxatives, like other drugs, should be given to suit the particular condition of the individual patient.

2. It is impossible to answer such a general question. Again it may be stated that patients must be individualized and not treated by rule.

3. See answers to 1 and 2.

4. There are differences between various brands of liquid petrolatum. The price does not indicate the quality. A brand complying with U. S. P. standards for liquid petrolatum should be used.

5. So far as known, no pathologic changes resulting from the use of liquid petrolatum have been described.

In general it may be said that the aim should be, even with a tuberculous bed patient, unless it is a hopeless case, to relieve constipation by remedial agents other than drugs. Diet is here all important. Cooked and raw fruits, coarse cereals, vegetables, nuts, cream, butter, oil, bran bread, etc., may be of service. Persistence in regulative diet, with attention to details, is imperative. Enemas, such as the oil enema at night, may be helpful. Massage may be beneficial.

The objection to giving a laxative continually is that it induces a habit. This is of course not comparable in its harmful effects to the morphin or cocain habit, but its ultimate result is apt to be the depriving of the intestine of its power of independent action; the bowels unless urged become more and more sluggish, and the dose must be increased. Besides, there often results an irritable and inflamed intestinal mucosa, the cause of occasional looseness of the bowels, mucus in the stools, abdominal pain—a "cathartic ileocolitis." This really causes much suffering, is provocative of many nervous disturbances, and may even simulate and be treated for such conditions as appendicitis.

So, to repeat, we should advise our correspondent to try by every means not to use a laxative, even a "best laxative," as a routine measure. The relief from the habit of constipation is at the expense of a new habit, that of cathartics with its attendant irritated bowel.

EFFECT ON ETHER AND CHLOROFORM OF EXPOSURE TO THE AIR

To the Editor:—1. Please tell me if ether is rendered unfit for anesthesia if it is allowed to remain in an open can for some time. Does it undergo any chemical change when exposed to the air?

2. Please give me the same information about chloroform.

C. MAYFIELD, M.D., Hutchinson, Kan.

ANSWER.—1. Yes. The U. S. Pharmacopeia requires that ether be preserved in partially filled, well closed containers, in a cool place, remote from fire, and protected from daylight. The U. S. Pharmacopeia further cautions that when ether is to be used for anesthesia, it is to be dispensed only in small, well closed containers, and is not to be used for this purpose if the container has been opened longer than twenty-four hours. Ether is slowly oxidized by the action of air, moisture and sunlight, with the formation of peroxids.

2. The U. S. Pharmacopeia requires that chloroform be preserved in well stoppered bottles, in a cool place, protected from light. Chloroform, which contains alcohol as a preservative, is not readily decomposed by exposure to air. Worth Hale (Variations in the Toxicity of Chloroform for Anesthesia, Annual Reports of the Therapeutic Research Committee of the Council on Pharmacy and Chemistry, 1915, p. 112) studied the toxicity of four commercial brands of anesthetic chloroform, and one sample of anesthetic chloroform which had been standing in the laboratory exposed to the light for at least two years in a half filled white glass bottle. He did not discover any marked difference in the toxicity of the five specimens of chloroform examined.

LAFAYETTE MIXTURE

To the Editor:—What is the composition of Lafayette's mixture, used on the border for the treatment of gonorrhea. A soldier back from the Texan border showed me the prescription.

E. C. CARY, M.D., Reedsville, Wis.

ANSWER.—Lafayette mixture is the alkaline copaiba mixture which had considerable vogue about thirty years ago when gonorrhea was treated in a haphazard way. It has been characterized recently by pharmaceutic authorities as disagreeable, irrational and usually inefficient. The formula is still to be found in the National Formulary under "Mistura Copaibae," with "Lafayette mixture" as a synonym. The formula is:

Copaiba	125 c.c.
Spirit of nitrous ether	125 c.c.
Compound tincture of lavender	125 c.c.
Solution of potassium hydroxid	32 c.c.
Syrup	300 c.c.
Mucilage of acacia, a sufficient quantity to make	1,000 c.c.

ACTION OF STRYCHNIN ON BLOOD PRESSURE

To the Editor:—What influence, if any, does strychnin exert on blood pressure?

L. W. WRIGHT, M.D., Williamsport, Pa.

ANSWER.—Strychnin in therapeutic doses causes a rise in blood pressure. This is principally due to stimulation of the vasomotor centers, but in part to the increase in tone of the skeletal muscles. Strychnin has little or no action directly on the heart, and the pulse rate is, if anything, slowed. In quantities large enough to cause convulsions, the rise of blood pressure during the latter is enormous. Experiments on animals show that this rise is not entirely due to the convulsion itself, but in part to the effect on the vasomotor center. It is rapidly followed by a fall of pressure from overstimulation and fatigue.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ILLINOIS: Chicago, Feb. 21-23. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

IOWA: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

NEW YORK: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.

VERMONT: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

Connecticut July Report

Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the practical and written examination held at New Haven, July 11-12, 1916. The total number of subjects examined in was 7; total number of questions asked 70; percentage required to pass, 75. The total number of candidates examined was 24, of whom 12 passed and 12 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Yale University	(1916)	82.9, 83.9, 85.4
Bowdoin Medical School	(1913)	79.9
University of Maryland	(1916)	75.6
Harvard University	(1915)	86
Columbia Univ., Coll. of Phys. and Surgs.	(1913) 78.8; (1915)	92.7
Fordham University	(1913)	76.4
Jefferson Medical College	(1916)	77
McGill University	(1914)	77.6
University of Budapest	(1898)	78.6*
FAILED		
Yale University	(1915)	76.4†
Eastern University‡	(1913)	58.5
Johns Hopkins University	(1909)	75.8†
Maryland Medical College	(1913)	56.4
University of Maryland	(1916)	71
College of Physicians and Surgeons, Boston	(1912)	67.5
Harvard University	(1916)	77.5†
Columbia University, College of Phys. and Surgs.	(1915)	73.6, 74.5
Long Island College Hospital	(1916)	68.5
Jefferson Medical College	(1912)	65.7
University of Vermont	(1910)	71.5

* Graduation not verified.

† Fell below the required average in one subject.

‡ This college was officially reported as not recognized by the Maryland State Board of Medical Examiners.

Connecticut Homeopathic November Report

Dr. Edwin C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports that the two following candidates were licensed on presentation of satisfactory credentials, Nov. 14, 1916.

College	Year Grad.
Atlantic Medical College	(1910)
New York Homeo. Med. Coll. and Flower Hosp.	(1915)

Nevada November Report

Dr. S. L. Lee, secretary of the Nevada State Board of Medical Examiners, reports the written examination held at Carson City, Nov. 6-8, 1916. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. Eleven candidates were licensed through reciprocity. One candidate was granted a reregistration license by examination. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Medical Evangelists	(1916)	83.8
Hahnemann Med. Coll. of the Pacific, San Francisco	(1916)	85.6
Leland Stanford Junior University	(1915)	88.6
College of Phys. and Surgs. in the City of New York	(1888)	85.9
Cornell University	(1903)	90.8
McGill University	(1896)	86.7

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Chicago College of Medicine and Surgery	(1914)	Illinois
Rush Medical College	(1915)	Utah
Kansas City Medical College	(1900)	Missouri
St. Louis University	(1911) Illinois; (1913)	Utah
John A. Creighton Medical College	(1912)	Nebraska
Lincoln Medical College	(1909)	Nebraska
Medical College of Ohio	(1909)	Utah
Jefferson Medical College of Philadelphia	(1908)	Penna.
University of Pennsylvania	(1898)	Penna.
College of Physicians and Surgeons, Dallas	(1905)	Oklahoma

Social Medicine, Medical Economics and Miscellany

COMBATING VENEREAL DISEASES

A report on venereal disease (*Münchener medizinische Wochenschrift,* 1916, **63,** 1691) has just been issued by a special committee appointed by the Munich Aerztliche Verein, a medical association, to study questions affecting the preservation and promotion of racial vigor (*Volkskraft*). Venereal diseases, it states, are "next to alcohol and tuberculosis the most dangerous enemies of the human race. The knowledge of this seems to be gradually making its way into wider circles. There is now hope that the importance of this hitherto much neglected field will gradually come to be appreciated. The time has arrived for rousing the community to more energetic measures. It is self-evident that with diseases which are so amenable to treatment as the venereal diseases, everything depends on getting all the persons affected to take thorough treatment. With this, and only with this, is it possible to restrict the spread of these plagues, the prevalence of which is suspected only by the few. . . . It is a known fact that, at present, persons with venereal diseases in the overwhelming majority of cases get inadequate treatment. This, experience has shown, is due less to the fact that they do not seek medical aid as that they think they are cured as soon as the acute manifestations have subsided. They think that they are cured, or at least they do not regard it as worth while to take further treatment. Syphilitics seldom find it convenient to repeat the course of treatment necessary for a cure unless unmistakable recurrence of the manifestations drives them to a physician. For these reasons the Aerztliche Verein of Munich advocates in the most forcible manner legislative measures to insure that persons affected with venereal diseases get treatment and, especially, that they are kept under treatment and under medical control until they are cured and no longer a menace to others. The carrying through of adequate treatment seems impossible, however, so long as it is optional for the heedless, the unreasonable or the indifferent to let themselves be treated or not. It is therefore essential that the authorities should be empowered to compel those with venereal disease to take proper and adequate treatment. As a logical corollary, the authorities must know what persons they are to compel to take treatment. Compulsory treatment therefore presupposes compulsory notification.

LEGISLATION ADVOCATED

"The Munich Aerztliche Verein therefore advocates legislative provision for compulsory notification and compulsory treatment of venereal diseases. The association does this only after mature deliberation and weighing of all the reasons for and against such a measure. It is well aware that this conflicts with widespread and apparently well founded considerations. But examination of the latter more closely shows that they cannot be regarded as unimpeachable. The chief objection is that compulsory notification would prevent those affected from seeking the aid of a physician. They would either apply to quacks or let their disease go untreated. That the latter would not occur is guaranteed by the pains and fear of the disease, which would be more and more effectual the more the public is enlightened on the subject of venereal diseases. Even now nearly all affected apply for treatment so long as there are appreciable manifestations of the disease. The quacks could be prohibited from treating venereal disease, as the military authorities have now enforced, or, if this proves impracticable, they would have to conform to the regulations in regard to compulsory notification. With energetic measures on the part of the authorities, any failure to comply with the regulations would be a difficult and expensive matter. Of course any physicians failing to comply with the regulations would also be liable to penalty.

"The objection that regulations of this kind would encounter invincible opposition on the part of the people seems to be unfounded. Wide and influential circles are of the same mind as our association in this matter, as has been ascertained by written and verbal communications from various quarters. To assume that the medical profession would not do this service for the public welfare is to discredit our profession. It is a favorable circumstance that, just at present, in the consulting dispensaries for venereal diseases which have been organized recently under the auspices of the insurance societies (Landesversicherungsanstalten) throughout the entire empire, we have an arrangement along the same lines. Unfortunately, they are dependent on and subject to the good will of those affected. They have no means of compulsion, and consequently they only half fulfil their purpose. The fact that these consulting dispensaries have received such a welcome everywhere is a sign that the current is flowing in our direction.

"Of course the introduction of compulsory notification and compulsory treatment is an innovation and an experiment, for everything that has been done in this line in other lands has been only half measures. But unless experiments are made, there can be no progress."

REGULATION FOR COMPULSORY NOTIFICATION

The report then outlines the principles on which the regulations for compulsory notification and compulsory treatment should be based. It calls for notification of gonorrhea of the urinary and sexual organs, conjunctiva and rectal mucosa, for ulcus molle, and for syphilis in the first or second phase, and in the tertiary phase when the skin, organs of locomotion, visible mucosa, organs of sense or central nervous system are affected, and for congenital syphilis; notification of change of residence, and notification of patients in hospitals. Notification is imperative even when the patient has applied to the physician for some other ailment. The notification must be in writing on a printed form, free of postage, with details as to whether and where treatment has been applied and whether the patient refuses. Notification is also to be required when treatment is concluded, also on a printed form, specifying whether and when the patient is to be examined or treated again. Notification is also required when the patient stops taking treatment prematurely. An official physician should be deputed to examine those who apply the first time. A special board should have charge of the lists of patients and all the data as to past, present and further treatment. This board should be empowered to warn and compel the patient to submit to treatment, committing him to a hospital for the purpose if necessary. Other members of the family or persons with whom those affected have had sexual intercourse are to be examined and treated, unless injury otherwise is to be feared. The notifying or treating physician can specify when he thinks institutional treatment is necessary on account either of living conditions, carelessness, the profession, refusal to submit to treatment, or the severity of the case. Persons not under the care of any physician can be compelled to submit to examination and to treatment if required. The army and navy authorities should also notify the civil authorities when those requiring treatment pass into civilian conditions. Treatment of venereal diseases by others than registered physicians should be forbidden, as also the sale of means of treatment. Druggists should be allowed to dispense such remedies only on a physician's prescription and only in the prescribed amounts and not repeat. Arrangements should be provided for sufficient treatment for all with venereal disease. The poor should be treated free unless otherwise provided for by the social or life insurance, etc. All physicians, officials and others engaged in the work should be held to strict secrecy in regard to the cases of venereal disease of which they learn in their official capacity. No outsider should be allowed access to the records. Especial care as to secrecy should be maintained in recording the data. The notice, with name, birthplace and birthday and the filled out forms are to be sent to the local board in the patient's birthplace, which is to preserve and record the data.

The report outlines also a set of regulations for the police similar to those in vogue for acute contagious diseases. It specifies that the notification must record the entire name, sex, birthplace and birthday, whether single, married, divorced or widow or widower, the name of the venereal disease, site, kind, stage and previous duration, the time and source of infection, even if only surmised; details as to previous treatment and by whom, with place and date of the notification, and full name and address of the one making it. The patient must be informed of the necessity for notification, but told that the data are to be held secret. The patient is to be warned against marrying so long as the disease is contagious, and, if marriage is contracted, concealing the presence of venereal disease, the marriage can be annulled under certain circumstances and damages claimed.

The expense of treatment is to be borne by the patient unless provided for by official, insurance, or charitable appropriations. A fine of 90 marks (about $22.50) or a four weeks' prison term are suggested as penalties for failure to comply with the regulations.

THE WOCHENSCHRIFT COMMENTS

In the same issue of the *Münchener medizinische Wochenschrift* with the above appears a comment on the way in which questions affecting the future welfare of the race have been forced into prominence by the war. It is stated editorially: "The full importance of this was realized before the war only by a small number of far-seeing men but the war, by revealing the dangers threatening the race from the declining birth rate, has demonstrated to the widest circles the necessity for energetic measures to combat the causes of the decline in the birth rate. Associations have been formed at various points to study the questions involved. In this same issue of the *Wochenschrift* are reports of the meetings of three organizations of the kind, two of national scope. The resolutions voted for the combating of venereal diseases are surprising for those who know with what timidity this problem has been approached in the past. Even the National Prevention Society, the Deutsche Gesellschaft zur Bekämpfung der Geschlechtskrankheiten, goes so far as to demand that the venereal diseases be included in the regulations regarding epidemic diseases, the *Seuchengesetz,* and asks for a limited notification. The Munich committee is even more radical in its demands, drawing the ultimate conclusions from the conception of sexual diseases as evils menacing the public health, and hence requiring compulsory notification and compulsory treatment. The conclusions formulated by the committee are worthy of all attention not only because they are clear and logical and have been worked up equally well from the medical and the juristic sides, but because they represent a courageous act thus to break decisively with old traditions. For reserves and attacks will soon follow, and not the least, we fear, will come from the ranks of physicians. Even the comments that have been heard already on the 'consulting dispensaries' for venereal diseases that have been organized throughout the country by the insurance societies, the Landesversicherungsanstalten, show that in medical circles any infringement on the principle of medical secrecy is felt deeply. The official organ of the Medical Chambers, the *Aerztliches Vereinsblatt,* has already declared that the suggestion of compulsory notification of venereal diseases would be the most momentous legislative aberration that it is possible to conceive (*verhängnisvollste gesetzgeberische Verirrung*). The still more far-reaching conclusions of the Munich committee will arouse a storm of protests. And yet there can be no doubt that finally the medical profession will acquiesce in some restriction of the conception of medical secrecy in the matter of venereal diseases as has long been the rule with certain contagious diseases. The principle of compulsory notification and compulsory treatment has proved its usefulness with other contagious disease. It is impossible to understand why for the sexual diseases alone we should renounce this principle just on account of tender solicitude for the false shame of those affected. The sexual diseases are among the worst scourges of humanity. It is our imperious duty to restrict their devastating action on the strength of the nation (*Volkskraft*). Compulsory notification and compulsory treatment are the only measures which promise effectual results, so they must be introduced, even trampling down deep-rooted and otherwise justified ethical considerations. The supreme law which has facilitated so many decisions in the course of the war must prevail here also, *Salus rei publicae,* 'health is a public matter.' "

Medicolegal

Liability Where Two Physicians are Employed—Minimizing Damages

(*Stokes vs. Long* (*Mont.*), *159 Pac. R. 28*)

The Supreme Court of Montana affirms a judgment in favor of the plaintiff for alleged malpractice in the reduction and treatment of a broken leg. The court says that the plaintiff sent his wife to engage the defendant's services, and the defendant told her that he would need assistance, suggesting that he secure the services of a Dr. Wallin, to which she agreed. There was much conflict in the evidence as to the course of treatment pursued. According to the plaintiff, his wife, and other lay witnesses, the leg was inclosed in a plaster cast without any opening. A weight of 4¾ pounds was attached to the foot by means of a cord held by strips of surgeon's plaster adhering to the leg. No means were employed, such as the elevation of the foot of the bed, to prevent the body from slipping down in the bed, as it yielded to the pull of the weight. No examinations were made by means of the Roentgen-ray process, nor were the usual necessary superficial measurements made from day to day. No examination could be made by manipulation because the cast prevented. The court thinks the evidence made a prima facie case for the jury as to whether ordinary care and skill had been exercised in selecting the means employed to produce a proper union. On the other hand, if the testimony of the defendant and Dr. Wallin were to be accepted as true, the plaintiff had no case, for, as detailed by them, the course pursued was in every particular beyond criticism. Yet, even so, the evidence as a whole presented a question as to whether, in view of the result, their testimony was true, and this question was exclusively for the jury.

It was contended, furthermore, that Dr. Wallin reduced the fracture and chose the mechanical appliances which were used; that the defendant only administered the anesthetic, and five days later left for Florida, without having taken any part in the treatment of the injury. In other words, the contention was that, since the defendant was authorized by the plaintiff to employ Dr. Wallin, and he performed the operation of reduction and thereafter treated the plaintiff exclusively, Dr. Wallin's employment constituted an independent contract under which he became solely responsible to the plaintiff. If the evidence were in the condition which counsel asserted, their conclusion would undoubtedly be correct. If one physician, on leaving temporarily the community in which he is engaged in practice, recommends to his patients the employment, in case of need, of some other physician who is not in any sense in his employment or associated with him as a copartner, he is not liable for injuries resulting from negligence or want of skill in the latter, in case he is employed. In such case the employment of the latter is under an independent contract, and he is solely responsible for the result. It is held also that when two physicians are employed in the same case and by agreement divide the service as their best judgment may dictate, they are considered as independent agents, each being responsible for his own negligence and no more. If, however, one observes and lets go on without objection wrongful acts and omissions by the other, or if the circumstances are such that he ought to have observed such wrongful acts or omissions, he is liable. Each is bound to bring to the case the ordinary knowledge and skill of the profession, and also to give his best personal attention and care. If one is guilty of want of ordinary professional care and skill in choosing the mode of treatment adopted, and the other expressly or impliedly gives his approval, there is no reason apparent why the latter should not be held guilty also, for by his acquiescence he fails to give the care and attention his employment requires. However, the court thinks the evidence in this case did not justify the position of counsel, but justified the conclusion that the defendant considered the case his own until he left, and that both physicians were to be deemed responsible for the result, there being evidence that the treatment was vicious from the start, as "Buck's extension" or other adequate appliance was not used.

In order to minimize the injurious consequences of a bodily injury suffered through the fault of another, one is not necessarily bound to submit to a major surgical operation which may or may not result in a betterment of his condition; but, if he chooses to do so, he may show what would be the cost of an operation which would minimize the suffering due to his condition at the time of the trial, though he cannot recover for both future pain and the cost of obtaining relief from it.

Contract of Hospital to Care for Infant Received Along With Mother

(Roche vs. St. John's Riverside Hospital (N. Y.), 160 N. Y. Supp. 401)

The Supreme Court of New York, Special Term, Westchester County, holds that it is within the power of a hospital to contract to receive an infant along with its mother and to exercise over it careful supervision and watchfulness in order that it may not suffer harm while the mother is undergoing a course of treatment, and that an action may be maintained by the administrator of the estate of the infant when its death is caused by a breach of such contract, as when its head is permitted to come into contact with a steam pipe and to remain so long that its death is caused by the burn. The court thinks that it has authority for holding this to be true even if the hospital be a charitable institution.

Society Proceedings

COMING MEETINGS

Congress on Medical Education, Public Health and Medical Licensure, Congress Hotel, Chicago, Feb. 5-6.

Western Roentgen Society, Hotel Sherman, Chicago, Feb. 16-17.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Twenty-Ninth Annual Meeting, held at White Sulphur Springs, W. Va., Dec. 11-13, 1916

(Concluded from page 222)

Transplantation of the Ureter Following Traumatism and Resection of the Bladder for Cancer

Dr. E. Starr Judd, Rochester, Minn.: The indications for ureterocystotomy are threefold: (1) injury to the ureter during hysterectomy usually for an advanced carcinoma of the cervix; (2) traumatism of the ureter during difficult instrumental labors, and (3) resection of the bladder for cancer located about the ureteral orifice. Intravesical transplantation of the ureter can be performed and the function of the kidney maintained. It is entirely feasible and altogether the procedure of choice in cases of ureteral fistula, and is much to be preferred to sacrificing the kidney.

DISCUSSION ON PAPERS OF DRS. JACKSON, HUNNER AND JUDD

Dr. R. C. Coffey, Portland, Ore.: In 1910 I reported some experimental work on implantation of the ureter by running the ureter along the mucous membrane three-quarters inch before it enters the bladder. I have since that time implanted four ureters into human beings, one a double implantation. In one the ureter at the time was implanted for exstrophy of the bladder, the operation having been done two years ago. That patient was in perfect health. There is no evidence of ascending infection. I have had two cases of cancer of the bladder; one patient went along for eight months with the ureter functionating perfectly, but I have not heard from this patient for over a year.

Dr. J. Wesley Bovée, Washington, D. C.: Implantation of the ureter into the bladder for injuries is an operation which should be avoided. It is one in which we must expect, as a rule, bad results. The bad results, when we have immediate success in the operation, are almost exclusively due to constriction at the point of junction or to too large an opening. We get a backing up of urine in the ureter and in the pelvis of the kidney which sooner or later does away with the function of the kidney, if we have a stricture at the point of junction.

Dr. Robert L. Payne, Norfolk, Va.: In 1907 I carried out some experimental work in uretero-ureteral anastomosis. There is no structure in the body which heals more kindly and lends itself so well to surgical intervention as the ureter if it is handled properly. The success of surgical procedures on the ureter depends on the blood supply. The ureter must be handled with extreme gentleness in order not to compress or injure it and set up thrombosis of its periureteral blood supply.

Dr. Howard A. Kelly, Baltimore: Many mild infections are liable to result in stricture of the ureter. My work has been confined very largely to strictures of the ureter of major caliber, and they are tighter. I have some of these cases on hand now that are interesting. I remember my first case in 1888. I diagnosed a tight stricture of the ureter and treated the patient for some time. We were not recognizing tuberculosis then as readily as we are today, and it was a case of tuberculosis. In 1891 I took out the kidney, doing a nephro-ureterectomy. The patient died at the end of one week. My next case was one of gonorrheal stricture of the right ureter. I dilated this stricture, and the woman got well, and is living today.

Dr. Charles R. Robins, Richmond, Va.: In the first case that came under my observation the patient had a bleeding uterus due to fibroids. She gave a history of having had the left kidney removed about ten years previously. On account of the fact that she had only one kidney left, we made an elaborate examination and were not able to detect any trouble with the right kidney. Hysterectomy was performed without any untoward result, except that as the patient was convalescing from the operation she developed a high degree of pyelitis in the right kidney. As there was only one kidney to deal with, it gave me considerable concern. This was treated by lavage of the kidney, and after a rather slow convalescence lasting for a long time, she finally made a recovery sufficient to go home. Her fever, which was high and subject to extreme exacerbations, had gone down to normal, and she was allowed to go home, although there was still some pus in the kidney. Lavage was practiced at regular intervals, and we were unable to discover anything which would suggest that the patient had a stricture of the ureter.

Dr. George Tully Vaughan, Washington, D. C.: I have seen two or three cases, one in a man aged 24, who had trouble in his right side of a chronic character off and on for a considerable time. Cystoscopy revealed no urine coming from the right ureter. He was operated on because of appendicitis. The appendix was found much inflamed, and inflammatory tissue surrounded the ureter. The ureter above this point was dilated; below it was very small. The appendix was removed, the tissue dissected off, and the urine passed down through the constricted part of the ureter into the bladder. I operated on this patient about six months ago; he continued to pass urine from that side, but after six months there has been a subsidence.

Syphilis of the Stomach

Dr. William A. Downes, New York: Observations have been made in eight cases of syphilis of the stomach for periods extending from one and one-half to three and one-half years. Two cases were of the congenital type, and six of the acquired. One patient died of a generalized syphilis one and one-half years after the diagnosis was made. The remaining seven are well from a clinical standpoint, so far as their stomach symptoms are concerned. They are able to follow their usual vocations, and have gained from 10 to over 50 pounds in weight. Five of the patients were subjected to gastro-enterostomy for the relief of symptoms due to obstruction.

Congenital Lipoma of the Cheek

Dr. Joseph Ransohoff, Cincinnati: The first patient was a child of several months with a large myxolipoma of the cheek. The second case, also congenital, is of the cheek. The child was operated on when 1 year of age. The second operation revealed the fact that in conjunction with the lipoma there was very extensive lymphangioma. In many of these congenital lipomas, the lymphangiectasis is a common complication.

Traumatic Asphyxia

Dr. J. Garland Sherrill, Louisville, Ky.: A bridge builder, aged 35, was caught and squeezed; he was doubled up and his head brought down on his knees by at least 7 tons of metal. He presented marked ecchymosis and swelling over the head and forehead and down to the malar bones. This area was dark purple and clearly delineated by an abrupt margin where the healthy color of the skin joined the swollen discolored part. Pressure did not affect the discoloration. There was present a subconjunctival hemorrhage on each side which was bright red, contrasting strongly with the purplish discoloration of the adjacent tissues—a striking appearance. Rupture of each eardrum with hemorrhage from the ear canal was noted. Bleeding also occurred from the nose. There were no other injuries, except a few minor bruises and a fracture of the seventh rib on the right side. The patient was fully conscious and the reflexes were normal, with no evidence of cerebral injury. The pupils were equal and responsive to light and accommodation. The diagnosis of traumatic asphyxia was confirmed by the subsequent history of the case. The patient recovered without untoward incident.

Zinc Chlorid in Uterine Hemorrhage, Particularly When Caused by Uterine Myomas and Metro-Endometritis

Dr. H. J. Boldt, New York: I do not approve of the removal of the uterus for bleeding if it is not the seat of a neoplasm. Zinc chlorid is used in all instances of severe bleeding, whether due to metro-endometritis or simple endometritis, but particularly when caused by interstitial myomas of small size. In large tumors, especially of the uterus, it is more desirable to extirpate. I use a 50 per cent. solution of zinc chlorid more frequently than weaker solutions. Care must be taken to avoid having the medicament come in contact with the cervical mucosa lest a stricture result. In several instances of very profuse bleeding from interstitial myomas, some measuring about 6 inches in diameter, in women past 40 years of age, I have seen complete amenorrhea established after using twelve, or even a less number of zinc chlorid applications. While the tumors do not decrease in size, the health of the patients improves as the result of amenorrhea. There must be no oozing of blood from the endometrium when the intra-uterine applications are made; the uterine cavity must be dry. If it is not, it may be prepared with an intra-uterine tampon of styptic gauze.

Cancer of Mammary Tissue Misplaced in Axilla

Dr. J. Shelton Horsley, Richmond, Va.: An unmarried woman, aged 46, who had two sisters with cancer, noticed a growth in the right axilla which became quite painful. There was no evidence of any primary lesion elsewhere. An examination of removed tissue showed it to be malignant. Three years and four months after the operation, the patient was entirely free from recurrence.

Prosecution of Quacks and "Patent Medicine" Fakers.—A recent *Bulletin* of the New York City Department of Health ives a list of the prosecutions made by the department under hat section of the Sanitary Code regulating the manufacture r sale of drugs or medicines which are adulterated or misbranded. Most of the cases prosecuted thus far have been by nspectors of the Bureau of Food and Drugs. During the past hree months, Anthony Ofries has been fined $100 for selling henacetin which was adulterated; Charles Stiriz was given hirty days for selling a paralysis "cure"; Smith and Zibriskie vere fined $800 for selling an infantile paralysis "cure"; alvatore F. Sellarc for the use of wood alcohol, $500 and hirty days; J. A. Miller for adulterating phenacetin and ther tablets, $500, and Peter U. Russ for selling a consumpion "cure," $100 or thirty days. A number of additional ases are now waiting trial.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

January, XIII, No. 1

1 *Three Cases of Congenital Familial Cyanosis and New Method of Diagnosis of Congenital Heart Lesions. J. H. Hess and R. G. Pearce, Chicago.—p. 1.
2 *Phenol Excretion in Urine of Infants, Including New-Born. C. U. Moore, Portland, Ore.—p. 15.
3 *Chemistry of Spinal Fluid of Children. J. S. Leopold and A. Bernhard, New York.—p. 34.
4 Alkali and Earth Alkali Equilibrium in Spasmophilia. C. G. Grulee, Chicago.—p. 44.
5 Acrocephaly; Report of Two Cases. P. Lewin, Chicago.—p. 61.
6 *Excretion of Sodium Chlorid Solution Injected Subcutaneously. L. E. Holt, A. M. Courtney and H. L. Fales, New York.—p. 73.
7 Factor of Inanition in Development of Acetonuria in Children. B. S. Veeder and M. R. Johnston, St. Louis.—p. 89.
8 *Infantile Scurvy. Therapeutic Value of Yeast and of Wheat Embryo. A. F. Hess, New York.—p. 98.

1. **Congenital Familial Cyanosis.**—The results of the analyses made by Hess and Pearce show that the cyanosis is not a faulty gas exchange of the blood as it passes through the lungs, for this is above normal, but rather lies in a reduction of the amount of blood which reaches the left ventricle from the pulmonary circulation. The rate of blood flow is normal or above normal through the systemic circulation. They believe, therefore, that the blood sent from the left ventricle is a mixture of venous and arterial blood, and that the tension of oxygen in the arterial blood is below that normally found. The larger percentage of reduced hemoglobin in the arterial blood than is found in normal individuals imparts the blue color to the skin. The amount of oxygen, however, delivered to the tissues is sufficient to meet their needs, due at least in part to the increased hemoglobin content of the blood; and the amount of carbon dioxid excreted by the lungs is kept within normal limits by the greater difference in the effectual diffusion pressure of carbon dioxid between arterial and venous blood in the lungs.

The cyanotic boys are not different from other boys in their ability to do the ordinary things of life. However, their power of endurance does not compare with that of a normal boy. When forced pulmonary ventilation is pushed, the color markedly improves. These boys are all subject to bronchitis and this tendency might be explained on the assumption that a deficient oxygen supply in the blood of the bronchial artery is a factor in producing congestion or edema in the lungs. The authors conclude that the pathology consists of a cardiac abnormality. The methods, outlined, afford a new means of investigating the relationship of the pulmonic circulation to the systemic circulation, and in the present case renders the diagnosis of a septal or ductus defect highly probable.

2. **Phenol Excretion in Urine of Infants.**—In the series of fifteen infants examined by Moore the phenol excretion per kilogram of body weight is less in the breast-fed than in the artificially fed infant. In infants and in adults there is an interrelation between the total phenol excretion and the protein intake as measured by the total nitrogen excreted in the urine. This relation can be expressed in the general term, trebling the protein intake doubles the phenol excretion. Contrary to the earlier findings, phenol is quantitatively present in the urine of every new-born infant, the average of these nineteen cases being 11.2 mg. for the first three days of life. As phenol is present during this period of starvation, it must originate in part through endogenous metabolism.

3. **Chemistry of Spinal Fluid of Children.**—Chemical examination of the spinal fluid in ten normal cases in children gave the following results: The total nonprotein nitrogen varied between 17 and 26 mg. per 100 c.c. of fluid, the urea nitrogen varied between 7 and 13.5 mg.; the creatinin varied between 0.7 and 1.5 mg. In no case was there enough uric acid present in the spinal fluid to give a positive quantitative test. The sugar content varied within very narrow limits (0.07 and 0.1 per cent.). The concentration of total nonprotein nitrogen in

the spinal fluid averaged 75 per cent. of that in the blood, the urea 82 per cent. of that in the blood and the creatinin 60 per cent. of that in the blood. The chemical examination of the spinal fluids from diseased children showed the following conditions: In chorea, idiocy, syphilis, epilepsy and enuresis the nonprotein nitrogenous constituents of the spinal fluid closely paralleled the normal.

In acute nephritis without uremic symptoms the total nonprotein nitrogen was slightly increased and uric acid was present in small amounts. In acute nephritis with uremic symptoms the total nonprotein nitrogen, urea and creatinin were markedly increased and uric acid was present in slight amounts. The sugar content was also increased. In serous meningitis the nonprotein nitrogenous constituents, as well as the sugar content were within normal limits. In tuberculous meningitis the total nonprotein nitrogen and the urea were normal, but the creatinin was slightly increased. Uric acid was present in every case, but the sugar content was normal or slightly reduced. In cerebrospinal meningitis the nonprotein nitrogenous constituents were normal, but the sugar content was reduced. In a fatal case of meningitis in which the streptococcus was found, the nonprotein nitrogenous constituents were normal and sugar was absent. In the early stages of infantile paralysis the nonprotein nitrogenous constituents, as well as the sugar content, were within normal limits.

6. **Sodium Chlorid Excretion.**—The authors' metabolism studies support the clinical conclusions as to the beneficial effects of repeated saline injections.

8. **Yeast and Wheat Embryo Infantile Scurvy.**—Clinical experience demonstrated that yeast is of no value in scurvy either as a prophylactic or as a curative dietetic agent. It was found, however, to possess virtue as a stimulant to growth, when added to the milk in the form of the fluid autolyzed yeast or given to older infants as a desiccated powder. The embryo or germ of the wheat seed manifested some value as an antiscorbutic, but not sufficient to render it useful in this connection from a practical or clinical standpoint. The watery extract, which is readily prepared, was found to stimulate growth, and may be used to advantage, on account of this quality, as a substitute for barley in milk preparations.

American Journal of Medical Sciences, Philadelphia

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9 Abnormalities of Growth. L. B. Mendel, New Haven, Conn.—p. 1.
10 Syphilis of Stomach; Report of Twenty-Three Cases. G. B. Eusterman, Rochester, Minn.—p. 21.
11 Intermediary Metabolism in Diabetes. G. Lusk, New York.—p. 40.
12 *Clinical Significance of Glucose-Nitrogen Ratio in Diabetes Mellitus. N. W. Janney, New York.—p. 44.
13 *Starvation Treatment of Diabetes. C. F. Martin and E. H. Mason, Montreal, Canada.—p. 50.
14 *Influence of Acidosis on Hyperglycemia in Diabetes Mellitus. A. A. Epstein and J. Felsen, New York.—p. 58.
15 *Fatal Case of Diabetes Mellitus Associated with Large Cell Hyperplasia. J. R. Williams, Rochester and M. Dresbach, Ithaca, N. Y.—p. 65.
16 Renal Glycosuria. J. R. Murlin and W. L. Niles, New York.—p. 79.
17 Clinical Studies of Acidosis. J. H. Austin and L. Jonas, Philadelphia.—p. 81.
18 *Toxemias of Pregnancy. J. R. Losee and D. D. Van Slyke, New York.—p. 94.
19 Determining Intragastric Temperature in Man; Variations After Ingestion of Hot and Cold Liquids and During Digestion. A. Stengel and A. H. Hopkins, Philadelphia.—p. 101.
20 Aspirating Bougie for Esophagus and Stomach. M. Einhorn, New York.—p. 106.
21 *Treatment of Circulatory Failure in Acute Infections. M. Goodridge, New York.—p. 107.

12. **Glucose-Nitrogen Ratio in Diabetes Mellitus.**—By means of improved experimental methods it was established by Janney that the fasting urinary glucose-nitrogen ratio of severe diabetes mellitus is about 3.4 : 1. The glucose-nitrogen ratio is, therefore, to be regarded as a definite index of the severity of this disease. In association with other factors to be considered, the glucose-nitrogen ratio is a valuable prognostic sign.

13. **Starvation Treatment of Diabetes.**—Two important points are worthy of note in the authors' observations: 1. The ferric chlorid reaction is sometimes absent when acidosis is present, and is less sensitive, too, than the nitroprussid reaction. 2. The urine does not always show a reaction for acidosis even when the blood gives a positive quantitative result, therefore, the excretion of the acid bodies is not necessarily an index of the degree of acidosis, while in diabetes the reverse occurs. Sometimes, however, in Martin and Mason's cases, acidosis was initiated by the starvation, at other times a preexisting acidosis was increased, though usually it disappeared. Evidently there is a variation due to many circumstances, though starvation ultimately does make the urine acid free. In one persistent case of very mild diabetes, with prolonged mild acidosis, interrupted periods of a fat free diet seemed especially useful in clearing up remnants of the acidosis. In one very severe case in which the acidosis disappeared on starvation, it developed again on a protein-fat diet, and later on disappeared with one day of starvation. Sodium bicarbonate was given (32 gm. per diem) for five days, with resulting elimination of more ketone bodies. Excretion of these bodies ceased again with cessation of bicarbonate administration. Another experience worthy of note is the varying ratio of the acetone bodies to beta-oxybutyric acid. Sometimes there is much acetone and little beta-oxybutyric acid, and sometimes the reverse occurs. There seems to be little constancy, and the percentage of 60 to 80, as usually recorded, is subject to many wide exceptions.

14. **Hyperglycemia in Diabetes.**—The study made by Epstein and Felsen showed that the withdrawal of food from certain cases of diabetes provokes, or aggravates the acidosis. The acidosis causes an increase in the blood sugar content, in one of two ways: (*a*) by augmenting the mobilization of sugar, and (*b*) by affecting the sugar secreting function of the kidneys. Liberal, but judicious, administration of carbohydrate may control the acidosis provoked by the withdrawal of carbohydrates or complete fasting, thus leading to a general amelioration of the diabetes. A progressive rise in the blood sugar content, associated with a gradual fall in the alveolar carbon dioxid is indicative of impending coma.

15. **Fatal Case of Diabetes Mellitus.**—A case of fatal diabetes with large cell hyperplasia of the spleen, lymph nodes and liver is presentd by Williams and Dresbach. It is the fourth case on record so far as the authors can tell. The hyperplasia has some resemblance to the cell changes in Gaucher's disease of the spleen. It is shown that overfeeding with fat increases acidosis in diabetes and probably bears some relation, as yet not understood, to lipoidemia. The acidosis is readily controlled. A brief discussion of some of the newer ideas regarding fat metabolism is given.

18. **Toxemias of Pregnancy.**—Losee and Van Slyke found that neither blood nor urine of eclamptic women shows, as a rule, an amino-acid content above normal limits. Inspection of the other nitrogen figures of the urine shows that the urea in eclampsia is usually below the average normal, often strikingly so, even if calculated on the basis of total nitrogen of the urine minus the albumin nitrogen. The only eclamptic urines which showed more than 70 per cent. of urea nitrogen were those obtained one or more days postpartum. The ammonia was often higher than the average in normal individuals, but the abnormality is less striking than that of the urea. All the cases of pernicious vomiting showed strikingly high ammonia percentages; none of the cases showed less than 16.9 per cent. In five cases of nontoxic pregnancy the nitrogen ratios were normal. The authors conclude that the toxemias of pregnancy can be attributed neither to failure in diaminization of the amino-acids, nor to the moderate degree of acidosis observed. The nature of the toxin or toxins remains unknown.

21. **Circulatory Failure in Acute Infections.**—In Goodridge's opinion there is neither clinical nor experimental evidence to support the belief that failure of the vasomotor center is the cause of the symptoms of circulatory failure which occur in acute infectious disease. While it has been shown experi-

mentally that the heart is not exhausted in animals dying of acute infectious diseases, there is no positive proof that the myocardium is wholly efficient in its effect to maintain the circulation in the body of the living animal under such circumstances. The hypothesis which suggests the existence of a third center controlling the flow of blood is important even though it is not yet proved. Alcohol and strychnin are absolutely worthless drugs in the treatment of circulatory failure. Epinephrin and pituitary extract are useful in the treatment of sudden circulatory collapse, but their action is not a sustained one. The nitrites are valuable additions to the therapeutic armamentarium in the treatment of pulmonary edema under certain circumstances, because of their selective action in constricting the pulmonary arteries. Caffein increases the flow of blood when the supply to the heart is "inadequate," probably by an action on some mechanism outside of the heart. One of the most important contributions of recent times on the action of digitalis is the proof electrocardiographically that it exerts precisely the same effect on the heart in febrile conditions that it exercises in nonfebrile states, and whether the rhythm is initiated in the normal pacemaker or not.

American Journal of Roentgenology, New York

December, 1916, III, No. 12

22 *Roentgen Examination as Aid in Differential Diagnosis between Pneumonia and Empyema, Especially in Children. W. H. Stewart, New York.—p. 559.
23 Practical Points on Use of Intensifying Screens and on Their Selection and Care. H. Threlkeld-Edwards, South Bethlehem, Pa.—p. 585.
24 Device for Obtaining Lateral Roentgenograms of Spine in Hyperextension. R. Hammond, Providence, R. I.—p. 589.
25 Plan of Roentgen Department in Hospital. P. M. Hickey, Detroit. —p. 590.

22. Abstracted in The Journal, Nov. 18, 1916, p. 1549.

Archives of Pediatrics, New York

December, 1916, XXXIII, No. 12

26 Pertussis. I. A. Abt, Chicago.—p. 881.
27 Care and Asepsis in Hospitals for Infants. A. Strauch, Chicago. —p. 899.
28 *Heart Disease in Infancy and Childhood. A. L. Goodman, New York.—p. 909.

28. **Heart Disease in Infancy and Childhood.**—Cases of rheumatism in children are treated by Goodman in the following manner: During an acute attack give the patient sodium salicylate, if this is not well borne by the mouth, use it per rectum. If there is already an accompanying heart condition, use fluidextract of digitalis and spartein sulphate in rather large doses. If there is no accompanying heart complication, give smaller doses and examine the heart at frequent intervals to observe any occasion for increasing the dose. The children are kept in bed until all vestige of pain has disappeared, and the heart sounds have improved or become normal. The children's guardians are then warned of the o-called "growing pains," and the moment the pains reappear, or difficulty in walking is noticed by the parents, the children re at once placed in bed and the salicylate given every hour r two until the pain has disappeared. Give the salicylate, fter an attack, two or three times a day for two weeks longer. Children with rheumatism should not be subjected to extremes n temperature. Rapid evaporation from the surface of the ody should be avoided. In summer light cotton underwear hould be used, and in winter a mixture of wool and cotton ill be found more serviceable, as it is not so heavy as the ool alone, and, absorbs perspiration more readily than the llwool garment.

The children should receive daily lukewarm baths, never ot and never cold, followed by a brisk rubbing with a coarse ath towel. If there exists any adenoid growth or enlarged onsils they should be removed. When the children come in rom the street after play their stockings should be removed, heir feet rubbed dry, and a fresh pair of stockings subituted. Damp dwellings should be avoided. Parents with hildren subject to rheumatism should be told that they may ot live on the ground floor. The sleeping room should be unny and have a southern exposure, if possible. In reference to diet: Beef should be avoided, especially beef juices or extracts; spiced and fried foods should not be permitted. Sweets, such as candy and pastry, should be forbidden, and, above all, coffee, tea and alcohol.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

January, IX, No. 7

29 Fat Dystrophies of Endocrinous Origin. H. G. Beck, Baltimore. —p. 98.
30 Relation of Glands of Internal Secretion to Female Pelvic Organs. C. W. Vest, Baltimore.—p. 102.

California State Journal of Medicine, San Francisco

January, XV, No. 1

31 Diabetes in Pregnancy; Report of Cases. W. A. Beattie, Sacramento.—p. 11.
32 Use of Whole Blood in Hemorrhage; Report of Cases. H. R. Oliver, San Francisco.—p. 13.
33 Attitude of Physician toward Venereal Patient. A. M. Meads, Oakland.—p. 15.
34 Obscure Symptoms of Rheumatism in Children. J. A. Colliver, Los Angeles, Cal.—p. 18.
35 Treatment of Fractures of Long Bones. S. J. Hunkin, San Francisco.—p. 20.
36 *Trial of Goodman's "Autoserum" Treatment of Chorea. H. K. Faber, San Francisco.—p. 27.
37 Case of Typhus Exanthematicus in San Francisco. I. C. Brill, San Francisco.—p. 29.
38 Sulphur as Remedy for Rheumatism. W. F. McNutt, San Francisco.—p. 30.

36. **Goodman's "Autoserum" Treatment of Chorea.**—Goodman's method consists in the injection, one to four times repeated, of the patient's own serum into the subdural space of the spinal canal. Faber says that improvement, shown by the disappearance of choreic movements, occurs frequently within three days, or even less, and a majority of cases remain permanently free of movements. Certain instances of recurrence are mild and readily amenable to the action of another injection. Of the thirty cases treated by Goodman fourteen received one injection, eight received two injections, five received three injections, and three received four injections. Of those receiving one injection, twelve were cured and two markedly improved. Of those receiving two injections, five were cured and three markedly improved. Of those receiving three injections, two were cured and one markedly improved, one slightly improved, and one unimproved. Of those receiving four injections, one was cured, one markedly improved and one unimproved. Faber used the method in three cases. An almost immediate cessation of choreic movements followed a single injection of the patient's own serum into the spinal canal, and no recurrence of symptoms has occurred in a little over a month.

Florida Medical Association Journal, Jacksonville

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39 Hormones and Hormone Therapy. J. E. Caldwell, Bradentown. —p. 161.
40 Duty of Physician Toward Eradication of Malaria. G. E. Henson, Jacksonville.—p. 165.
41 Vitamin. A. W. Downs, Philadelphia.—p. 169.
42 Treatment of Morphin Habit. W. C. Douglass, Tampa.—p. 172.
43 Herniotomy. S. Stringer, Tampa.—p. 174.
44 Poliomyelitis or Heine-Medin's Disease. G. H. Benton, Miami. —p. 176.
45 Alcoholic Insanity; Report of Case. D. C. Main, Welaka.—p. 181.
46 Pituitary Extract. G. C. Kingsbury, Largo.—p. 182.
47 Calomel. L. S. Oppenheimer, Tampa.—p. 183.

Illinois Medical Journal, Chicago

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48 Roentgen Diagnosis of Chest Lesions. A. Hartung, Chicago.—p. 1.
49 Health Insurance from Standpoint of Physician. G. T. Palmer, Springfield.—p. 5.
50 Dementia Praecox Studies. B. Holmes, Chicago.—p. 9.
51 Vaccine Therapy in Treatment of Modern Diseases. F. M. Wood, Chicago.—p. 13.
52 Symptoms and Diagnosis of Infantile Paralysis. T. McEachern, Rochelle.—p. 21.
53 Epidemic of Typhoid. W. M. Friend, Park Ridge.—p. 23.
54 Brief Review of Pavlov's Work. J. J. Moorehead, Chicago.—p. 25.
55 Diabetes Mellitus—Why do Glycosuria and Acidosis Increase During Work in Some Diabetics? Suggestion in Treatment. M. B. Leviton, Chicago.—p. 34.
56 Mental Mechanisms. B. F. Williams, Lincoln, Neb.—p. 35.

57 Cerebrospinal Syphilis Treatment. C. D. Humes, Indianapolis. —p. 38.
58 Case of Juvenile General Paresis. F. C. Potter, Indianapolis. —p. 40.
59 Case of Bilateral Lenticular Degeneration. M. A. Bahr and F. C. Potter, Indianapolis.—p. 44.
60 Education of Feebleminded. G. Bliss, Fort Wayne, Ind.—p. 46.
61 Report of Cases Recently Discharged from Watertown State Hospital. F. A. Causey, East Moline.—p. 47.
62 Case of Alcoholic Polyneuritis with Unusual Trophic Disturbances. G. B. Hassin, Chicago.—p. 51.
63 Accessory Sinuses of Nose. W. H. Gardner, Bloomington.—p. 54.

Journal of Immunology, Baltimore

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64 *Comparison of Antigenic Properties of Different Strains of Bacillus Typhosus. S. B. Hooker, San Francisco.—p. 1.
65 *Hecht (Gradwohl Modification) Complement Fixation Reaction in Syphilis with Special Reference to Cholesterinized Antigens. J. A. Kolmer, Philadelphia.—p. 23.
66 *Correct and Incorrect Methods of Performing "Daily Titrations" for Wassermann Reaction and Other Forms of Complement Fixation. R. Ottenberg.—p. 39.
67 Methods of Determining Optimal Amount of "Antigen" for Wassermann Reaction. R. Ottenberg, New York.—p. 47.
68 *Study of Two Hundred and Ninety Postmortem Wassermann Reactions. S. Graves, Louisville, Ky.—p. 53.
69 *Study of Von Dungern's Indigo Test for Syphilis. E. P. Flood, New York.—p. 69.
70 *Comparative Study of Different Methods of Performing Wassermann Test for Syphilis. J. W. Smith, Jr., and W. J. MacNeal, New York.—p. 75.
71 Studies in Anaphylaxis. Mechanism of Delayed Shock. R. Weil, New York.—p. 95.
72 *Id. Simultaneous Injections of Antigen and Antiserum. Anaphylatoxin Theory of Anaphylaxis. R. Weil, New York.—p. 109.
73 Studies on Antibodies. Analyses and Nitrogen Distribution of Number of Antiserums. E. J. Banzhaf, K. Sugiura and K. G. Falk, New York.—p. 125.

64. **Antigenic Properties of Different Strains of Bacillus Typhosus.**—By means of the alexin fixation reaction Hooker was able to demonstrate consistent antigenic differences among some strains of *B. typhosus.* By means of agglutinin absorption experiments, findings have been obtained that, in general, harmonize strikingly with the results of cross fixation. This confirmatory evidence, secured by a widely different serologic method, Hooker says, tends strongly to prove that these antigenic differences among typhoid strains, as demonstrated by alexin fixation, represent an actual condition and are not fortuitous. The facts that a serum immune to any recently isolated strain cross fixes with all other strains, old or young, while serums immune to older strains do not so cross fix, would lead to the seemingly justified assumption that only do the young strains contain all of the antigenic complexes of typhoid bacillary protein. The logical conclusion, then, would be that a young strain ought to afford the most efficient protection when used for prophylactic immunization against typhoid. However, the results of the work on agglutinin absorption, if correctly interpreted, do not warrant the assumption that a univalent vaccine is sufficient. Therefore it seems advisable, for the present, to recommend the use of a balanced polyvalent typhoid vaccine, for immunizing and therapeutic purposes.

65. **Hecht Complement Fixation Reaction.**—The Hecht reaction as modified by Gradwohl, and conducted with a properly standardized antigen Kolmer claims constitutes a very delicate control over the Wassermann reaction, although it possesses a greater negative than a positive value. The fewest pseudoreactions occurred with an extract of acetone insoluble lipoids. An alcoholic extract of syphilitic liver proved of least antigenic sensitiveness and yielded the highest percentage of false or pseudoreactions. The modified Hecht and Wassermann reactions including the use of cholesterinized extracts, yielded similar results in 82 per cent. of a series of 360 serums. The modified Hecht reaction yielded about 16 per cent. more positive reactions and about 12 per cent. more true positive reactions than the Wassermann reaction conducted with a cholesterinized extract as antigen; 26 per cent. more true positive reactions than the Wassermann conducted with an alcoholic extract of liver and 18 per cent. more true reactions than the Wassermann with an extract of acetone insoluble lipoids. Kolmer believes that the modified Hecht reaction has its greatest value as a serologic control in the treatment of syphilis.

66. **Methods of Performing "Daily Titrations" for Wassermann Reaction.**—Ottenberg's experiments demonstrate that in the Wassermann reaction compensating for increased hemolytic strength of the complement by using a diminished amboceptor dose inevitably leads to a negative result in certain grades of weakly positive serums. The correct method of compensating for complements of greater than average hemolytic strength is by using a smaller dose of complement. The method of doing daily complement titrations is greatly to be preferred to the method of keeping the dose of complement fixed and doing daily amboceptor titrations.

68. **Postmortem Wassermann Reactions.**—In 90.4 per cent. of cases showing postmortem anatomic lesions of syphilis or presenting positive evidence of syphilis in their histories the serums postmortem gave positive Wassermann reactions. Only 7 per cent. of 282 cases showed negative reactions in the presence of anatomic lesions (aneurysms) characteristic of syphilis.

69. **Von Dungern's Indigo Test for Syphilis.**—Flood claims that the alkali and not the indigo is the sole inhibiting agent in the von Dungern's test. The method is of no value in the serum diagnosis of syphilis for in a series of 140 serums, forty of which were evidently syphilitic, coagulation occurred in but three, with the prescribed amount of reagent.

70. **Wassermann Test for Syphilis.**—The use of a simple alcoholic antigen, with the first incubation carried out in the ice-box for four to twenty-four hours, was found to be more sensitive in the detection of syphilis than the other procedures tested.

72. **Anaphylatoxin Theory of Anaphylaxis.**—Characteristic anaphylactic symptoms were produced by Weil exceptionally by the simultaneous, but separate, injection of antigen and antibody intravenously. They may be produced by the simultaneous separate injection of two foreign serums or proteins not related as antigen and antibody.

Journal-Lancet, Minneapolis

January 1, XXXVII, No. 1

74 Tubal Pregnancy. M. M. Ghent, St. Paul.—p. 1.
75 Achondroplasia in Calf with Thymus in Place of Thyroid. W. S. Nickerson, Long Lake.—p. 7.
76 Present Status of Treatment of Fractures. O. W. Parker, Ely. —p. 10.
77 Elements of Psychiatry; What Busy Practitioner Should Know About Mental Diseases. H. R. Hummer, Canton, S. D.—p. 15.

Laryngoscope, St. Louis

December, 1916, XXVI, No. 12

78 Cerebellar Abscess; Symptoms and Differential Diagnosis. P. D. Kerrison, New York.—p. 1327.
79 Spontaneous Recovery in Cerebrospinal Meningitis of Otitic Origin; Report of Case. S. McCullagh, New York.—p. 1338.
80 Tubercular Mastoiditis with Sequellae; Multiple Operation; Recovery. W. L. Culbert, New York.—p. 1346.
81 Disease and Surgery of Fifth Nerve. J. F. Barnhill, Indianapolis. —p. 1351.
82 Résumé of Year's Work with Suspension Laryngoscopy. R. C. Lynch, New Orleans.—p. 1360.
83 Removal of Fragment of Tracheotomy Tube from Lung, Six Years After Its Inspiration. F. R. Packard, Philadelphia.—p. 1371.
84 General Surgical Principles as Applied to Tonsillectomy. W. Marshall, Pittsburgh.—p. 1374.
85 Hyperplasia of Paratonsillar Gland After Tonsillectomy. Preliminary Report. H. Hays, New York.—p. 1380.
86 Electric Foot-Switch. A. G. Bryant, Boston.—p. 1383.

Medical Record, New York

January 6, XCI, No. 1

87 Is There Any Relation Between Tuberculosis, Mental Disease and Mental Deficiency? S. A. Knopf, New York.—p. 1.
88 Organization of Special Surgical Unit in General Hospital. H. H. Young, Baltimore.—p. 8.
89 Roentgen Rays in Diagnosis and Treatment of Thyroid and Thymus Enlargement. A. J. Quimby and W. A. Quimby, New York. —p. 13.
90 Diagnosis and Treatment of Trachoma. W. M. D'A. Carhart, New York.—p. 16.
91 Importance of Accurate Diagnosis of Urologic Disturbances Encountered in Gynecologic Practice. W. T. Dannreuther, New York.—p. 19.
92 New Research Work Relating to Alcoholic Question. T. D. Crothers, Hartford, Conn.—p. 21.

Michigan State Medical Society Journal, Grand Rapids

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93 To Be Forewarned Is to Be Forearmed. A. McKenzie, Port Huron.—p. 1.
94 Diagnosis and Significance of Tuberculous Bronchial Lymph Nodes. H. M. Rich, Detroit.—p. 7.
95 Practical Value of Polygraph in Diagnosis of Cardiac Disorders. C. E. Stewart, Battle Creek.—p. 9.
96 Tonsillectomy in Adults. J. J. Moffett, Port Huron.—p. 17.
97 Case of Sarcoma of Thyroid. H. J. Vandenberg, Grand Rapids. —p. 18.
98 Case of Polyserositis. N. B. Foster, Ann Arbor.—p. 21.
99 Case of Papulonecrotic Tuberculides. J. A. Elliott, Ann Arbor. —p. 22.
100 Case of Suppurative Otitis Media with Complete Thrombosis of Lateral Sinus, Superior Petrosal Sinus and Jugular Bulb with Invasion of Labyrinth. R. B. Canfield, Ann Arbor.—p. 24.
101 Unusual Case of Anorectal Fistula. C. G. Darling, Ann Arbor.—p. 25.

Military Surgeon, Washington, D. C.

January, XL, No. 1

102 Advantages of Military Training for Young Man. W. H. Arthur, U. S. Army.—p. 1.
103 Present System of Recruiting for U. S. Navy and Marine Corps. M. S. Elliott, New York.—p. 10.
104 Recruiting for Military Service. F. T. Woodbury, U. S. Army. —p. 17.
105 Heart of Recruit and Soldier. E. K. Tullidge, Austrian Army. —p. 24.
106 Special Physical Examination of Aviators for U. S. Army. C. H. Connor; U. S. Army.—p. 29.
107 Comparative Hearing Requirements in Foreign and American Navies. G. P. Trible, U. S. Navy.—p. 33.
08 Demography in so far as it Relates to Vital Statistics of Armies. W. P. Chamberlain, U. S. Army.—p. 37.
09 Another Viewpoint of Red Cross Work in Serbia. S. O. Beasley. —p. 45.
10 Prophylaxis and Treatment of Tetanus. A. McGlannan, U. S. Army.—p. 52.
11 *Toxic Effect of Emetin Hydrochlorid. H. H. Johnson and J. A. Murphy, U. S. Army.—p. 58.

111. **Toxic Effect of Emetin Hydrochlorid.**—Emetin hydro-
hlorid has been used by Johnson and Murphy as the principal
emedy in the treatment of 142 cases of endamebic dysentery.
he authors have found its use, results and dangers some-
hat analogous to those of salvarsan in syphilis. Two men
ied under treatment from peculiar and unusual conditions
n no way connected with the disease from which they suf-
ered; five other cases showed physical signs and symptoms
hich it is believed were due to emetin. In the two fatal
ases there was (1) inability to swallow after food had
eached the esophagus, (2) hepatization of the lungs and (3)
apid and uncontrolled action of the heart. Both patients
howed, at first, a general motor weakness affecting particu-
rly the muscles of the back of the neck, with a tendency
r the head to fall forward, later a difficulty in swallowing,
nd finally a pneumonia of lobar type. One case showed
ecided cardiac signs, possibly attributable to failure of vagus
ntrol. These cases were treated with emetin, particularly
uring the acute stage of the disease, and received in all 23½
d 25 grains each. In the five cases mentioned the untoward
mptoms were somewhat similar and disappeared promptly
hen medication was stopped.

The authors' present method of administering emetin in
ses of endamebic dysentery is as follows: ⅓ grain daily,
creasing ⅓ grain per day until 1 grain is given, con-
ued until 8 grains have been given. With the emetin, bis-
uth subnitras in large doses, is given. For the succeeding
riod of ten days colonic irrigations of 1:1,000 quinin solu-
n are given once or twice daily. If the stool is still posi-
e a subsequent course of emetin, 1 grain daily, is given
r three days. By this method of treatment the patient
ceives 11 grains, which is less than the single lethal dose
ated by Sir Leonard Rodgers. This procedure usually
ffices to free the stool from ameba and cysts. There are
casional cases which will require a third course, which is
t instituted until after a sufficient lapse of time and not
en, if asthenia or special contraindications exist, that is,
otor weakness, irregular heart action, nervous exhaustion
irritative diarrhea. In view of the experiences the authors
vise a very careful and watchful course in the use of
etin, in protracted cases especially.

New Jersey Medical Society Journal, Orange

January, XIV, No. 1

112 Protective Inoculation by Use of Vaccines and Serums. G. F. Leonard, New Brunswick.—p. 1.
113 Poliomyelitis. D. Elliott, Newark.—p. 5.
114 Prophylaxis and Treatment of Postanesthetic Vomiting. C. J. Larkey, Bayonne.—p. 8.
115 Use of Iodin in Obstetrics. M. E. Swiney, Bayonne.—p. 10.

New Orleans Medical and Surgical Journal

January, LXIX, No. 7

116 Incontinence of Urine in Women. M. J. Gelpi, New Orleans.—p. 486.
117 Large Typhoid Abscess; Report of Case. J. M. Perret, New Orleans.—p. 492.
118 Tubo-Uterine Rupture at Fourth Month of Gestation. P. Michinard, New Orleans.—p. 496.
119 *Bacterial Cultures of Human Spleens Removed by Surgical Operation. A. W. Sellards, Boston.—p. 502.
120 Occurrence of Parasite in Tick. S. B. Wolbach, Boston.—p. 519.

119. **Bacterial Cultures of Human Spleens Removed by Surgical Operation.**—Bacterial cultures were made by Sellards of human spleens removed for surgical purposes in ten cases. The cultures from four of these spleens remained sterile. In three instances, a micrococcus was obtained and in three other cases an anaerobic bacillus developed. The anaerobic bacillus in its morphology, in its cultural characteristics and in its serologic reactions resembled very closely the bacillus isolated by Plotz in typhus. The weight of evidence indicates that this group of organisms represents parasitic but nonpathogenic flora of the human body. There is not sufficient evidence to ascribe a specific etiologic rôle to members of this group of anaerobic bacilli in either typhus or in pernicious anemia.

New York Medical Journal

January 6, CV, No. 1

121 Bronchial Asthma. W. Freudenthal, New York.—p. 1.
122 Treatment of Hypertension and Complicating Conditions. W. B. Snow, New York.—p. 5.
123 Pathology of Poliomyelitis and Its Relation to Virus. G. E. Price, Philadelphia.—p. 9.
124 Rollier Treatment of Tuberculosis. C. L. Hyde and H. Lo Grasso, Perrysburg.—p. 11.
125 Borderline Cases of Upper Abdomen. H. Weinstein, New York. —p. 18.
126 Treatment of Stitch Suppuration by Bismuth Paste. A. R. Hollender, Chicago.—p. 20.
127 Infiltration Anesthesia for Tonsillectomy, Together with Employment of Normal Saline Solution. M. S. Ersner, Philadelphia. —p. 21.
128 New and Powerful Galactogogue (Autotherapy). C. H. Duncan, New York.—p. 22.

Ohio State Medical Journal, Columbus

January, XIII, No. 1

129 Surgical Treatment of Exophthalmic Goiter. G. W. Crile, Cleveland.—p. 7.
130 Medical Treatment of Exophthalmic Goiter. A. Crotti, Columbus. —p. 8.
131 Exophthalmic Goiter. J. P. Sawyer, Cleveland.—p. 11.
132 Deductions Drawn from Use of Salvarsan in Treatment of Syphilis. H. N. Cole, Cleveland.—p. 16.
133 Traumatic Hysteria, Report of Cases. W. F. Bay, Columbus.—p. 18.
134 Ductless Gland Therapy and Dermatology. E. D. Tucker, Toledo. —p. 21.

South Carolina Medical Association Journal, Greenville

December, 1916, XII, No. 12

135 Abdominal Cesarean Section, Indications, Technic; Report of Case. J. R. Young, Anderson.—p. 365.
136 Tuberculous Patients Unsuited for Sanatoriums. E. Cooper, Columbia.—p. 372.
137 State's Duty to Feebleminded. A. B. Patterson, Barnwell.—p. 374.
138 General Paresis; Diagnosis and Treatment. J. F. Munnerlyn, Columbia.—p. 376.
139 Classification of Pathologic Hearts. J. E. Edwards, Spartanburg. —p. 380.

West Virginia Medical Journal, Huntington

September, 1916, XI, No. 2

140 Stones in Gallbladder. F. S. Mathews, New York.—p. 73.
141 Sanitation on Cabin Creek, W. Va., After Flood, Aug. 9, 1916. E. S. Tisdale.—p. 89.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

December, 1916, X, No. 3

1 Fourth Variety of Trichonocardiasis; Cultivation of Nocardia Tenuis (Castellani, 1911). J. W. S. Macfie.—p. 283.
2 Urinary Amebiasis. J. W. S. Macfie.—p. 291.
3 Morphology of Certain Spirochetes of Man and Other Animals. J. W. S. Macfie.—p. 305.
4 Studies in Blackwater Fever. Importance of Furnishing Statistics in Connection with Cases. J. W. W. Stephens.—p. 345.

British Medical Journal, London

December 23, 1916, II, No. 2921

5 *Influence of Antiseptics on Activities of Leukocytes and Healing of Wounds. C. J. Bond.—p. 861.
6 Dysentery Carriers. A. M. Kennedy and D. D. Rosewarne.—p. 864.
7 Case of Amebic Abscess of Liver Occurring Twenty Years after Original Attack of Dysentery. G. C. Low.—p. 867.
8 Fulminating Type of Cerebrospinal Fever. P. W. Maclagan and W. E. Cooke.—p. 869.
9 Treatment of Trench Feet. A. S. Gillett.—p. 870.
10 *Home-Made Bread Substitutes for Diabetic Patients. R. T. Williamson.—p. 870.

5. **Influence of Antiseptics on Leukocytes.**—If it be true that some part (how large a part is at present unknown) of the spread of infection in wounds is due to a breakdown in the defensive mechanism of phagocytosis, of which return immigration is only one phase; if, in other words, a certain number of pus cells in infected wounds reenter the circulation or the tissues carrying ingested but still living organisms with them, and if a certain proportion of the latent infection in sinus cases and the recrudescent sepsis which breaks out in healed wounds is due to this same cause, then, says Bond, any method of wound treatment to be successful must deal with the problem of the return immigration of germ laden phagocytes. If antiseptic solutions when applied to wounds are sufficiently strong to kill the phagocytes and their cargoes, and so prevent their reentrance into the tissues they will also inhibit emigration and phagocytosis. The irrigation of a wound with normal saline favors emigration and ingestion, but it does not prevent return immigration. The application of hypertonic saline, on the other hand, may prevent return immigration by killing the leukocytes, but it also checks emigration and phagocytosis.

Bond's observations suggest that return immigration of leukocytes is intimately associated with the spread of infection and recrudescent sepsis in wounds. The spread of infection is due to a breakdown in one or more of the factors on which phagocytosis depends. Either the wandering phagocytes do not emigrate into the invaded area in sufficient numbers, or, having emigrated, they do not ingest the organisms, or the breakdown of the defensive mechanism may occur at a later stage. The phagocytes may emigrate and successfully intern the invading organisms, but they may fail to digest them, or things may go wrong during return immigration. The organisms may be liberated by the leukocytes while still alive, just as the pigment granules may be liberated, and they may retain sufficient virulence to originate a recrudescent infection in a new area. It is quite likely, says Bond, that some part of the autointoxication which attends the too free movement of infected limbs may depend on a liberation of ingested organisms brought about by injury to germ containing leukocytes rather than to a mechanical pumping of the organisms or their toxins into the tissues.

10. **Home-Made Bread Substitutes for Diabetic Patients.**—Williamson uses a soluble casein containing a small percentage of phosphate and gluten, coconut and almond flour.

Glasgow Medical Journal

December, 1916, LXXXVI, No. 6

11 Outdoor Occupations for Tuberculous Cases. J. W. Allan.—p. 321.
12 *Advanced Pulmonary Tuberculosis. W. T. G. Davidson.—p. 330.
13 Liver Abscess Among Soldiers. A. G. Faulds.—p. 337.

12. **Tuberculin in Treatment of Advanced Tuberculosis.**—Davidson's experience has been that tuberculin has done good even in cases of fairly advanced phthisis, though the number of cases treated has not been sufficient to make the evidence conclusive. He does not claim to have cured any patient of the disease with it; but he has treated about fifty patients, specially selected, but all with advanced lesions. These patients put on weight, their general health improved, immunity was brought about from toxemic symptoms, cough became very slight and the sputum scanty, and in some cases both entirely disappeared. The lesion in the lungs was not so marked, in several cases the local signs had practically disappeared, and the patients were dismissed very much improved.

New tuberculin B. E. was found to give the most satisfactory results. The initial dose was 0.3 c.c. of a dilution of one in a million, and a dose was administered biweekly unless there was some contraindication, each subsequent dose being increased by 0.3 c.c. Whenever the dose exceeded 1 c.c. a dilution of the fluid ten times less (one in 100,000) was used. For example, the first four doses would be 0.3 c.c., 0.6 c.c., 0.9 c.c. of a dilution of one in a million, the next dose, instead of being 1.2 c.c. of the same dilution, would be 0.2 c.c. of a dilution of one in 100,000, and so on, until the undiluted tuberculin was given, when the increase of the dose each time was 0.1 c.c. The treatment lasted for about three months, and came to a conclusion after 1 c.c. of pure tuberculin was given. But it is evident that the treatment should be kept up for a longer period, since many cases which had improved under its influence, and had kept well for some time afterward, tended to get worse again when away from the influence of the tuberculin.

Lancet, London

December 23, 1916, II, No. 4869

14 *Antiseptic Treatment of Wounds. I. Feldman and A. J. Walton.—p. 1043.
15 Cerebral Associations of Raynaud's Disease. H. J. Norman.—p. 1049.
16 Treatment of Lamblia Infections. C. Dobell and G. C. Low.—p. 1053.
17 Fulminating Type of Cerebrospinal Fever; Pathology and Cause of Death. P. W. Maclagan and W. E. Cooke.—p. 1054.
18 Importance of Getting Pregnant Woman Under Medical Supervision and Affording Her Necessary Treatment. A. Routh.—p. 1055.
19 Two Fatal Cases of Metastatic Gas Gangrene. K. Taylor.—p. 1057.

14. **Antiseptic Treatment of Wounds.**—The antiseptic advocated by Feldman and Walton is prepared by rubbing together in a mortar crystals of pure phenol and camphor in equal parts by weight—a perfectly clean sweet smelling liquid being thus obtained. As is the case when using any other application, it is primarily essential to provide adequate drainage. When seen in a relatively early stage the wound, if deep or punctured, should be opened under general anesthesia so as to eliminate, so far as possible, any pockets in the tissues and all foreign bodies, loose pieces of bone, or necrotic tissue should be removed. When the wound has been freely opened sufficient of the liquid is poured in to reach the whole surface of the tissues. In large wounds as much as 1 or 2 fluidounces may be required, although as a general rule one or more fluidrams are sufficient. Drainage tubes are inserted as required and packed round with gauze soaked in the fluid. On the surface dry gauze is applied. It is only necessary to change the dressing every forty-eight hours, when a few drops of the fluid are poured down the tube and fresh soaked gauze applied to the raw surfaces. When the treatment is commenced some days or weeks after the infliction of the wound it is again necessary to open up all sinuses and pockets so that the fluid may reach all the septic areas, and if necessary tubes should be inserted so that free drainage is established. The fluid is then used in the same manner as previously. It is noteworthy that the fluid can be handled freely without doing any harm to the skin, but if left for a prolonged period in contact with patient's skin around the wound a certain amount of burning may be caused; for this reason surface dressings should be formed of dry gauze. It is rarely necessary to smear the surrounding skin with sterilized petrolatum.

It is claimed for the method that it overcomes sepsis more rapidly than other methods. With its use amputations are much less frequent. It diminishes pain rather than increases it, as is so often the case with other dressings. The dressing requires to be changed only at long intervals. Its use is associated with no danger. The amount of work in the ward is greatly diminished. It is most suitable to the conditions of modern warfare and can be easily applied to cases that have to travel.

Medical Journal of Australia, Sydney

November 25, 1916, II, No. 22

20 Account of Hospital Ship Karoola. G. Craig.—p. 447.
21 Rupture of Bladder. C. E. Todd.—p. 453.
22 Case of Extraperitoneal Rupture of Bladder. H. Rischbieth.—p. 454.

December 2, 1916, No. 23

23 Thyroid and Internal Secretion. J. C. Verco.—p. 465.
24 Seven Cases of Labyrinthitis, with Six Operations on Labyrinth. M. A. Reid and M. E. Lynch.—p. 470.
25 Case of Acute Cerebrospinal Meningitis. K. Inglis.—p. 474.

Sei-I-Kwai Medical Journal, Tokyo

December, 1916, XXXV, No. 12, pp. 73-78

26 Relation Between Diabetes Mellitus and Albuminuria. S. Iwai.—p. 73. To be continued.

Archives de Médecine des Enfants, Paris

November, 1916, XIX, No. 11, pp. 561-616

27 *Dyspeptic Diarrhea in Children. C. Blanc (Lausanne).—p. 561.
28 *Syphilitic Meningitis and Meningeal Reactions in Syphilitics. M. Lavergne.—p. 579.
29 Recovery from Tetanus under Intravenous Serotherapy. P. Nobécourt and E. Peyre.—p. 588.
30 Milk as Vehicle of Infection of Malta Fever. J. Comby.—p. 597.

27. **Dyspeptic Diarrhea.**—Blanc emphasizes that this disturbance is the result of a disproportion between the food that has to be digested and the juices which are to digest them. Consequently each of these factors must be investigated separately. The food may be at fault or one or more of the digestive juices may be inadequate. The clinical picture is described in detail of nervous functional and dyspeptic diarrheas, and the means of investigation in each, especially when the diarrhea is due to insufficiency on the part of the pancreas. Emaciation is an important sign of the latter and also anemia, as the pancreas secretes hemolysins when it is becoming atrophied. There is liable also to be hint of bronzing, and colic on the left side is a characteristic feature. The stools are whitish and oily, the palmitin coagulates *en masse* like tallow. There is also much residue of undigested meat fibers. Steatorrhea and creatorrhea may occur in normal conditions when fat and meats are eaten in undue amounts.

Among the useful tests are alimentary glycosuria, and alimentary steatorrhea and creatorrhea. If the pancreas functioning is defective, Blanc advises to restrict the intake of meat and of fats, increasing the proportion of starch, which is digested well in such cases, and stimulating secretion in the pancreas by giving hydrochloric acid and pepsin, which aid in the formation of trypsin. To stimulate production of steapsin, he gives pills of bile between meals, as the biliary acids stimulate secretion of steapsin. Intestinal diarrhea from fermentations does not affect the general health as a rule, but neurasthenia is common. The stools reveal the acid dyspepsia. The fermentation irritates the bowels and they protect themselves by mucous secretions. The diet should be modified into an antidiabetic diet, meat, cream, fat, butter, rice and potatoes. Casein may be given and the bowels disinfected.

28. **Meningeal Reactions in Syphilitics.**—Lavergne has had four cases of meningeal symptoms in children for which neither tuberculous nor cerebrospinal meningitis was responsible. In two they were a manifestation of inherited syphilis, in the others the meningeal reaction occurred in the course of an acute infectious disease. All the children recovered completely. None of them had ever presented signs or symptoms otherwise that might have suggested an inherited taint, but the Wassermann reaction was found positive and under mercurial treatment recovery was soon complete. Whenever meningeal reactions are accompanied by an appreciable lymphocytosis, the Wassermann test should be applied without delay.

Bulletin de l'Académie de Médecine, Paris

1916, LXXV, No. 6, pp. 131-154

31 Remote Results of Anastomosis between Intestines and Biliary Apparatus. (Résultats éloignés des anastomoses entéro-biliaires.) P. Bazy.—p. 135.
32 Wine from Psychologic Standpoint. C. Fiessinger.—p. 141.
33 Preparation of Catgut. Goris.—p. 148.
34 Direct Laryngoscopy, Tracheoscopy and Esophagoscopy in Specialist Service for the Wounded. Guisez.—p. 152.

Paris Médical

December 16, 1916, VI, No. 51, pp. 529-544

35 Treatment of Skull Wounds. (Traitement des plaies du crâne dans les ambulances de l'avant.) A. Schwartz.—p. 529.
36 *Curative Value of Serotherapy in Tetanus. (De la valeur curative du sérum antitétanique.) E. Merle.—p. 533.
37 *Anastomosis of Intestines without Opening the Lumen. (Nouveau procédé d'entérectomie et d'entéro-anastomose aseptiques.) Gudin.—p. 539.
38 Suture of Wound in Heart. (Plaie du cœur traitée par la suture, avec survie de neuf heures, chez un blessé atteint de plaies multiples.) Ertaud.—p. 541.

36. **Antitetanus Serum in Treatment of Tetanus.**—Merle has been making extensive experiments which have demonstrated anew the special affinity of the nerve cells for the tetanus toxin, and also that they are able to neutralize a certain proportion of the toxin. The toxin arriving in amounts greater than the cells can neutralize is adsorbed by the cells and held so firm by them that it does not feel the influence of any antitoxin injected. This seems to be able to act only on the toxin left in the blood stream, but Roux and Borrel, by injecting the antitoxin directly into the brain of guinea-pigs, were able to neutralize the toxin already fastened in the nerve cells. The application of similar measures in the clinic has not given the anticipated results, probably, Merle says, because the antitoxin has not been applied directly to the cells in sufficient quantities. He cites thirty-seven cases reported by various writers of recovery from tetanus under intraspinal injections of large doses of antitetanus serum. They encourage further trials of the method, injecting the antiserum into the spinal canal, and rectum, intravenously and subcutaneously, to act on the toxin by all methods of approach. A transient aggravation of the symptoms may follow.

37. **Entero-Anastomosis Without Exposing the Lumen.**—The bowel is crushed with clamps on each side of the portion to be resected. With small forceps the bowel is seized at the edge of each of the crushed segments. The intervening segment and its mesentery are cut out and the two small forceps are brought together and the stumps are sutured together, the stitches including the forceps. The forceps are then withdrawn and a grooved sound is introduced in place of the forceps and is worked in until it has spread apart the tissues crushed together by the clamp. This is done for each stump, loosening apart the mucosa and muscular walls of the bowel, and thus rendering the bowel permeable. It is claimed that this method ensures hemostasis while it avoids the operations in two sittings, and the lumen is not opened until the suture is complete. Gudin's clinical experience with this method has been extremely favorable. He gives illustrations of the various steps of the method for entero-anastomosis, and also an illustrated description of the same principle applied to gastro-enterostomy.

Presse Médicale, Paris

December 14, 1916, XXIV, No. 69, pp. 569-576

39 *Nature and Serotherapy of Infectious Hemorrhagic Jaundice. (La spirochétose ictérohémorrhagique.) L. Martin and A. Pettit.—p. 569.
40 *Experimental Research on Section and Restoration of Nerves in Dogs. E. Duroux and A. Couvreur.—p. 572.

39. **Hemorrhagic Jaundice.**—Martin and Pettit give a complete review of the present status of what they call ictero-hemorrhagic spirochetosis, including an account of their own research, and clinical experiences, reproducing a typical fever chart, and describing the results of inoculation of guinea-pigs with blood or urine from patients. The clinical case reported was a laboratory infection, Dr. G. L., who has been doing this kind of work for years, having been in charge of the glanders service for ten years. He inoculated guinea-pigs at

a two days' interval and six or seven days later developed a severe typhoid-like condition accompanied by intense jaundice. The disease reached its height in a week and guinea-pigs inoculated died of spirochetosis in five days. Improvement became evident by the twelfth day and he was able to get up the eighteenth day, but he was unable to start to work for three or four months. The case shows that the incubation is one week. Infection seems to have occurred when the virulence of the virus had been enhanced by the passage through guinea-pigs. In the second case the disease was mild but confirmed by inoculation of guinea-pigs. Martin and Pettit have produced now from the horse an antiserum which has proved its efficacy conclusively on guinea-pigs, even at the third day of the infection otherwise fatal in six days. They say that every infectious jaundice should be examined for the Inada-Ido spirochete, of which they give some illustrations.

40. **Operations on Nerves in Dogs.**—Dogs seem to stand the severing of even large nerves much better than man. But even in dogs the immediate restoration of function is illusory. The peripheral end does not recuperate its functions until it has been penetrated by the fibers from the central stump. Suture and possibly grafting give best results. Compression from proliferation of connective tissue must of course always be corrected.

Correspondenz-Blatt für Schweizer Aerzte, Basel

December 16, 1916, XLVI, No. 51, pp. 1697-1728

41 *Welfare Work for School Children with Ear Disease. (Fürsorgebestrebungen für ohrenkranke Schulkinder.) O. Laubi.—p. 1697.
42 Utilizing the Muscular Force in Stump of the Arm to Control Functioning of Artificial Hand. (Un nouvel appareil pour les mouvements volontaires de la main artificielle.) N. Fialko.—p. 1703.
43 *Regular Daily and Yearly Fluctuations in the Body Temperature. (Bemerkungen über die regelmässigen täglichen und jährlichen Schwankungen der Körperwärme und ihre Herkunft.) R. Ammann.—p. 1710.

41. **Welfare Work for Children with Ear Disease.**—Laubi states that for twenty-two years he has examined the ears of the children entering school for the first time at Zurich. As the child's aptitude for profiting by the school instruction depends on the functioning of the eye and ear, it is to be deplored that examination of the eye and ear is not the rule everywhere on entering school. At Zurich, the school inspector or teacher examines the children first and all who cannot hear the whispered voice at 8 meters are referred to an ear specialist. During the twenty-one years, 1894-1914, from 4.8 to 21.6 per cent. were thus found abnormal, a total of 6,785 out of 62,738 children examined in these years, namely, 11.8 per cent. of all the boys and 9.8 per cent. of the girls. (Nager found 40 per cent. at Lucerne, and Bezold has reported 25.8 per cent., Ostmann 28.4 per cent., and Denker 23.3 per cent., who were unable to hear a whisper at 8 meters.) A circular is sent the parents giving the location and hours of the policlinic where ears are treated, and the children are obliged to bring a certificate to the effect that they have applied for treatment.

The very deaf are given a desk near the teacher, the best ear turned to the teacher, and each child is given a "protector," an intelligent child who sits near and explains to him what he fails to hear. Ear trumpet devices are recommended for those who cannot otherwise hear their own voice, mainly so they can listen to and modulate their own voices. The curved hand to promote hearing is also advised. Lip reading is essential, and Laubi recommends Gutzmann's treatise on this subject (1912). A special school or classes are advisable for children who are unable to hear a whisper at 2 meters. The teachers should be trained in the care of deafmutism, and Laubi deplores that there is no state examination in Switzerland, as there is in Germany, that guarantees special training for welfare work among the deaf. He urges the organization of a school with three grades for the children with defective hearing, with special training to improve vision, and with extra manual training work. The school might also, he says, include the children with eyesight requiring much correction. The expense of such a school renders it impracticable at Zurich at present, but there is already valuable work being done in this line in five cities by a private organization, the Hephatavereine, which assembles the younger children and trains them in hearing exercises, and in the use of the voice, with gymnastics and games.

43. **Regular Fluctuations of the Temperature.**—Ammann reviews what has been written on this subject, citing the findings on pigeons, monkeys and other animals and on man, in regard to the diurnal and nocturnal variations in the normal temperature. He then tabulates the findings over a whole year in a healthy person with regular habits, not doing heavy work. The temperature was taken on rising in the morning and just before going to bed, the thermometer held in the mouth for fifteen minutes each time. There was an average daily variation and also an annual, the body temperature gradually reaching its highest point in July and lowest in November, practically uninfluenced by the atmospheric temperature. The fluctuation was 0.43 of a centigrade degree. Ammann theorizes that the electricity in the air is responsible for the daily and yearly fluctuations.

Medizinische Klinik, Berlin

November 19, 1916, XII, No. 47, pp. 1223-1248

44 *Venesection plus Autoserotherapy. (Eigenserum und Aderlass—Lehre und Anwendung.) B. Spiethoff.—p. 1223. To be concluded.
45 *To Expel the Blood in Operating on the Limbs. (Kurze Bemerkung zur Blutleere bei Operationen von den Extremitäten.) Ritter.—p. 1228.
46 *Salvarsan in Treatment of Pernicious Anemia. R. Lämpe.—p. 1228.
47 The Sago-Like Lumps in Dysenteric Stools. (Ueber die sagokornähnlichen Klümpchen in den Ruhrentleerungen.) B. Ullmann.—p. 1230.
48 Case of Echinococcus Disease of the Skin. (Fall von Cysticercus cellulosae der Haut.) F. Fischl.—p. 1233.
49 *Neurasthenia of the Heart. (Zur Symptomatik der Neurasthenia cordis.) K. Singer.—p. 1233.
50 Folding Operating Table. (Ein Feldoperationstisch.) O. Loewe.—p. 1235.
51 Indications for Obstetric Operations by the General Practitioner. (Zur Indikationsstellung bei den geburtshilflichen Operationen des praktischen Arztes.) H. Walther.—p. 1236. To be continued.

44. **Venesection Plus Autoserotherapy.**—Spiethoff has apparently established that equally favorable results can be realized with the patient's own serum as with alien serotherapy. The benefit does not depend on supplying certain lacking elements but on a broader principle, which includes the individual's own serum. He here reports his favorable experiences with the method in a variety of skin diseases and acute general infectious diseases. He draws from 50 to 100 c.c. of blood and reinjects into a vein the serum from this blood after coagulation. The procedure is repeated on alternate days at first and then twice a week. Or the venesection can be smaller, and 5 c.c. injected intravenously every day. The dosage is extremely important. He has never witnessed with this form of serotherapy anything like the phenomena of hypersusceptibility sometimes noted with foreign serum, but there is usually a transient general and a focal reaction. Promising experiences are related with rebellious urticaria, eczema, pemphigus, scalp disease and gangrenous ulcers. Pruritus at all ages offers an exceptionally grateful field for this technic. If the favorable effect diminishes, he advises changing to Ringer's solution, injecting 300 c.c. two or three times a week, intravenously or subcutaneously. Good results were obtained in the complications of gonorrhea; acute febrile swelling of the epididymis and prostate rapidly retrogressed in his experience.

45. **To Expel the Blood from the Limb.**—Ritter commends the principle of Trendelenburg's "spit" (*Spiess*) for checking the flow of blood at the hip and shoulder. When this special instrument is not available, the same result can be obtained with long forceps or scissors. He has never had the constricting rubber tube slip. He does not describe the technic.

46. **Salvarsan in Pernicious Anemia.**—Lämpe declares that he has never witnessed such pronounced and durable improvement from any other measures in pernicious anemia as he realized under salvarsan in the three cases described. The patients were women of 40, 45 and 50, and the anemia was in a grave stage, the hemoglobin 30 per cent., reds 1,400,000, in the first case, with syncopes and hourly vomiting. Under

six small doses of salvarsan—a total of 0.65 gm. in five weeks—the patient rapidly improved and in four months the hemoglobin had risen to 70 per cent. and the reds to 4,400,000. She felt quite well for seven months, but then symptoms of pernicious anemia returned and as the heart was weak no attempt to give salvarsan again was made. Necropsy confirmed the diagnosis and the fatty degeneration of the heart. Equally favorable results were obtained in the two other cases, the reds numbered 1,200,000 and 1,000,000 and both patients were restored to clinically perfect health and endurance. Syphilis and helminths could be excluded in all three cases, and under salvarsan the morphologic blood findings returned to normal. A permanent cure can scarcely be expected, but the last two patients are still in good health. The six or seven doses were 0.05 to 0.15 gm. each, intravenously in the course of eight or fifteen weeks, and they were borne well as a rule.

49. **Nervous Weakness of the Heart.**—Singer calls attention to three tests which may reveal an organic basis for the apparently exclusively subjective disturbances. One is an especially sensitive area near the heart, a hyperesthetic zone, egg shaped or elliptic, near or including the left nipple. When the needle is drawn lightly over the right breast and then over the left breast, the patient shrinks and exclaims when this tender area is reached. He gives illustrations of the area involved in eight cases. The second test is what he calls the "vagus pulse." The anomaly in the vagus action is shown most instructively by the difference in the pulse during inspiration and expiration, and between the pulse lying down and sitting up. The pulse also grows slower during the "squatting test"; the man bends his knees several times and then stays in the squatting position, the head bent forward, while the pulse is counted. It was materially retarded in the heart-neurosis cases, dropping from 6 × 21 to 6 × 13; in one case from 6 × 25 during running to 6 × 12 while squatting. The retardation is briefly transient. In twenty healthy men there was no change in the pulse except in four cases, and in these it lasted only for two or three beats. But it is common in neuropaths and neurasthenics, even when there is no appreciable heart neurosis.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 7, 1916, XXXVII, No. 98, pp. 1537-1552

52 *The Various Forms of Purpura. (Morbo di Werlhoff e trombopenia essenziale.) G. Matteucci.—p. 1539.

December 10, No. 99, pp. 1553-1568

53 *Unusual Localizations of Paratyphoid B Infection. A. Florenzano. —p. 1553.

52. **Werlhof's Disease and Essential Deficiency in Thrombogen.**—Matteucci relates that his analysis of cases of purpura has shown that there are nine different varieties of this affection and that certain varieties are amenable to horse serum, while others are not modified by this but are corrected by administration of. an extract of blood platelets. He lists them as simple purpura, Schönlein's rheumatoid purpura, Majocchi's type with telangiectasis, Landouzy's infectious type, Henoch's fulminating form, Werlhof's disease, essential thrombopeny (Frank) and scorbutic and chronic purpura. In two cases described in detail the difference between typical Werlhof's disease and essential thrombopeny is well brought out, and the benefit from horse serum in the first type and from extract of blood platelets in the second. The patients were a boy of 16 and girl of 12. Examination of the blood classifies the cases. In all varieties, epinephrin is liable to prove a valuable aid. It was not needed in the first case, the horse serum answering the purpose alone. The varieties of purpura are all of two types, those with and those without normal conditions in the blood platelets.

53. **Unusual Localizations of Paratyphoid Infection.**—Florenzano remarks that paratyphoid B infection is always a septicemia, but the main focus of infection may be in various organs in different cases. The disease may run a mild course in three or four days or it may last for three months with remittent or intermittent fever. In a case described in detail, the localization was in the pleura, and the symptoms from this had preceded the paratyphoid septicemia. The disease ran its course through three months, the toxi-infectious symptoms recurring in three attacks. Tuberculin reactions were negative, and great benefit was derived each time from injection into the pleural cavity of an antiparatyphoid vaccine. In a second case the paratyphoid infection was installed predominantly in the colon, and the symptoms suggested acute appendicitis in the course of the paratyphoid, but it apparently subsided and the patient recovered under medical measures alone. In a third case the symptoms were those of acute appendicitis alone, with constipation, no diarrhea as in other cases, and there had been several days of malaise with fever and chills, but nothing to suggest other intestinal trouble. In still another case the paratyphoid B septicemia induced a hemorrhagic set of symptoms and then seemed to subside, the temperature becoming normal and the patient feeling well for a day; then a severe typical paratyphoid fever set in, with fatal hemorrhage in the bowel. One man of 39 had a combination of typhoid and paratyphoid, but left the hospital in good condition after a two months' stay.

Policlinico, Rome

December 17, 1916, XXIII, No. 51, pp. 1489-1522

54 First Treatment of War Wounds of the Joints. (La cura immediata delle ferite articolari in chirurgia di guerra.) R. Mosti. —p. 1489.
55 Gaseous Infection of War Wounds. F. Bartoli.—p. 1493.
56 Case of Hemorrhagic Septicemia with Death from Cerebral Hemorrhage. B. Frattini.—p. 1495.
57 Recovery from Tetanus under Subcutaneous Injections of Phenol. (Caso di tetano guarito con la cura Baccelli.) G. Merolillo.—p. 1497.

Riforma Medica, Naples

September 11, 1916, XXXII, No. 37, pp. 1005-1032

58 Annular Scotoma from Occipital War Wounds. G. A. Pari.—p. 1005.
59 *Total Nitrogen, Cholin and Cholesterin in the Cerebrospinal Fluid in Various Pathologic Conditions of the Central Nervous System. C. Cantieri.—p. 1009. Concluded.

September 18, No. 38, pp. 1033-1060

60 *Minor Long Continued Fevers and Nervous Fevers. (Le piccole febbri nella clinica e le febbri nervose.) A. Rossi.—p. 1033.

September 25, No. 39, pp. 1061-1088

61 Addison Syndrome in an Incomplete Form of Recklinghausen's Disease. C. V. Lutati.—p. 1061.

59. **The Nitrogen, Cholin and Cholesterin Content of the Cerebrospinal Fluid.**—Cantieri gives the detailed findings in regard to the total nitrogen, the cholin and the cholesterin in the lumbar puncture fluid from thirty-one patients with different diseases. There was no regularity to be detected in the cholin and cholesterin content, but the nitrogen content showed an increase in all disturbances of a toxic infectious character affecting the brain, or in disturbance from arteriosclerosis. The nitrogen content was also liable to be high in psychoses and epilepsy, as well as with uremic derangement, but with brain tumors there was no increase. An extensive bibliography is appended.

60. **Minor Long Continued Fevers.**—In a few specimen cases reported, the patients were women in the thirties, a young man and some children. Each for a year or two or more had had weeks of depression and slightly abnormal rise in temperature over long periods, for which absolutely no cause could be discovered. Rossi comes to the conclusion that the explanation must be some upset in the innervation of the glands with an internal secretion. There was nothing to suggest hysteria in any of the cases, but the general nutritional processes seemed below par and functional nervous disturbances of various kinds were manifest.

Cronica Medica, Lima, Peru

November, 1916, XXXIII, No. 641, pp. 377-420

62 *Peruvian Verruga. (Algunas consideraciones sobre la nueva teoria dualista de la enfermedad de Carrion.) J. Arce.—p. 377.
63 *Postoperative Acute Dilatation of the Stomach. (La dilatacion aguda del estomago con oclusion duodenal postoperatoria.) G. V. Riestra.—p. 391.
64 Present Status of Treatment of Hemoptysis. (Hemoptisis tuberculosa.) E. Odriozola.—p. 399.
65 Ephedra Root in Treatment of Certain Affections of the Urinary Apparatus. (La Ephedra Americana en el tratamiento de algunas afecciones de las vias urinarias.) E. Escomel.—p. 403.

December, No. 642, pp. 421-480

66 Cystic Dilatation of the Bile Ducts from Stenosis of Pancreatic Segment. (Dilatacion quistica del hepatocoledoco por estenosis del segmento pancreatico.) F. Wieland and F. Quesada.—p. 421.
67 *Pathologic Anatomy of Dermal Leishmaniasis. (Anatomia patologica de las Leishmaniasis dermicas.) G. Almenara.—p. 429.

62. **Identity of Peruvian Verruga and Oroya Fever.**—Arce protests against the conclusions of the report of the Harvard commission on Peruvian verruga. (It was published in The Journal, Nov. 8, 1913, p. 1713). The commission decided that Peruvian verruga and Oroya fever are separate diseases. The fact that the same germs were found in both at times, they ascribed to mixed infection. But Arce's long years of practice in Peru have confirmed him more and more in the view that they are the benign and the malignant forms of one and the same disease. Arce is professor of tropical medicine in the University of Lima, and he presents an array of arguments to invalidate the commission's conclusions. Different persons react differently according to their defensive powers, and the germs may differ; they may be represented by two different species or varieties as we know to be the case with the malaria germ. The Harvard commission fully established the inoculability from man to man of Peruvian verruga, thus confirming Carrion's work. Arce asserts in conclusion that there is no proof as to the zooparasitic nature of the inclusions in the red corpuscles which they call *Bartonia bacilliformis.* Arce exclaims "How can we explain these and similar mistakes made by men of unquestionable scientific authority? We must acknowledge the great and multiple difficulties presented in the study of the infinitely small, and of all research in the field of the red blood corpuscle, this highly specialized minute organ, differentiated for its functional perfection, the elective affinity for and fixation of oxygen, but losing in the meanwhile two of the fundamental attributes of the cell: the nucleus and the power of reproduction. The physiopathology of the red corpuscles is still full of surprises, even under normal conditions, and the pathologic erythrocyte offers a broad field for discussion and erroneous conclusions."

63. **Postoperative Acute Dilatation of the Stomach.**—Valle Riestra reports four cases in Denegri's service and three in Carvallo's, all presenting the clinical picture of acute arteriomesenteric occlusion of the duodenum, with extreme dilatation of the stomach. Necropsy in the two fatal cases in the last group showed the typical compression of the duodenum by the mesenteric artery, owing to the acute dilatation of the stomach. The symptoms in these cases had been ascribed to a nonexistent peritonitis. In the others, the correct diagnosis was made in time, and lavage and the knee-chest posture brought the patients through. The cause seemed to be the anesthetic plus preceding weakness of the stomach, with or without a tendency to peritonitis, in all but one case. In this the acute dilatation developed under the physician's eyes almost entirely from swallowing air. This case teaches the necessity for being on the alert to prevent swallowing of air. The Trendelenburg position wards off the compression of the duodenum by the artery. It can be alternated with the knee-chest posture. Chambard insists that no fluid should be allowed by the mouth, and thirst should be combated by the rectum drop method.

67. **Dermal Leishmaniasis.**—Nearly the whole of this issue of the *Cronica Medica* is devoted to Almenara's illustrated study of the pathologic anatomy and histology of the various forms of superficial lesions caused by the leishmania. They can all be classed as the ulcerative or the tubercle types, the latter subject also to ulceration and crust production. The ulcerative type is called uta hembra, espundia, juccuya and tiacaraña; the tubercle type is called Oriental sore, uta macho and qcepo. In all the cases examined the leishmania was found in the tissues, free in the lymph and plasma or incorporated in the large mononuclear cells.

Semana Medica, Buenos Aires

October 5, 1916, XXIII, No. 40, pp. 331-358

68 Vaccine Treatment of Eczema. (Terapeutica esencial del eczema.) N. S. Loizaga.—p. 331.
69 Symmetrical Gangrene of the Extremities. B. N. Calcagno.—p. 334.
70 *Dosage of Urea in Blood Serum. (Procédé rapide et exacte pour le dosage de l'urée dans le sérum sanguin.) F. Landolph.—p. 337.
71 *To Enlarge the Uterine Cervix for Emergency Evacuation of the Uterus. (Procedimientos que permiten vencer la resistencia opuesta por el cuello para el vaciamiento rapido del utero.) U. Fernandez.—p. 338.
72 Climatotherapy of Tuberculosis in Argentina. J. M. Escarlier and P. D. Galli.—p. 342.
73 Puncture Followed by Lavage in Diagnosis of Suppuration in the Maxillary Sinus. A. S. Lagomarsino.—p. 351.
74 Associated Reflexes. (Asociacion de reflejos—sinreflexias.) A Austregesilo and T. Mendez.—p. 352.

70. **Dosage of Urea in the Blood Serum.**—Landolph commends a method for this purpose which has proved simple and satisfactory in his hands. He mixes 2 c.c. of the serum with 2 c.c. water and from 1.5 to 2 c.c. of pure hydrochloric acid. This is brought to the boiling point for a moment and then filtered through a small filter with folds. It speedily filters through and the residue on the filter is washed with 4 c.c. water. The filtered fluid is treated directly with 20 or 30 c.c. of sodium hypobromite in the A. Robin ureometer. Practically all of the nitrogenous compounds capable of yielding nitrogen as urea are eliminated by this procedure which, he thinks, reduces the sources of error to the minimum.

71. **Emergency Dilatation of Uterine Cervix.**—Fernandez advocates incising the cervix rather than attempting to dilate it by mechanical means when the pregnancy is in the last half. He has thus operated on eight women with progressive tuberculosis or other cause requiring prompt evacuation of the uterus. The effects were excellent, and two of the women have passed since through a normal pregnancy.

Siglo Medico, Madrid

November 25, 1916, LXIII, No. 3285, pp. 753-768

75 Recommendation, dated 1881, of a Mixture of Chlorinated Lime and Oxalic Acid for Treatment of Wounds. (Recuerdo de un antecedente.) C. M. Cortezo.—p. 754.
76 The Allen Fasting Treatment of Diabetes. Madinaveitia.—p. 755.
77 *Balneotherapy in Treatment of Disturbances from Hypertrophied Prostate. (Procedimiento para combatir los fenomenos del prostatismo.) M. Fernandez.—p. 759.

December 2, 1916, No. 3286, pp. 769-784

78 General Paresis Mistaken for Neurasthenia. (Un caso de diagnostico tardio.) C. Juarros.—p. 770.
79 The Chlorophyl Function. (Una nueva explicacion de la funcion clorofiliana.) V. de Castro.—p. 774.

77. **Balneotherapy for Enlarged Prostate.**—Fernandez reports the case of an elderly man with hypertrophied prostate causing intense reflex phenomena and polyuria, with pains before and after micturition, the desires returning every ten minutes on an average, rest at night being impossible. He had tried all kinds of measures but without avail. Fernandez then ordered baths the same as for uterine trouble, ten or twelve baths of ten minutes each, with the water at 45 C. (113 F.). After the first bath conditions were improved so much that two hours elapsed before micturition became necessary. By the end of sixteen days, the cure seemed complete, there being no further pains and the intervals approximately normal. This condition has persisted for the two months to date. (Fernandez gives no details of the technic for the baths *à la prostata,* except that they were taken "according to his method." He practices at Vichy Catalan, Spain.)

Grèce Médicale, Athens

1916, XVIII, No. 17-18, pp. 33-36. French Supplement of Iatriki Proodos

80 Treatment of Congenital Dislocation of the Hip Joint. P. Nicolaidis.—p. 33. Concluded.

Russkiy Vrach, Petrograd

1916, XV, No. 42, pp. 985-1008

81 War Wounds of the Chest. (Ognestr. raneniya grudnoi polosti i ikh liechenie.) A. L. Polienoff.—p. 985.
82 *The First Dentition and Abnormal Conditions Therein. (Zabluzhdenie prof. Heubner'a—Berlin—v voprosie o 1-m proriezivanii zubov u dietei.) A. O. Karnitzky.—p. 989. Commenced in No. 41. p. 962.
83 Injury of the Organ of Vision in War Wounds of the Head. Povrezhdeniya zritelnago organa pri ognestr. raneniakh golovi.) R. A. Katz.—p. 994. Continued.
84 *Periodic Leukocytosis. V. M. Sokoloff.—p. 997.

82. **The First Dentition.**—Karnitzky protests against Heubner's "energy" theory of the first dentition, saying that the same laws which regulate growth and development at all ages govern them at the first dentition as later. He has been making a special study of conditions affecting the first dentition, and tabulates data from 5,735 children, including 2,143 under 12 months old, all with affections of the respiratory apparatus, and also the data from 13,151 with digestive disturbances, including 4,249 under 6 months old and 3,402 from 6 to 12 months, and also a long list of apparently healthy children. Analysis of all this material confirms the frequency of pathologic conditions in infants, particularly between the sixth and twelfth months, when they begin to have more intercourse with the external world—just the months when the teeth are developing. Not only the well defined pathologic states, but possibly overlooked stomatitis, slight sore throat, slight grippe, a touch of typhoid, slight intermittent fever, lymphangitis in the neck, and so on. These conditions may affect the development of the teeth under the same laws as regulate conditions in adults. The formation of the teeth may be diverted from normal, and there may be pathologic local processes in the teeth, defects in the dentine or enamel, pulpitis and carious processes in the teeth after they cut through. In short, he declares, instead of theorizing about the first dentition, examine the babies' mouths, and much that is surprising will be learnt, when the children are below par in any way or the parents at the time of conception were not entirely healthy.

84. **Periodic Leukocytosis.**—Sokoloff adds another to the imposing array of works issued by Boldireff and his pupils, of the university of Kazan, on the periodical fluctuations in the functioning of the vital processes, especially of the digestive tract outside of digestion. This article gives tables of details of tests on thirty-three dogs to show the fluctuations in the leukocyte count during exercise and during rest. Changes of 6,000 in the figure were by no means uncommon, the higher figures being encountered during exercise and when the digestive tract was most active. The conclusion is drawn that the leukocytosis is elicited by the action of ferments in the digestive juices, the pancreatic and intestinal juices; during exercise these juices are forced out into the blood stream in larger proportions. The fluctuations average about the same as with the leukocytosis of digestion, sometimes one and sometimes the other being highest. The bibliography on this special research is appended, including a number of theses both at Kazan and Petrograd. All are in Russian except an early communication from Boldireff in the *Ergebnisse der Physiologie*, 1911. Some have been summarized in these columns, as, in The Journal, Oct. 9, 1915, p. 1316, Nikulin's article on periodical vomiting.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

November 18, 1916, II, No. 21, pp. 1849-1920

85 *Snapping Hip. (Over de veerende heup, ziekte van Perrin-Ferraton.) G. Kapsenberg.—p. 1849.
86 The Visual Field as Guide to Operating in Glaucoma. (Gezichtsveldonderzoek en glaucoomoperatie.) D. J. Waardenburg.—p. 1866.
87 *Urine Containing Indigo Red. (Indigoroodhoudende urine.) L. de Jager.—p. 1873.
88 *Present Status of Prophylaxis of Scarlet Fever. (De tegenwoordige roodvonkbestrijding.) H. G. Ringeling.—p. 1874.

85. **Snapping Hip.**—Kapsenberg discusses with illustrations the mechanism of typical and atypical snapping hip, and reports a few cases to show the different factors that may be involved. In the typical form it is caused by the abnormally taut fasciogluteal fibers springing over the major rochanter. The jerk of the snap is accompanied by a click. The snapping can be done voluntarily, in which case there s no pain, or the snapping occurs automatically and is usually accompanied by some pain. The snapping may be from the liopsoas muscle, above the greater trochanter. In a case in his own practice a young man had fallen on the right buttock and there was pain in the region and hip joint and some stiffness in the leg but nothing abnormal could be detected o explain the pain in the buttock when the hip joint was moved and the snap when this thigh was flexed or extended. The jerk and snap were most pronounced as the man reclined and moved his hip joint, the jerk being felt through the whole leg. The click seemed to come from the hip joint. It resembled the noise made when a reducible dislocation is reduced. The movements of the leg were normal at all times, but in running or climbing stairs the snapping phenomenon occurred occasionally. There was no snapping across the greater trochanter, but a distinct jerking movement could be seen in and felt in the tissues close to the anterior superior iliac spine, in front of the attachment of the sartorius muscle. Roentgenoscopy showed apparently normal conditions, but a very taut tendon was found deep below the surface. It was evidently responsible for the snapping as it moved to and fro across a bony projection. The tendon was about 1 cm. broad and evidently belonged to the iliopsoas muscle. It was severed and the upper stump sprang back out of sight. The snapping was cured at once, but the man still has some pain in the region and later the hip joint and knee on the other side have become painful, showing a general tendency to joint troubles. This tendency may have been responsible for some change in the bone which may have caused indirectly the snapping of the tendon.

87. **Indigo Red in the Urine.**—De Jager recently had a specimen of urine sent in for examination which contained albumin and, supposedly, blood as it was reddish, but no red corpuscles could be detected in the sediment and the reaction was alkaline. The patient was an unmarried woman of 88. The guaiac and benzidin tests for blood gave negative findings, and other tests proved the coloring matter to be indigo red. He thinks it liable that this has sometimes been mistaken for blood.

88. **Hospital Treatment in Prophylaxis of Scarlet Fever.**—Ringeling says that the known cases of scarlet fever in Amsterdam for the months of August, September and October have been in 1912, 1915 and 1916, respectively, 1,566, 673 and 1,147. He has seen return cases develop after 46, 48, 49, 55, 75 and 88 days of hospital treatment of the scarlet fever with every possible means of prophylaxis applied. For this and for other reasons, especially when we reflect that the healthy bacilli carriers cannot be isolated, it seems that not much can be anticipated from hospital treatment of scarlet fever in general prophylaxis of the disease, but the families are thus released from the annoyance of quarantine, which is a great advantage. He warns further that scarlet fever is a treacherous disease. An apparently mild case may have severe complications and may transmit the disease to others in a severe form. The mortality in the recent epidemics has been only 0.32, 0.74 and 2.18 per cent. of the notified cases, and he queries whether the prompt hospital treatment may not have been the decisive factor in this low mortality. In 1915, fully 80 per cent. were taken to the hospital and only 0.74 per cent. died. Statistics from London are cited showing how the mortality of the known cases has dropped from 5.6 per cent. to 2 since 1890, in inverse proportion to the percentage of cases taken to the hospital. This was 42.8 per cent., with a mortality of 5.6 per cent. in 1890, the total number of cases being 3.7 per thousand inhabitants. The figures in 1910 were 85.6 per cent. in the hospital, mortality 2 per cent., the number of known cases being 2.5 per thousand inhabitants. In short, Ringeling declares, progress is to be realized by taking more and more the cases of infectious diseases of all kinds to the hospitals.

Finska Läkaresällskapets Handlingar, Helsingfors

September, 1916, LVIII, No. 9, pp. 1297-1470

89 *Mechanism of Traumatic Rupture of Internal Organs. A. Krogius.—p. 1297.
90 *Subconjunctival Injections of Sodium Citrate in Treatment of Glaucoma. V. Grönholm.—p. 1329.
91 *Treatment of Spontaneous Tuberculous Pneumothorax. A. v. Bonsdorff.—p. 1339.
92 *Hydrosalpinx; Pathologic Anatomy, Etiology, Pathogenesis and Clinical Experiences. B. H. Jägerroos.—p. 1357.

Supplement, pp. 1-78

93 *Fibromas, Sarcomas, and Mixed Tumors of the Ovaries and Results of Operative Treatment. (Undersökning öfver läkningsresultaten vid den operativa behandlingen af desmoida ovarialtumörer.) M. af Heurlin.—p. 1.

89. **Traumatic Rupture of Internal Organs.**—Krogius gives a number of illustrations to show the various types of rupture of the spleen, liver and other organs under the influence of contusions bending or squeezing them. When the force bends the organ, the rupture is on the convex side and runs perpendicularly to the force applied; the edges of the rupture are sharp, and the rupture is more extensive on the surface than below. Rupture from compression runs parallel to the force, and may occur on both sides of the organ. The rupture extends more in the depths than on the surface, and the edges are torn and uneven. These features of rupturing may be useful in criminal cases to determine the character of the force applied. In making tests on the cadaver, the organs must have fluid injected to bring them up to the physiologic tonus.

90. **Sodium Citrate in Treatment of Glaucoma.**—Grönholm's experience was disappointing. He injected the 4.05 or 5.41 per cent. solution of sodium citrate, making thirty-three subconjunctival injections in four cases, including two eyes with inflammatory glaucoma, two with simple glaucoma and two with absolute glaucoma. Pain and swelling followed in the acutely inflamed glaucomatous eyes, but there was no modification in the pressure. In the other cases benefit was apparent, the pressure in some of the eyes returning to normal. But this effect proved transitory. It is possible that this treatment might prove effectual in combination with myotics, but it cannot compete with operative measures.

91. **Spontaneous Pneumothorax in Pulmonary Tuberculosis.**—Bonsdorff concludes from his experience in nineteen cases of this kind that treatment should aim to transform the spontaneous pneumothorax into a seropneumothorax or serothorax, and then, as soon as the fistula has healed, to aspirate the effusion and introduce nitrogen in its place, keeping up the artificial pneumothorax as long as conditions require. This method was applied in three of his cases and proved completely successful in two. In the third case the fistula refused to heal.

92. **Hydrosalpinx.**—Jägerroos' long study of this subject fills sixty-four pages, including two devoted to bibliography. It is based on 100 clinical cases. As conservative operative treatment is the rule, only fifty-eight pathologic anatomic specimens were obtained. There are no especially characteristic symptoms, he says, so that it is almost impossible to determine beforehand the exact nature of the trouble. Conservatism was carried to the extreme, and recent reexamination of seventy of the 100 women showed forty-five entirely cured of all disturbances to date, after salpingotomy. In three cases the hydrosalpinx returned on the other side. In fourteen cases treated with salpingostomy, the results have been entirely satisfactory; in two other cases a tumor developed later on that side. One woman has passed through a normal pregnancy since. In five cases there is still some subjective disturbance although the objective findings are normal.

93. **Ovarian Fibromas and Sarcomas.**—Af Heurlin's profusely and handsomely illustrated monograph is based on 45 ovarian tumors of the fibroma and fibrosarcoma types. He reviews the literature on the subject of desmoid ovarian tumors. The article proceeds from the gynecologic clinic in charge of Engström. The fibromas formed 1.9 per cent. and the sarcomas 3.6 per cent. of the total 688 operative ovarian tumor cases at the clinic. The malignant sarcomas were bilateral in 50 per cent. of these 9 cases, while only 12.5 per cent. of the spindle-cell sarcomas involved both sides. The fibromas never invaded both ovaries. The average age in the spindle-cell sarcoma cases was 47.1 years, while 2 of the other sarcoma patients were between 18 and 19; 2 between 20 and 24; 4 between 35 and 40, and 1 between 40 and 45. One of the fibroma patients had exophthalmic goiter and died from embolism the second week. The others are all in good health from four to nineteen years since the operation. The mortality in the spindle-cell sarcoma cases was 12.5 per cent. A similar proportion are living four years since the operation, while 50 per cent. are living after an interval of from six to twenty-three years. In the 9 malignant sarcoma cases, 33 per cent. died soon after the operation, and only 2 are still living, one only recently operated on, the other after an interval of twenty-two months. The others died from recurrence in from two to fourteen months. These types of ovarian tumors are encountered, according to his statistics, in a ratio of one to every 20,000 inhabitants. One case per year of ovarian fibroma would correspond to 1,000,000 inhabitants; one spindle-cell sarcoma to 800,000, and one malignant sarcoma to 1,500,000. These figures are based on the population of Finland in 1914, namely 3,269,253. This is a lower percentage than in Sweden and Denmark.

Ugeskrift for Læger, Copenhagen

November 23, 1916, LXXVIII, No. 47, pp. 2051-2076

94 *Rupture of Spleen from Contusion. (To Tilfælde af subkutan traumatisk Miltruptur.) C. Tage-Hansen.—p. 2051.

95 *Phototherapy in Danish Sanatoriums. (Lysbehandling af Tuberkulose paa nogle jydske Sanatorier.) T. Begtrup-Hansen.—p. 2057.

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96 *The Sugar Content of the Blood. (Nogle Bemærkninger om Blodsukkerbestemmelsernes Teknik og nogle Iagttagelser over Blodsukkerets Forhold ved lette Glykosurier.) F. Rydgaard.—p. 2007.

97 Quantitative Determination of Albumin in the Urine. (Nogle Bemærkninger om kvantitativ Bestemmelse af Aeggehvide i Urinen, spec. om "Esbachs Metode" og dens Modifikation ved Gad-Andresen.) E. Biering-Petersen.—p. 2089.

94. **Rupture of the Spleen.**—In Hansen's two cases both of the patients recovered after removal of the spleen which had been split into two parts. The symptoms of the intraperitoneal hemorrhage in one case were all in the right side, which was misleading, but was explained by the fact that the left side of the bed stood against the wall, so the lad of 16 had to lie on his right side as there was much vomiting and collapse. The other patient, a woman of 38, had signs of peritoneal irritation but it was not severe and the trauma seemed insignificant and the general condition kept good. Possibly the morphin that had been given had contributed to this. There was much less loose blood than in the first case, although the operation came in three and a half hours in this and not until after twenty-four hours in the second case, the bleeding in the latter being intermittent. Adhesions may check it; as these break up, more blood escapes. An enlarged spleen ruptures more readily; in these cases the spleen weighed 160 and 280 gm. In Berger's compilation of 168 cases, 50 per cent. died within the first hour and 25 per cent. between the second and the tenth.

95. **Phototherapy of Tuberculosis in Danish Sanatoriums.**—Hansen reviews the work being done with arc lights and mercury vapor lamps in the various sanatoriums, including the one in his own charge. He soon abandoned the arc lamps as uncontrollable, and now works exclusively with the mercury vapor lamp. The general impression is favorable for superficial accessible lesions but not for others.

96. **Determination of Sugar Content of the Blood.**—Rydgaard describes the technic with which it is possible to determine the absolute values as well as the relative in testing the sugar content of the blood. He uses Bang's second micromethod—the uranyl acetate method—as this is more exact than the precipitation with salt solution method. Even with the former, a number of minor technical points must be observed to get satisfactory results, as he describes in detail from his own experience. In connection therewith he discusses the sugar content of the blood with slight glycosuria, citing some cases of the latter with diametrically opposite sugar content of the blood and clinical course. He queries whether they represent different morbid entities or are merely various manifestations of diabetes mellitus. In the one type the glycosuria was a casual discovery and it did not seem to depend on the diet, not increasing on a full diet and not decreasing on the antidiabetic diet, while the sugar content of the blood was within normal range and there was nothing otherwise to suggest diabetes. In the case of the other type, the glycosuria responded promptly to dietetic measures but the sugar content of the blood corresponded to that of actual diabetes throughout the tests.

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MECHANICAL DERANGEMENTS OF THE KNEE JOINT *

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Mechanical derangements of the knee joint are relatively common and may be due to either extrinsic causes such as exostoses, or to intrinsic causes such as fractured internal semilunar cartilage. It is to the latter, which are the most difficult to diagnose, that attention will be drawn in this paper.

ANATOMY

The knee joint is a hinge joint. While nature was apparently most lax in providing bony reinforcements to the knee, she has been most ingenious in furnishing ligaments strong enough to take up the strains imposed. In front is the anterior or big patellar ligament. This has a ligamentous or tendinous attachment below and a muscular attachment above. Its action as a true ligament, therefore, is not very great. On the inner side is the internal lateral ligament, short, strong and fan shaped, with its narrow part downward, and having its deep portion intimately associated with the capsule and the internal semilunar cartilage. The deep fibers, being short, keep the internal semilunar close to the condyles of the femur. On the outer side the external lateral ligament extends from the external tuberosity of the femur to the head of the fibula, splitting the tendon of the biceps in its course. This ligament has two divisions, a weak posterior part and a strong anterior part. It is separated from the capsule of the joint by the popliteus tendon and the bursa found there. The two lateral ligaments are the chief agents in providing against lateral mobility; the internal lateral preventing the knee from bending outward, and the external lateral preventing the knee from bending inward. The rounded ends of the femur are buttressed, as it were, by the internal and external semilunar cartilages, and thus the lateral ligaments are aided in their function (Fig. 1).

The internal semilunar cartilage forms a large segment of a circle and is less movable than the external. Posteriorly it is firmly attached just in front of the posterior crucial ligament. Anteriorly it is less firmly attached in front of the anterior crucial ligament. Internally it has a firm attachment to the lateral ligament and a somewhat weak attachment to the tibia by the coronary ligament.

The external semilunar cartilage forms a smaller segment of a circle. Occasionally it is nearly a complete circle, there being only a small opening against the tibial spine, as in three of the 150 specimens examined by Tenney.[1] The external semilunar is fixed anteriorly in front of the tibial spine, and posteriorly to the tibial spine between the tubercles, giving a strong slip to the posterior crucial ligament. The attachments to the external lateral ligaments and the tibia are very weak. The semilunar bodies are spoken of as being cartilaginous. In reality, they are fibrocartilaginous, the thick convex part being largely fibrous tissue, and only the inner concave portion cartilaginous. When this cartilaginous border is injured, small pieces of cartilage may become separated and loose. The fibrous tissue is arranged transversely and longitudinally. The longitudinal fibers may continue anteriorly across to the opposite cartilage, forming the transverse ligament—an insignificant structure. At the convex borders, the transverse fibers blend with the capsule. The coronary ligaments are formed by these fibers below and are really only the portion of the capsule between the semilunars and the tibia.

The anterior and posterior crucial ligaments are two very important internal ligaments. The anterior arises from the front of the spine of the tibia near the anterior extremity of the external semilunar cartilage and courses upward, outward and backward to the inner side of the outer condyle of the femur. The posterior arises from the back of the groove on the posterior side of the top of the tibia and from its outer border, leaving the floor of the groove and the transverse piece of the spine of the tibia free and covered by synovial membrane. Here it is closely connected with the external semilunar cartilage and runs forward, upward and a little inward to the front of the outer side of the inner condyle of the femur and of the intercondylar notch (Piersol[2]). These ligaments greatly aid in the stability of the joint. Griffiths[3] states that if the internal or external lateral ligament is divided and lateral bending is attempted with the knee extended, the bending allowed is considerable, but if the same is attempted with the knee in the flexed position no bending is allowed laterally. He concludes, therefore, that inward bending of the knee joint is prevented in the extended position by the internal lateral ligament, and in the flexed position by the crucials. In flexion the relaxation of the internal lateral ligament allows some rotation. With the knee partially flexed, extension may pull on the anterior or upper part of the internal lateral ligament and thus make some traction directly on the internal semilunar cartilage, there being a few fibers of the quadriceps inserted there. This may explain why the anterior extremity of this cartilage occasionally becomes caught and ripped. Jones[4] says experiments show that hyperextension of the knee is prevented by (1) the posterior crucial, (2) the anterior crucial, (3) the internal lateral ligament, (4) the external lateral ligament, and that increased extension is secured as one after another of these is divided. Internal rotation is limited by the internal lateral ligament and the anterior crucial. In external rotation the tibia may slip slightly forward on the femur but is stopped by the anterior crucial. On internal rotation the tibia may slip back a little but is stopped by the posterior crucial.

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* From the Mayo Clinic.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Tenney, B.: The Anatomy and Surgery of the Internal Derangements of the Knee Joint, Ann. Surg., 1904, **40**, 1.
2. Piersol, G. A.: Human Anatomy, Ed. 4, Philadelphia, J. B. Lippincott Company, 1913, **1**, 404.
3. Griffiths, J.: Observations upon Injuries to the Internal Lateral Ligament and to the Internal Semilunar Cartilage of the Knee Joint, Brit. Med. Jour., 1900, **2**, 1171.

Mechanical derangements produced by intrinsic causes will be considered under the following heads:

1. Semilunar cartilages.
2. Loose bodies:
    (*a*) Of intrinsic origin — chondral and osteochondral bodies.
    (*b*) Of extrinsic origin — foreign bodies.
3. Synovial fringes.
4. Crucial ligaments.

DERANGEMENTS DUE TO THE SEMILUNAR CARTILAGES

In the English medical literature there are many reports of large series of cases of damage to the semilunar cartilages, but those reported in the American literature are few. This is accounted for largely, I believe, by the fact that the English, as a class, participate much more freely in vigorous pastimes such as football, Rugby, tennis, hockey, etc., than do Americans. In America the clerk or laboring man seldom indulges in such pastimes, while in England he participates in them freely.

As stated previously, when the knee joint is partially flexed a little lateral mobility is permitted. This is due to the fact that the internal lateral ligament is relaxed. As it slacks, however, the crucial ligaments take up their duties so that when the knee is at right angles, the lateral mobility is checked. From 25 to 90 degrees' flexion is an arc of weakness, and it is in this arc that damage to the internal semilunar is most frequently inflicted. According to Jones,[5] the most frequent cause of injury to the internal meniscus is strain thrown on the internal lateral ligament when the tibia is rotated outward while the knee is flexed. In rare instances he has known it to occur when the knee was extended; but, as emphasized by Lane,[6] the internal fibrocartilage is injured in such cases only by great force. In extension, the internal lateral ligament is taut and performing its function, and it must be torn before the internal semilunar fibrocartilage can be displaced. In moderate flexion the crucials are not in a position to maintain stability, and the internal lateral ligament being slightly relaxed, some mobility of the internal semilunar is allowed. On attempted extension there may be a slight pull on the anterior extremity of the semilunar cartilage by the prolongation of the quadriceps muscle inserted into that part of the capsule, and the cartilage may be caught between the joint surfaces and torn loose or possibly fractured as the leg is straightened. Martin[7] states that damage to the internal semilunar is common among coal miners who stand with the knees more or less flexed in low seams (4 by 4½ feet) in the mines. A review of our case histories has demonstrated that in the majority of instances the accident occurred with the leg partially flexed, the foot abducted and rotated outward, and force applied which caused the tibia to be rotated outward or the femur to be rotated inward, depending on whether the force was applied above or below the plane of the knee.

Locking of the joint is followed by effusion. The pain is often so severe as to make the patient cry out and fall to the ground, grasping the knee with both hands. It is usually most severe at the primary locking, and lessens as the locking becomes more frequent, until by some patients the pain is complained of less than the mechanical obstruction blocking the extension of the leg. The effusion may be considerable following the early locking, but as the lockings become more frequent the joint seems to accustom itself to the condition, and very little if any appreciable amount is noted. In some cases the locking may not be distinct, the patient complaining only that "things do not feel right in the joint." A diagnosis of a damaged fibrocartilage should be made in such cases only after very careful examination and consideration. The roentgenogram is of practically no aid, as in the great majority of instances the fibrocartilaginous body of the misplaced cartilage casts no shadow. Occasionally in persons with a history of lockings extending over many years the irritation inflicted on a pedunculated end of the internal semilunar will so harden it that a faint shadow will show in the roentgenogram between the internal condyle of the femur and the tuberosity of the tibia. In such cases, however, the history is usually so clear that the roentgenogram is not a necessary aid in the diagnosis. Nevertheless, any patient with mechanical derangement of the knee should have the benefit of the roentgenographic examination, for it is impossible to differentiate in many cases between a misplaced or loose internal semilunar or external semilunar cartilage and a loose body. The roentgenogram, therefore, may be considered as of the greatest aid in making a differential diagnosis.

It must be constantly borne in mind that while the most frequent cause of mechanical derangement of the knee joint is an injured internal meniscus, other causes also may produce the derangement. In some instances a diagnosis is extremely difficult before operation, and even after the joint is opened the cause is not evident. Surgeons of great experience have acknowledged that occasionally after making a careful search for the condition causing the symptoms complained of, they have closed the knee joint without repairing or removing anything. The removal of the internal semilunar cartilage must be decided from the findings.

According to Lane,[6] periodic derangements of the knee joint may so lower the vitality of the joint tissues that tuberculosis develops. In his opinion the majority of cases of tuberculosis of the knee joint have this as their predisposing factor, particularly in persons who have intestinal stasis. In this contention he is supported by Jones,[4] who adds that rheumatoid arthritis also may be so induced. I have seen a few cases of tuberculosis of the knee in which there was a history of mechanical derangements for some years preceding the onset of the tuberculous arthritis. Such a history, however, was the exception rather than the rule.

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[4] Jones, R.: Notes on Derangements of the Knee, Ann. Surg., 1909, **50**, 969.

[5] Jones, R.: Internal Derangements of the Knee, Lancet, London, 1914, **2**, 297.

[6] Lane, W. A.: Some of the Common Injuries of the Knee Joint and Their Consequences, Brit. Med. Jour., 1911, **1**, 537.

[7] Martin, A. M.: Discussion on the Diagnosis and Treatment of Injuries of the Knee Joint Other than Fractures and Dislocations, Brit. Med. Jour., 1913, **2**, 1070.

The treatment of derangement due to the internal semilunar cartilage is either nonoperative or operative. It may be taken as a rule that patients should not be operated on who give a history of only one locking. If seen immediately after the accident, reduction should be made at once. Complete extension, and the statement of the patient that the joint feels right, is evidence that reduction of the displaced cartilage has been effected. If the patient insists that the reduction is not accomplished, it is probable that he is correct. After successful reduction, rest in bed should be insisted on until the effusion has subsided. Flexion of the knee and strain on the internal lateral ligament should be prevented for six weeks. If the damaged cartilage is given the opportunity to unite firmly in its normal position, the chances for a cure are very good. If the primary care has been careless and the fixation period inadequate, the patient very often presents himself with a story of multiple lockings. In these old cases, operative interference is necessary, for rest and immobilization at this late time will not insure the fixation of the loose cartilage in its normal position. When operation is necessary for removal of the internal meniscus, the incision of choice is the condylar incision of Jones. It is not necessary to remove the entire cartilage; the anterior three fifths is usually sufficient. Damage to the internal lateral ligament may be avoided by limiting the incision and by leaving a thin rim of the fibrocartilage attached to the internal lateral wall of the joint. This can be done easily by using a tenotomy knife to separate the cartilage, thus avoiding the deep fibers of the internal lateral ligament.

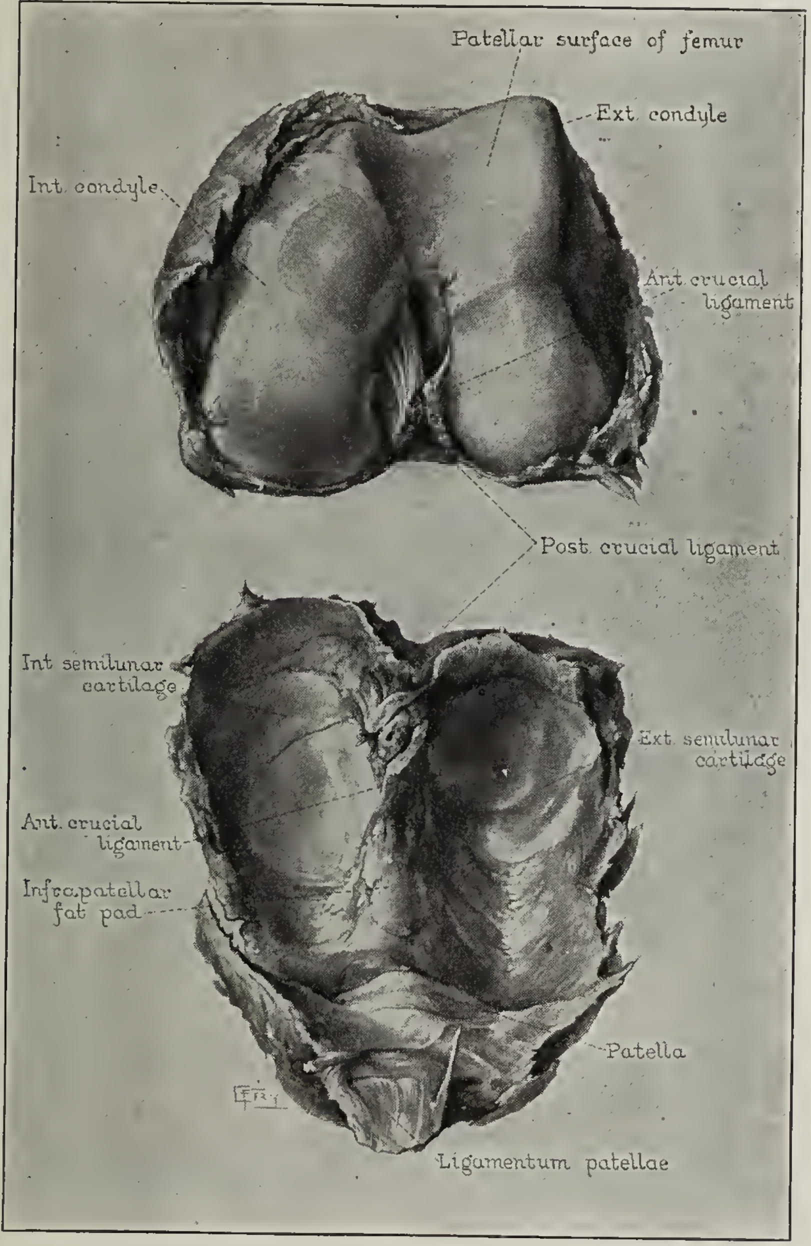

Fig. 1.—Intrinsic structures of the knee joint.

In my series of cases there has been none in which we have found it necessary to remove the external semilunar cartilage. Jones[4] found it necessary to remove it in twenty-four cases, 7 per cent. of his total. He explains the rarity of damage to this cartilage on the ground that, unlike the internal semilunar which is securely fastened by its ligaments and cannot slide out of the way of harm, the external semilunar is more loosely attached and thus escapes injury. However, it should be borne in mind when making a diagnosis that the external cartilage is not immune to damage.

LOOSE CHONDRAL AND OSTEOCHONDRAL BODIES

Relatively speaking, loose bodies of cartilaginous or osteocartilaginous consistency are common. They may be either free or pedunculated. Very often when the body is cast off from one of the articular surfaces a piece of spongy bone comes with it. As the body wanders about the joint it receives nourishment sufficient to permit the growth of cartilage until it is entirely covered. Then only by section of the body can the bone be demonstrated (Fig. 2).

The etiology of loose bodies is interesting. It is generally conceded that a certain definite group have ostearthritis or Charcot's disease of the joint as their primary cause. This group, however, does not directly concern the surgical aspect of the subject, for in such cases the disease is more important than the mechanical difficulties, which are only incidental. The majority of loose bodies in the knee joint cannot be explained on these grounds, and it is this majority that is of the greatest interest. Whitelocke[8] believes that many of them have their origin in the fibrous tags that hang from the synovial membrane. He states that as the synovial membrane, articular cartilages and interarticular cartilages are developed from the same primitive embryonic intermediate layer of the axial blastema, these fibrous tags may readily develop into loose bodies of chondral nature. Koenig,[9] on the other hand, described osteochondritis dissecans as being the cause of loose bodies. Ridlon[10] and Freiberg[11] have more recently called our attention to this condition and reported cases. Briefly, it is supposed that the pathology causing osteochondritis dissecans is a blocking of one of the nutrient end-arteries supplying the joint surfaces, with a consequent desiccation of the localized devitalized area as a free or pedunculated body. Undoubtedly there are such cases. However, it is very difficult to estimate the amount of trauma that may be inflicted on a joint surface by the crushing force exerted on attempted extension of the knee by a curled or crumpled up semilunar cartilage. Owing to its fibrocartilaginous structure, the semilunar cartilage may itself escape any serious damage and yet severely injure the cartilaginous articular surface. In the majority of instances no history is to be elicited of a tendency to form loose bodies, but there is a history of direct injury to the internal condyle of the femur by falling on the flexed knee. The injured area may be chipped off at the time, but more often the area of trauma is devitalized and later separates off and becomes a free body. In the greater number of our cases of loose bodies in the knee joint we were able to demonstrate either by the Roentgen ray or operation that the bodies originated from the thick ridge of the cartilage placed on the internal condyle of the femur to compensate for the wear caused by the normal action of the joint (Fig. 3).

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[8] Whitelocke, R. H. A.: Loose Bodies in the Knee, with Special Reference to their Etiology and Growth, Brit. Jour. Surg., 1913-1914, **1**, 650.

[9] Koenig, F.: Ueber freie Körper in den Gelenken, Deutsch. Ztschr. f. Chir., 1888, **27**, 90.

[10] Ridlon, John: Osteochondritis Dissecans, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1777.

[11] Freiberg, A. H., and Wooley, P. G.: Osteochondritis Dissecans; Concerning Its Nature and Relation to Formation of Joint Mice, Am. Jour. Orthop. Surg., 1910, **8**, 477.

The symptoms are catching or locking of the joint accompanied by pain and followed by swelling. Repeated attacks generally tend to decrease the severity of all the symptoms. Very often the patient is able to locate the body and thus establish the diagnosis. The Roentgen ray in practically all instances discloses the presence of the body, as the cartilage is usually dense enough to cast a shadow, and in many instances a small flake of bone is attached to the cartilage which further aids in the localization. The continued presence of these bodies in a joint causes continued irritation and is apt to produce arthritis. They should be removed, therefore, but before operation care should be taken to locate them as accurately as possible. After the preparation of the knee has been completed, it may be possible to localize the body in the suprapatellar pouch or at either side of the ligamentum patellae. By holding the body between the fingers and infiltrating the skin with local anesthesia, a sharp needle may be pushed through the skin into the body to hold it securely. A small incision down the course of the needle then allows ready removal of the body. More often, however, the body cannot be grasped in this manner and in such cases general anesthesia and an incision allowing the best approach to the body is necessary. If the body rests in the anterior compartment of the joint and on the inner side, the incision on the inner side of the patella permits the easiest entrance. When a more general exploration is necessary, the splitting of the patella as described by Corner[12] allows free inspection of the suprapatellar pouch and the anterior and interarticular areas of the joint. If the body is posterior, the incision described by Brackett and Osgood[13] through the popliteal space is the most convenient. The mere presence of a loose body in the posterior part of the joint does not demand its removal. Moreover, it should be remembered that occasionally there are sesamoid bones in the hamstrings that are extremely difficult to differentiate. A sesamoid bone may have a concave surface that fits the convex posterior surface of the condyle of the femur, whereas the loose body, because of its wandering, does not have the shape of its location impressed on it, and is often rounded or oblong. Stereoscopic roentgenograms may show whether the body casting the shadow is resting directly on the condylar surface or is located in the intercondylar notch. If in the intercondylar notch, it is presumably a loose body, but if resting on the condyle it probably is a sesamoid.

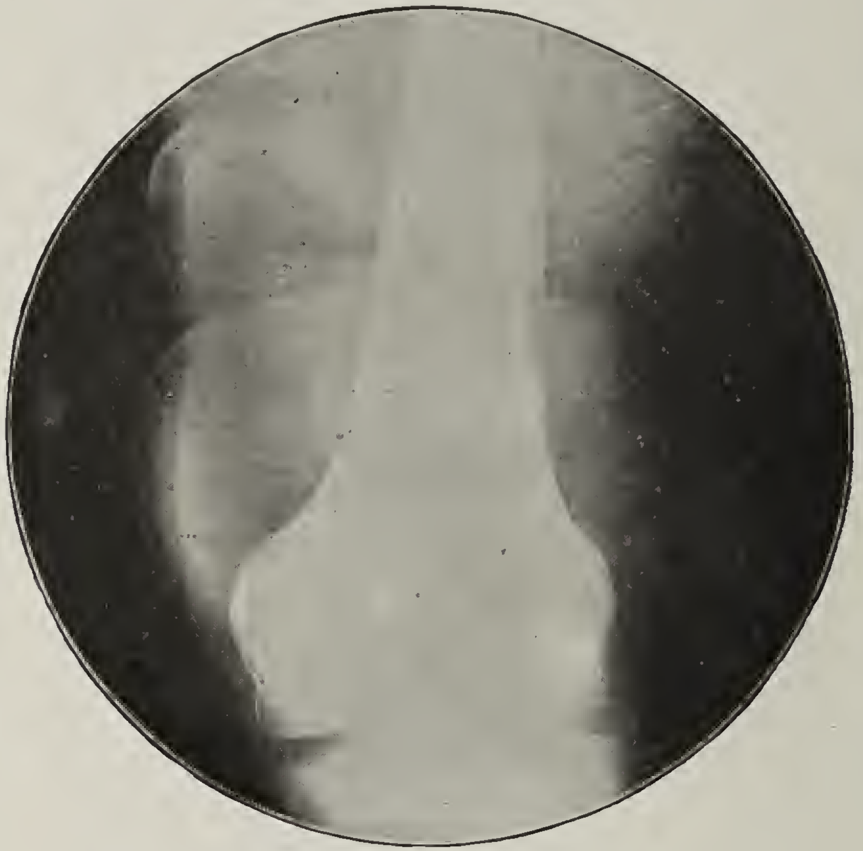

Fig. 2 (116019).—Anteroposterior view showing loose body at site of origin in internal condyle of the left femur.

FOREIGN BODIES

Foreign bodies cause derangements but differ from the previous groups mentioned in that they are of extrinsic origin, being introduced accidentally or intentionally from without. In the literature, needles are mentioned frequently as a finding. In some instances the patient is not aware of the introduction of the needle. Malingerers occasionally introduce needles in the knee joint, and the clinical picture is baffling until a roentgenogram is taken. Bullets may enter the joint and be remarkably well tolerated. The presence of a foreign body in practically all instances demands the same operative measures as mentioned for the loose cartilaginous bodies, except that the demand for its removal is even more urgent.

SYNOVIAL FRINGES

Synovial fringes or fat tags occasionally cause mechanical derangements, but the symptoms are usually mild. The condition may be due to mild tuberculosis or to some systemic disease, such as syphilis. These facts, together with the mildness of the symptoms, usually contraindicate operative interference. Such tags, as a rule, have their origin on the alar ligament or the fat pad extending on either side of the patellar ligament. Occasionally during the course of an exploration of the joint I have removed a pedunculated flattened fat tag which looked as though it were being habitually squeezed by the articular surfaces. However, that the fat tag may be the sole cause of joint derangement has not in our cases been shown to my satisfaction. Painter and Erving[14] have called attention to the possibility that fat tags may cause symptoms, and have reported cases.

THE CRUCIAL LIGAMENTS

The results of rupture of one or both of the crucial ligaments are more serious and disabling than those of what are generally understood as mechanical derangements of the knee joint. Their cause is severe trauma, such as that resulting from the passing of a wagon wheel over the leg. If after an injury with the knee in an extended position the tibia can be pushed forward, the anterior crucial is ruptured. If, with the knee in flexion, the tibia can be pushed backward, the posterior crucial is ruptured. The pain caused by such extensive manipulations usually necessitates an anesthetic. The spines of the tibia may be broken in addition, and occasionally give rise to loose bodies. For ruptured crucial ligaments, Corner has advised operative measures. However, when the knee is properly treated from the onset by placing it at rest in slight flexion in a plaster of Paris cast and maintaining such fixation for three months, a useful knee results. It is tersely stated by Jones and Smith[15] that "modern practice pays not enough attention to the fact that a ruptured tendon or ligament must not be subjected to strain during the period of healing." Use of an injured knee should be permitted only after careful examination. According to these authors, in a case of rupture of both crucials, conservative measures of rest for three to six months promise better results than immediate operation. It is astonishing to what extent, particularly in the young, a knee with relaxed ligaments will regain stability if a suitable brace is provided to prevent strain on the stretched ligaments.

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[12] Corner, E. M.: The Surgery of the Knee Joint, The Journal A. M. A., Sept. 26, 1914, p. 1069.

[13] Brackett, E. G., and Osgood, R. B.: The Popliteal Incision for the Removal of "Joint Mice" in the Posterior Capsule of the Knee Joint, Boston Med. and Surg. Jour., 1911, **165**, 975.

[14] Painter, C. F., and Erving, W. G.: Lipoma Arborescens, Boston Med. and Surg. Jour., 1903, **168**, 305.

END-RESULTS

The cases forming the basis of this report number eighty-seven. They were all under observation in the Mayo Clinic during the interval between Jan. 1, 1910, and Jan. 1, 1916. As many of the patients as possible have been seen or communicated with since their operation, to ascertain the end-result of the treatment accorded them. There were sixty-three males and twenty-four females. The youngest was 14 years of age, and the oldest 67. The average age was 32 years.

The internal semilunar cartilage was judged to be the sole offender and removed in fifty-three cases. We were able to trace forty-four of these patients. Thirty were cured, nine were relieved, and five reported themselves as no better. It is probable that a few of the nine reporting themselves as merely relieved may be considered cured, for in some instances their reasons for stating that they were more or less dissatisfied with the operation were indefinite. However, as the opportunity to make the examinations and observations necessary to refute their statements was lacking, they have been classified as merely relieved. The five patients reported as no better were cases in which at operation no definite pathology could be established and the semilunar was removed on insufficient pathologic evidence. In the majority of these cases it would have been better to have at least deferred operation. Five patients we were unable to trace. The internal semilunar cartilages were removed from eight knees at the same time that loose bodies were removed. In the majority the loose bodies were the prime cause of the trouble. All of these patients reported themselves as completely cured. In twenty-four instances, loose bodies were removed from the knee joint when they were considered to be the chief offenders. Sixteen patients reported themselves as cured; five were not traced, and three were relieved. The latter three cases were those of elderly people who had arthritis associated with the condition. Undoubtedly much of their present complaint is due to that.

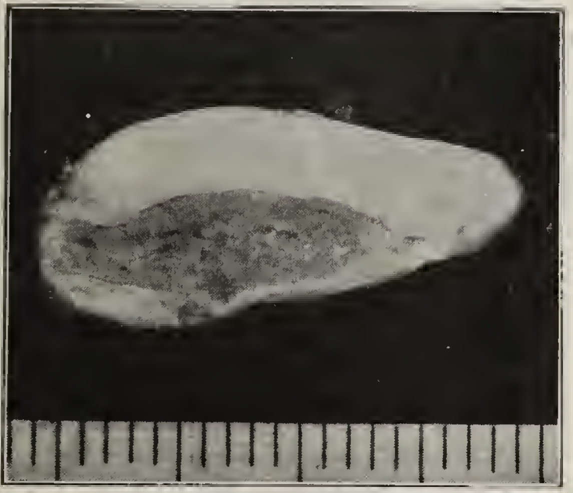

Fig. 3 (147988).—Cross section of loose body, showing cartilage grown around the bone, × 2½.

Two cases of rupture of the crucial ligaments were treated conservatively by placing the knee slightly flexed in a plaster of Paris cast. Full function was restored.

To sum up, fifty-six of the eighty-seven patients operated on for mechanical derangements of the knee due to intrinsic causes were cured; twelve were relieved; five reported themselves as no better, and fourteen were not traced.

CONCLUSIONS

1. Damaged semilunar cartilages should be accorded the careful treatment by rest and fixation that is given an ordinary fracture of one of the long bones. Recurrent locking will then be an uncommon sequela.
2. Recurrent locking produced by a loose or fractured semilunar cartilage or loose body demands removal of the meniscus or body under the strictest asepsis. A judicial exploration of the joint should be made at the same time.
3. The condylar incision is the incision of choice for the removal of the semilunar cartilages.
4. For the removal of loose bodies, the split-patella incision is usually best.
5. A ruptured crucial ligament is better treated conservatively than by operation.

ABSTRACT OF DISCUSSION

Dr. John Ridlon, Chicago: I agree entirely with all that Dr. Henderson said, but I would like to say that in injuries of the knee joint in which the semilunar cartilage may have been injured, it is most important to put the leg straight in a plaster cast and keep it there until all symptoms have been absent for a long time. If symptoms return without there having been an accident, it is necessary to go into the joint, unless some reason otherwise is shown. I think that we are going to find a lot more cases of osteochondritis dissecans than heretofore. When I published my paper I reported three cases. Before that Dr. Freiberg's case was the first, and I think the only one in this country; and my three were the next. The cases are not common. Dr. Henderson has been able to show a number, probably because he knew what to look for. We have had an unusual case since the publication of my paper. A young woman presented the typical Roentgen-ray pictures of osteochondritis dissecans in both knees. On opening the right knee we found the cartilage of the inner condyle blistered up, but no loose body. In the left knee we found the cartilage in the same condition and a loose body, biscuit-shaped, 1⅓ inch in circumference and one-fourth inch thick. This was removed. A year later the Roentgen-ray pictures showed a loose body in the right knee, another spot of osteochondritis dissecans in the left knee and another loose body in that joint.

Dr. J. P. Lord, Omaha: About twelve or fifteen years ago Dr. W. J. Mayo called attention to the advantages of a transverse incision of the knee for extreme infections of the knee joint. Having had experience in opening the knee thus freely with very desirable results, and regarding it as not of serious consequence, I used this method of exposure in one case with highly gratifying results in which the patellar tendon was divided and the knee joint widely opened, which enabled me with great facility to remove the foreign bodies.

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[15] Jones, R., and Smith, S. A.: On Rupture of the Crucial Ligaments of the Knee, and on Fractures of the Spine of the Tibia, Brit. Jour. Surg., 1913-1914, **1**, 70.

They were very large and eight in number, one being nearly 2 inches in extent, and of a mulberry type. Part of these bodies were well behind the condyles, and it had seemed to me that no other incision would have been adequate to have made an assured success of their removal without, perhaps, môre exposure and damage than there was in the very radical procedure of opening the joint in the manner described. I do not pretend to say that this is very often indicated.

Dr. W. C. Campbell, Memphis, Tenn.: Dr. Henderson stated that he has not removed a single external cartilage during all the series. A few days before I left I removed the external cartilage from a man who gave a very interesting history. He had three days previously a sudden locking of the knee, which had caught at a greater angle than I had ever seen. It was fixed and held at a right angle. Six or eight years before, he had had a number of attacks, and then, without treatment, they had stopped, and he has had no trouble for three years. He had always before been able to straighten the knee after a few hours. This time, however, he was unable to do so. He was brought to me with the knee flexed at about a right angle and fixed in that position. I insisted on taking him to the hospital and doing an operation to get the leg down, if he could not reduce it otherwise. He refused treatment or operation, so he went home and stayed there ten days. Then he came back with no improvement in his condition. There was practically no effusion in the joint when the joint was opened. The knee was freely movable in flexion beyond the point of locking. On operation, I found that the external cartilage was so long that it was folded on itself in the joint. I removed it by the usual external incision.

Dr. Robert B. Osgood, Boston: I agree in the main with Dr. Henderson, but I think that it is a mistake to consider this semilunar cartilage problem a simple one or to be dogmatic about the operation. I understood him to say that we should take three fifths of the cartilage away. I am not sure that that dictum is wise, because I have seen certain cases in which perhaps three fifths have been removed, and in which the symptoms of slipping did not return; but the symptoms of riding up over the end of the cartilage left did occur, and seemed to be overcome by an operation which secondarily removed the posterior portion of the cartilage. More than that, cartilages are often found, in my experience, not simply detached in their anterior portion, but sometimes quite extensively detached along their whole border. The flopping inward and outward gives rise to the symptoms. It would be, in such cases, obviously unwise to remove simply the anterior portion. They are sometimes split longitudinally as if cut with a knife from one end to the other. I have found this a number of times, the internal, or joint, side being free, and the other side attached to the coronary ligament. It would obviously be unwise to remove simply the anterior two thirds in such a case as that. These are problems which demand an exposure of the whole site and the condylar incision, which Dr. Henderson advises is the best. I take him to mean an incision that is longitudinal in its upper portion and then sweeps backward at the level of the joint line. At the Massachusetts General Hospital clinic during the last year we have had two cases of external cartilage, as well as internal.

Dr. Edwin W. Ryerson, Chicago: Dr. Osgood's point about the removal of the whole cartilage is excellent. If you are going to remove any, why not take out the whole thing? The operation is easier with the leg flexed at a right angle on the edge of the table. Then the leg can be rotated around, so as to reach the posterior end of the cartilage. The anterior end can always be removed easily. The other end can be snipped off with a pair of strong curved scissors. Loose bodies are sometimes extremely annoying. If you get into the joint without having first transfixed the loose body, you sometimes cannot find it even with a wide opening. It is possible to take it out under local anesthesia in most cases. In one case in which I was operating under a local anesthetic I could not find the loose body, which was as large as the end of the thumb. The man said, "I can find it for you"; so we put a pair of sterile rubber gloves on his hands, and in a minute he squeezed out the loose body, which flew on to the floor. Another point about the transverse incision is useful. Do not make too long an internal incision. I saw an incision 7 inches long made by a surgeon in Chicago. It is only necessary to make a short incision, the perpendicular part being an inch and a half long, and the transverse part about 2 inches, as described by Robert Jones. I want to report another case of external similunar cartilage fracture caused by a man being struck by the lower step of a train. It made a great deal of trouble for the patient until the cartilage was removed.

Dr. J. T. Watkins, San Francisco: I understood Dr. Henderson to say that he would not operate when the rupture of a semilunar cartilage occurred the first time. I think it would be right to qualify that statement according to the occupation of the individual. For instance, twice during the last year, once in a painter and once in a carpenter, I had to attack the semilunar immediately. I felt that I could not send the man up on a scaffolding with the knee in that condition, because a recurrence might mean his death by a fall. Mr. Jones, in his classical monograph, warns us that we may find all the symptoms at the inner or the outer side of the point only to find at operation that the other was the one involved. I had that experience last winter. I went in and found that the semilunar on the side where the patient gave all the classical symptoms was as good as any one's, and then discovered that the cartilage of the other side was the torn one.

Dr. Melvin S. Henderson, Rochester, Minn.: Dr. Lord mentioned the transverse incision. I have not used it except in resections of the joints, but see no reason why with proper care, avoiding the lateral ligaments, it should not be used in cases such as Dr. Lord speaks of. Dr. Campbell has mentioned the damage to the external semilunar cartilage. To me this is very interesting because in our series we have not had such a case. It may be that we have overlooked the condition in some of our cases. Dr. Osgood's criticism is a just one—in the part of the paper I have read I have not mentioned much about the internal semilunar cartilage as I found it necessary to reduce the paper in order to read it in the allotted time. Some of the points mentioned by Dr. Osgood have been taken up in the fore part of the paper. I believe that the removal of the anterior three fifths of the semilunar cartilage in the majority of cases is sufficient. Of course, if the fracture is further back it must be removed back of the fracture. One reason for advocating this is that a larger incision is necessary to remove the entire cartilage, and in using the larger incision one is apt to damage the internal lateral ligaments and it is best to avoid this as much as possible. Dr. Watkins mentioned not operating the first time the derangement occurred. If the reduction cannot be accomplished otherwise, of course, operation is necessary. Such a case was that mentioned by Dr. Campbell in which he was unable to reduce the dislocation and found it necessary to remove the external semilunar cartilage in order to straighten the leg.

Food Values and Appetite.—Not all food materials are valuable in proportion to the appeal which they make to the appetite. For example, the flavor substances in foods which stimulate the olfactory and gustatory nerves, and thus give rise to appetite, are not ordinarily the substances on which the body depends for its fuel, nor for the great bulk of its building materials. The latter materials—proteins, fats or oils, and carbohydrates—when chemically pure, have little or no taste or smell. The preference for thin and crisp rather than greasy bacon is an illustration. In a recent experiment it was found that of the 129 calories which represented the fuel value of a very thin 20 gm. (three-fourths ounce) slice, only nine calories remained when the slice was sent to the table; 120 calories being represented by the fat which "fried out" into the pan. In this case a considerable amount of flavor body also goes into the fat, yet most persons would not consider eating it unless it has been skilfully blended with large quantities of other foods; whereas the scrap of skeleton tissue which has lost 93 per cent. of its food value is a dainty morsel.—Minna C. Denton, *Scientific Monthly*, December, 1916.

RESULTS OF RESEARCH ON CONDITIONS AFFECTING POSTURE *

HENRY LING TAYLOR, M.D.
NEW YORK

Much has been said and well said on the importance for health and efficiency of straight standing and sitting, and on the deleterious effect on posture of weakness, poor health, overwork and certain types of physique.

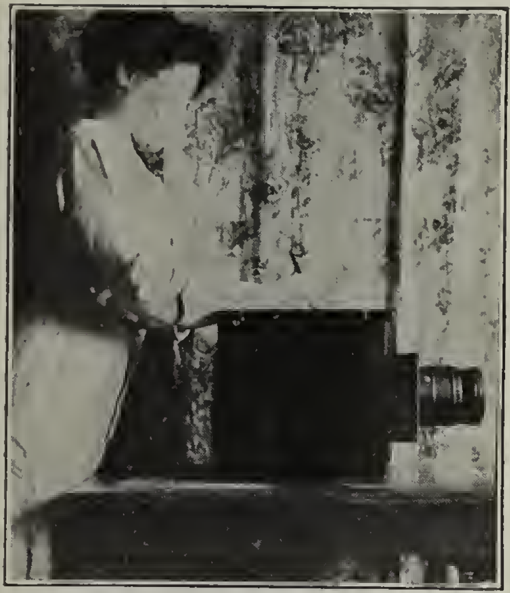

Fig. 1.—The Mosher-Lesley schematograph.

The effect of extrinsic conditions, such as clothing, furniture and certain features of family, school and industrial life on habitual posture, are also important. In order to study such matters more closely and to improve personal and environmental conditions affecting posture, the American Posture League was organized three years ago by a group of physicians and educators, and this paper aims to present some of the results of work done by its technical committees, or officially approved by them.

Broadly speaking, a good basic standing posture is one in which the different segments of the body, head, neck, chest, lower trunk and legs are balanced nearly vertically on each other like a column with its base, shaft and capital.

The posture of the standing figure may be tested in side view by comparison with a vertical line passing through the ear. In order to illustrate good posture and contrast it with a relaxed and with an exaggerated posture, the league has issued two wall charts of a girl and boy, respectively, illustrating the three attitudes in side view. These charts have been widely used in class rooms, physicians' offices and families, and have proved their practical value.

A new method of recording posture is furnished by the Mosher-Lesley schematograph, a camera-like apparatus which reflects the figure much reduced in size on a horiztontal glass plate over which a sheet of tracing paper is stretched. On this the outlines of the figure may be traced in front, side and rear views, if desired, and preserved for record or comparison with subsequent tracings. The outline of the figure may also be traced in other postures.

The effect of various postures on the position of the internal organs, especially the stomach and colon, has been studied fluoroscopically by one of the league's technical committees, which reported that in normal subjects standing, the fatigue posture, and also the lordosis posture lowered the abdominal organs; the erect posture invariably raised the organs from 1 to 3 inches. Breathing with chest up, especially with contraction of the abdominal muscles, raised the organs 1 to 5 or 6 inches. Ordinary deep breathing had little effect on the organs. The recumbent posture usually elevated the organs from 1 to 4 inches.

The conclusions of the league's technical committee on shoes are of general interest, and it seems to us of great importance. A preliminary investigation failed to show any exact anatomic basis for the prevailing shapes of lasts, and it was decided that a study to determine whether average feet were of one or several types was necessary before the subject of shoes could be intelligently attacked. It was also seen that the ground plan of the foot should be a determining factor in the ground plan of the shoe. A call was sent out to the membership of the league for tracings of average feet, with other data, and 1,422 answers were received from various parts of the United States, India and China. In order to determine the relation of the front of the foot tracing to the heel, the more stable part, the tracing of the heel was bisected longitudinally and the axis thus found was prolonged to the front of the foot. In order to do this conveniently, a simple instrument called a foot meter was devised. This consists of a piece of transparent celluloid, 7 by 13½ inches, on which a central line is drawn, with parallel lines at equal distances on either side giving the distance in quarter inches from the central line. This central line is so applied to a foot outline as to bisect the heel, when the distances of the outline at the ball from this axis on the outer and inner side may be read off from the foot meter.

Studied in this way, the foot tracings were divisible into three types: (1) those in which the heel axis prolonged forward divided the ball equally to within less than a quarter of an inch; these were called straight feet. In other tracings (2) the larger part of the foot at its widest part fell to the outer side of this axis; these were called outflared feet. In still a third class of tracings (3) the larger distance from the heel axis lay to the inner side; these were called inflared feet.

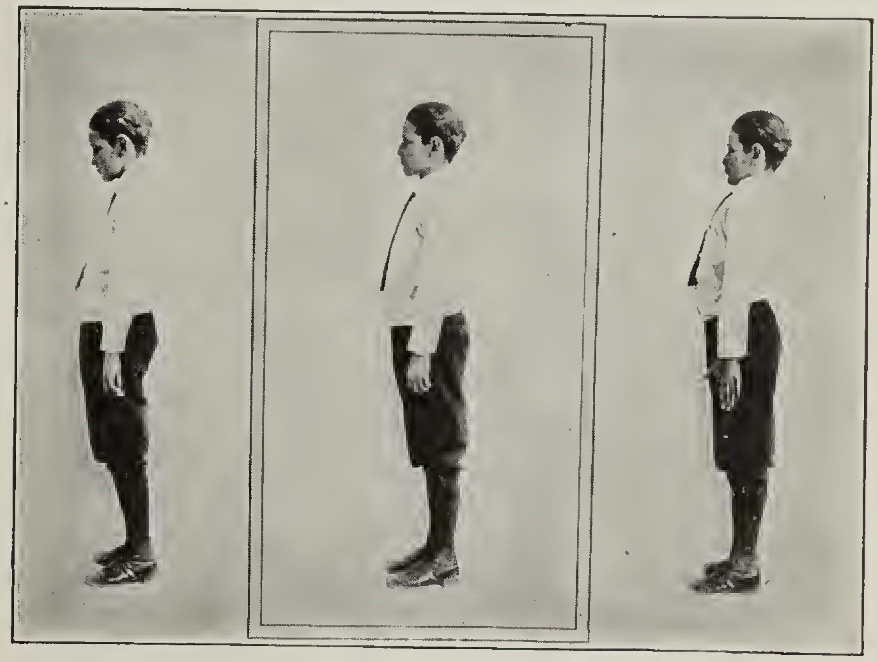

Fig. 2.—Standing postures.

In 1,131 tracings of American adults, dropping fractions, the following percentages were shown: straight feet, 30 per cent.; inflared feet, 14 per cent.; outflared feet, 56 per cent. The percentage did not greatly differ in men and women. We have nearly a hundred tracings of American children under 11, but are collecting more, especially of the younger ages, for special study.

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

One hundred and seventy tracings of the feet of Oriental adults from China and India, many of whom have never worn shoes, showed the three types of straight, outflared and inflared feet as in shoe-wearing Americans, though the percentages of the three classes are different. Leaving out fractions, the 170 were divided as follows: straight feet, 36 per cent.; inflared feet, 38 per cent.; outflared feet, 26 per cent.

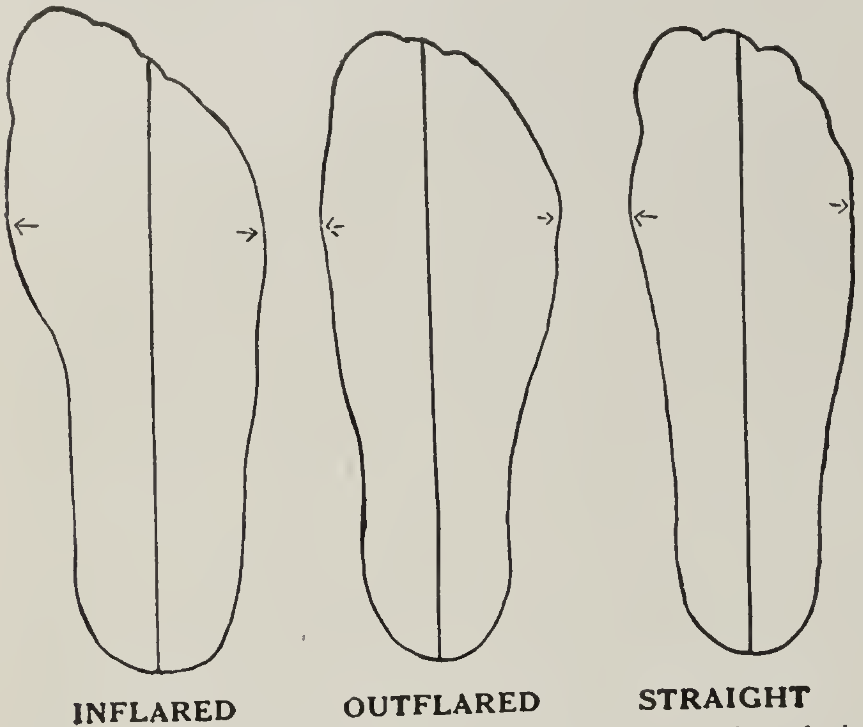

Fig. 3.—The three types of feet established by studies of the American Posture League.

A further study of these tracings, especially as to the effects of barefootedness and laborious occupations on the type, is now in progress. Since the ground plan of the foot may be straight, inflared, or outflared, it follows that no one type of shoe will fit all feet. Shoes are now being constructed over lasts of the three types, designed by a technical committee of the American Posture League, and will soon be on the market. These shoes not only have been designed with reference to the anatomy of the foot, but also have been made as light and attractive as was compatible with their intended use.

Other technical committees have laid down principles and effected reforms in the construction of ready made coats, and in garment suspension. It was found that many ready made coats for men and boys were too narrow in front and too loose behind because made over a round-back model. Such coats virtually compel poor posture. This was taken up with a large manufacturer, and the coats were remodeled to proper shape.

The weight of garments should be suspended from the shoulders near the neck, and from the pelvis above the hips; the shoulder tips and waist should not bear the weight of clothing. Waists and garters have been designed on these principles.

The Furniture Committee, having no apposite anatomic data, sent out a questionnaire to members on certain measurements of the adult clothed figure, and based its work on chairs and seats on a study of these measurements and other experimental data. In hygienic seating the feet, thighs, pelvis and spine are comfortably supported in proper relation to each other. Pressure on the popliteal region, and outer part of the scapulae and shoulders is avoided. Support to the back is given mainly in the upper sacral region, and lower half of the dorsal region. The chair floor is shaped to distribute pressure, and to prevent the pelvis sliding forward. A large space is provided at the lower part of the chair back, so that the buttocks may not be pushed forward. The chair back should be flat from side to side, or only slightly hollowed, so that the shoulders and scapulae may not be pushed forward. The slope of the back and other features vary with the use for which the seat is designed, the back being more reclined in chairs designed for resting.

Seats have been worked out for the new subway cars of the Brooklyn Rapid Transit Company and are now in use. A standard movable school chair and desk have been remodeled and have given great satisfaction in use. Kindergarten and vocational chairs have been designed, and several models of office chairs have been remodeled on scientific lines. A child's seat for baby-carriage and automobile has been designed from anatomic measurements.

Reading, writing and drawing on a flat surface exert a pernicious influence on posture and often produce eye strain. When the book or drawing board is held at a moderate slope from the vertical, the easel position, the posture is improved and eye strain relieved. An adjustable book rest has been devised, which holds the book or drawing board at the angle of choice and at the proper height.

A design for a sloped library table for reading has just been sent in for the league's inspection. Such tables have been in successful use in the children's department of the Cleveland Public Library.

Much information and material tending to greater comfort and convenience and the betterment of posture conditions are being continually presented for the consideration of the league, which acts as a clearing house for all such matters. Material officially approved bears the league's label.

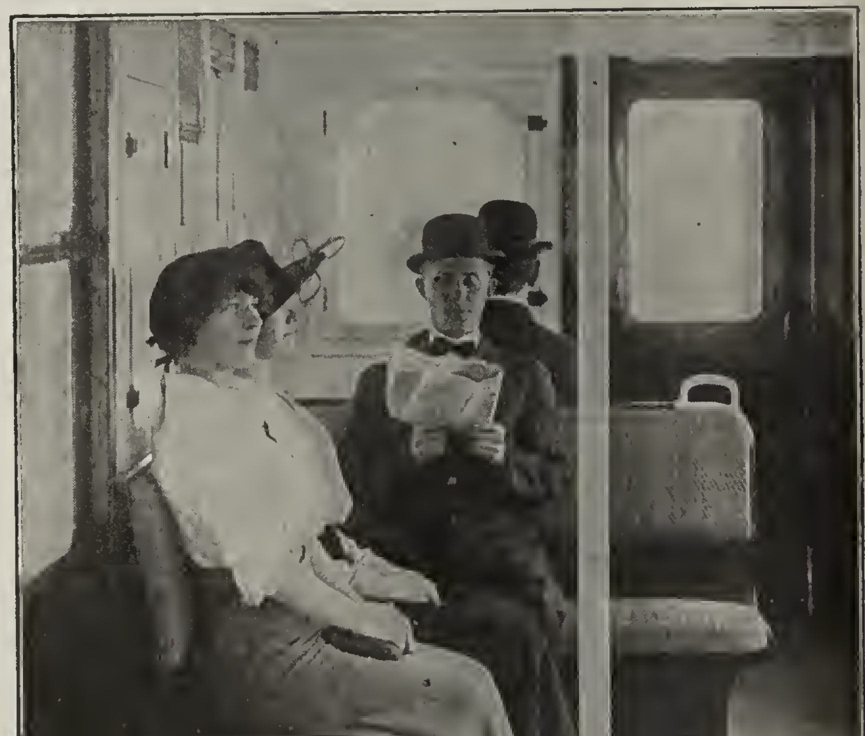

Fig. 4.—Anatomic subway car seat.

The foregoing is a very brief summary of a few of the things actually accomplished by the different technical committees, and the interest and scope of the work are constantly increasing.

The scientific standardizing of wearing apparel, furniture and the various appliances used by the worker makes a special appeal to the orthopedic surgeon, but should also interest the practicing physician and the general public.

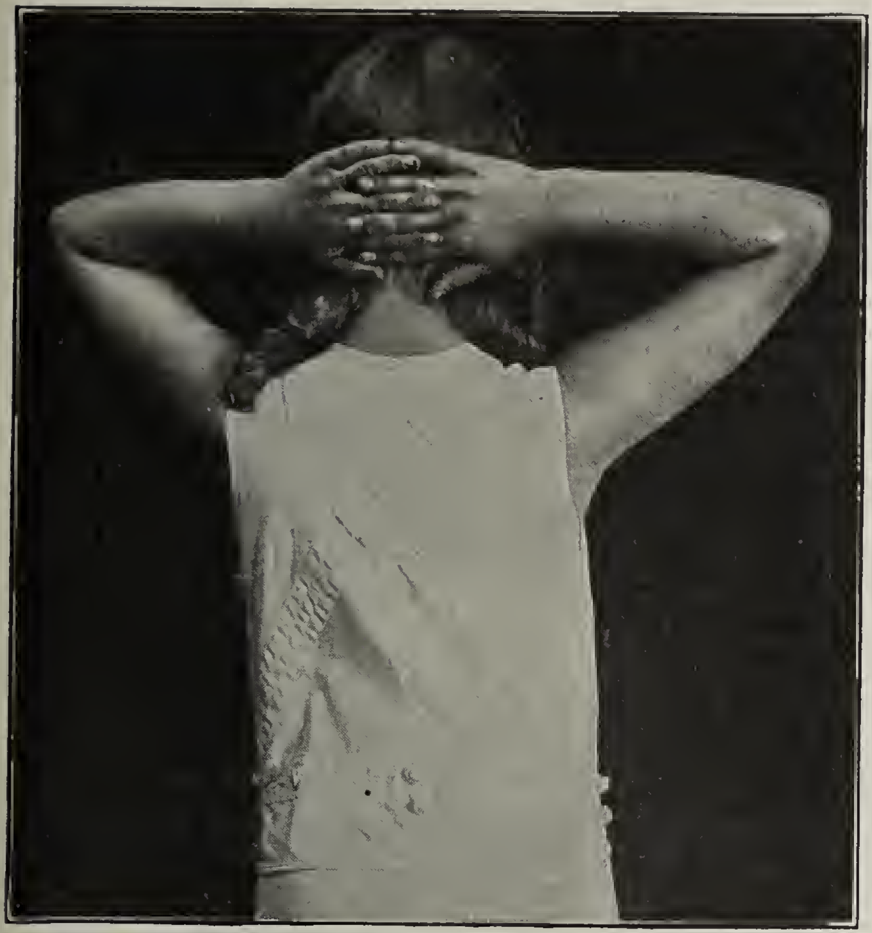
Fig. 5.—The rest right waist.

The league's scientific exhibit at this meeting shows the scope and quality of the work already done better than any description. The cooperation of all in this work whose benefits are shared by all is cordially invited.

125 West Fifty-Eighth Street.

ABSTRACT OF DISCUSSION

Dr. Joel E. Goldthwait, Boston: To mold the human body is important if we are to develop the best efficiency of the individual. If we allow the increasing number of slender individuals to grow up as they are, we shall have an increasing number of men and women to stand as the figure that Dr. Taylor showed. You can see hundreds of them. No one needs to be a physician to glance at such a figure and know that it is not a healthy body and not an efficient creature. If we are to treat these people we must appreciate the different anatomic forms that make it possible for one person to have one type of back, and another person another; and we must try to find out the cause of the difficulty from which each suffers. If we think of our patients in that way we can do much to help them. We can visit factories where people are employed; we can show them how to arrange things better. Not only should we see that proper seats are provided, but we should also see that the people using them understand how to adjust them properly themselves. Then there would be less backache and pulmonary disease, which must come primarily from the fact that the body is so used that the parts cannot work without strain.

Dr. Malcolm C. Rose, New York: For a number of years, I have taken the simple precaution of asking people to take two minutes' exercise night and morning in their bedroom, without clothing. The object of not having clothing on is to give freedom of movement and that they may see how they are holding their body. Tell them to put their knees back; it will bring out the center of the chest; tell them to take two minutes' exercise in the room, and they will tell you within a short time how they have improved in general feeling the way they carry themselves.

Dr. Eliza M. Mosher, Brooklyn, N. Y.: The relation of habits of posture to health is much more intimate than is usually supposed. Two bad habits of posture are the "sidewise slouch" and the "heel postures." We all recognize the importance of free rib movement, especially that which maintains a constant interchange of gases at the apexes of the lungs. The fact has been established that tuberculosis usually begins at the apex of the lung in which from any cause there is lowered movement of tidal air during the daily activities of life. The "sidewise slouch" posture can easily be shown to be one that mechanically limits rib movement on one side of the chest, especially in its upper part. It happens in this wise: the lax everted leg, instead of a support, becomes a weight which drags the pelvis down; lowering of the hip on one side means a proportional elevation of the opposite hip. This change in the pedestal of the trunk would unbalance the body if other weights were not moved over to enable it to regain its equilibrium. The weights moved are the shoulder and arm of the opposite side and generally the head. In doing this the spine assumes a long lateral curve with its convexity toward the high hip and low shoulder. These changes in the shape of the bony skeleton necessarily cause approximation of the ribs on the side of the supporting leg—which is almost invariably the right, and separates the ribs on the side of the low hip and elevated shoulder. With ribs thus posturally separated the inspiratory muscles are helpless (to raise them) as also are the muscles of expiration to draw them down. Hence the movement of tidal air is inhibited more or less completely. In an examination of a large number of tuberculous patients I have almost invariably found the "slouch" habit of posture present and the disease beginning on the side of the low hip and high shoulder. While the so-called "heel posture" produces round shoulders and flat chest it does not greatly interfere with the movement of air in the chest. Its malign influence is exerted on the abdomen and its contents. The shutting down of the ribs on the upper abdomen shortens the distance between sternum and pubis, thus lessening the activity of the abdominal muscles and crowding the viscera downward. This usually produces enteroptosis sooner or later with the setting free of its fateful brood to injure the body in all its parts. The American Posture League bespeaks the cooperation of all physicians in its efforts to correct and standardize the things in our environment that tend to produce incorrect habits of posture and to measurably improve public health thereby.

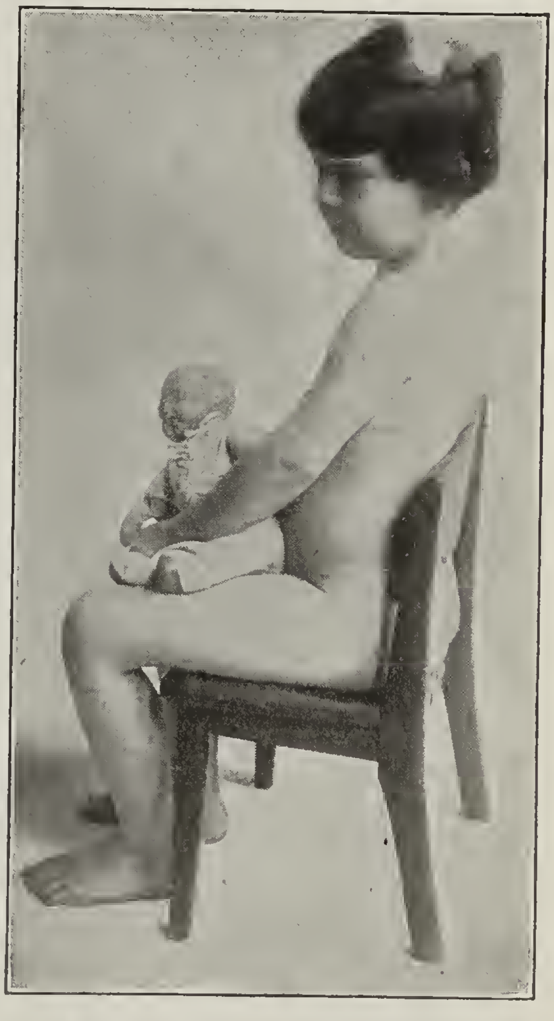
Fig. 6.—Anatomic kindergarten chair.

Dr. E. S. Everhard, Dayton, Ohio: What constitutes correct posture has been largely a matter of individual opinion. Each orthopedic surgeon, each director of physical culture and each general practitioner interested in it has his own idea. In the correct posture a line through the head and neck in front of the ear is vertical; one from the middle of the shoulder down through the trunk is vertical;

and one from the middle of the trunk through the legs is vertical. This is known as the vertical line test for posture. It is valuable because it gives a standard. There are three types of feet, the "inflared," the "outflared" and the straight. If we put an "inflared" foot into an "outflared" shoe, we cannot expect good results.

Dr. Roland Meisenbach, Buffalo: To establish the correct posture is by no means a simple problem. The work of establishing correct attitude, as Dr. Taylor is doing, is certainly commendable. Faulty attitude, like ptosis, cannot be corrected dogmatically. There are several reasons for this. In the first place, the variation in the anatomy of individuals must be taken into consideration; also the frequent occurrence of disease, as, for instance, rickets, especially in children, must be considered; likewise the flat back and the lordotic back. In regard to the sitting posture, I believe the time will come when we will have to conform our chairs to the individual rather than the individual to the chair. This is especially true in schools, and in special schools.

Dr. S. A. Knopf, New York: People who are subject to tuberculosis should not only be taught how to walk straight but how to breathe properly and deeply. I should like to see children enabled to sit comfortably, particularly in schools, on properly adjusted seats and at desks of the right height, and above all, they should not be obliged to sit quietly without moving for too long a time. It is an awful task for a youngster to sit for three quarters of an hour without wriggling. It is very sad to see so many children become subject to tuberculosis who have no tendency either by heredity or by reason of early infection, but because they have been confined altogether too long in badly aired and often overheated schoolrooms, and obliged to sit in an unnatural posture and with but a few minutes' recess and often only in a dusty indoor playroom. Let it be understood that no matter how good the posture, if it is maintained too long without change and the air is not fresh, good, and pure, it cannot be productive of good. To still further develop good, sound lungs and increase the vigor of the children, I would like to see singing, recitation, botany and geology taught out of doors as much as possible. I firmly believe that in this way you can do much to diminish tuberculosis in childhood. A recent study on the period of life at which infection from tuberculosis takes place most frequently has convinced me more than ever that if we wish to combat tuberculosis successfully we must begin to prevent and cure it during childhood. If we do this at the right time, at the right place, and in the proper manner, we cannot fail to be successful.

Dr. Henry Ling Taylor, New York: This is merely one aspect of the great movement for better hygiene. I am quite in sympathy with what Dr. Knopf said. School hygiene and industrial hygiene are both in great need of reformation, but we cannot expect, by simply giving an employee a good chair, to effect a hygienic reformation in him, when he is, perhaps, underfed and underpaid.

Appendicitis in Prussia.—The *Medizinische Klinik* gives the statistics in regard to *Blinddarmerkrankungen* in Prussia during 1913. While in 1912 there were 1,888 deaths from *Blinddarmentzündungen* in the various medical institutions, in 1913 the number was 2,185. Operative treatment was applied in 63.99 per cent. and 5.11 per cent. of the patients died. The mortality was only 3.47 per cent. among the women, and 5.61 per cent. among the men, but the mortality in the operative cases was 6.69 per cent. among the men and 3.86 per cent. of the women. About 56 per cent. of all the cases occurred in persons between the ages of 15 and 30. The mortality was highest in the elderly; 130 died of the 390 elderly patients given operative treatment, out of a total of 664 elderly patients.

CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH

XXXVIII. GASTRIC JUICE IN DUODENAL AND GASTRIC ULCERS *

LESTER R. DRAGSTEDT, M.S.

CHICAGO

The present work was undertaken to learn the effect of gastric juice on the rate of healing of acute gastric and duodenal ulcers. It is well known that lesions of the gastric and duodenal mucosa heal readily in the presence of active gastric juice. Small abrasions of the stomach mucosa, such as those following at times the administration of a stomach tube, are common, occasion no discomfort to the individual, and in a majority of cases heal without further sequelae. Surgical operations in which there is a maximum insult to the mucosa cells are not commonly followed by untoward effects due to the digestive activity of the gastric juice.

Nevertheless, up to the present, the medical and surgical treatment of gastric and duodenal ulcers has been based essentially on the theory that the gastric juice induces chronicity of these ulcers by digesting the exposed edges of the mucosa. This is a point of great practical as well as of theoretical importance. If pepsin—hydrochloric acid—has so great a digestive action on the injured mucosa that it maintains ulcers for months and even years, this fact ought to be readily demonstrated in well controlled laboratory experiments, where one can eliminate most, if not all, of the undetermined factors that unfortunately complicate results on patients.

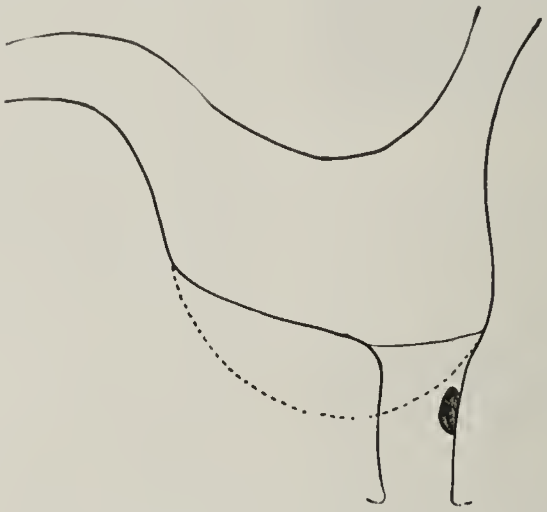

Fig. 1.—Pawlow pouch arranged to secure maximum drainage of gastric juice.

The clinical and experimental literature with reference to the rôle of gastric juice in the healing of ulcers is vast and conflicting. Sippy[1] states that under medical treatment consisting of rest in bed and the feeding of alkalies and highly nutritious foods at frequent intervals, the healing of gastric and duodenal ulcers is markedly accelerated. Here it is not evident that the neutralization of the gastric juice is the important factor, as, according to some authorities (Osler[2]), a treatment consisting solely of rest in bed and easily digested foods gives favorable results. Inaccurate diagnosis is at least one important factor in explaining the apparent cures of gastric and duodenal ulcers under medical treatment. In 264 cases of gastric ulcer operatively demonstrated at the Mayo Clinic, 1913-1914, there was an error in the primary diagnosis in 33 per cent. There was an equally high percentage of error in 814 cases of duodenal ulcer.[3] These cases were severe enough to indicate surgical intervention, and in such cases the diagnosis is more accurate than in the less severe forms.

The good results, reported after gastro-enterostomy for pyloric duodenal ulcers, must be carefully scrutinized in view of the work recently reported by Boas.[4] Examination will frequently reveal occult blood in patients apparently cured by the operation, in whom there is absence of pain and other subjective symptoms. As suggested by Carlson, the relief from pain following the administration of alkalies or following gastro-enterostomy may be due to other factors than the effect on the gastric juice. Burge[5] regards the digestive action of the gastric juice together with decreased resistance or oxidative properties of the mucosa cells as the causative agents in gastric ulcers. Bolton[6] gives a number of experiments in which artificially produced hyperacidity delayed the healing of experimental ulcers in rabbits. The degree of acidity employed by Bolton is far in excess of that found normally in the rabbit, and from the work of Hardt[7] and others there is considerable doubt whether there is an actual hyperacidity in cases of gastric or duodenal ulcer. The experiments of Friedman and Hamburger[8] are not very conclusive on this point. Their results indicate pyloric stenosis with consequent food retention in the stomach and hypersecretion of gastric juice as the important factors in the delayed healing of gastric ulcer. So many others factors are involved in their experiments that the effect of the gastric juice alone in determining the chronicity of ulcers is not evident. E. C. Rosenow[9] has produced acute and chronic ulcers in the stomach of dogs by the injection of certain strains of streptococci, obtained from the depth of gastric ulcers in man. He has also shown that gastric and duodenal ulcers in man are usually infected, that the route of infection is by way of the blood stream, and that the primary focus of infection may be in some distant part of the body. The importance of the difference in virulence of different species and strains of bacteria and the possibility of reinfection from the primary focus, as important factors in determining the chronicity of ulcers, have not been sufficiently considered. No work accurately controlled has as yet been reported showing the relative rates of healing of acute lesions in the stomach and duodenum both in the presence and in the absence of active gastric juice.

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* From the Hull Physiological Laboratory of the University of Chicago.

[1] Sippy, B. W.: Gastric and Duodenal Ulcer, The Journal A. M. A., May 15, 1915, p. 1625.

[2] Osler: The Principles and Practice of Medicine, 1914, p. 496.

[3] Foss, H. L.: Ann. Surg., 1916, **64**, 39.

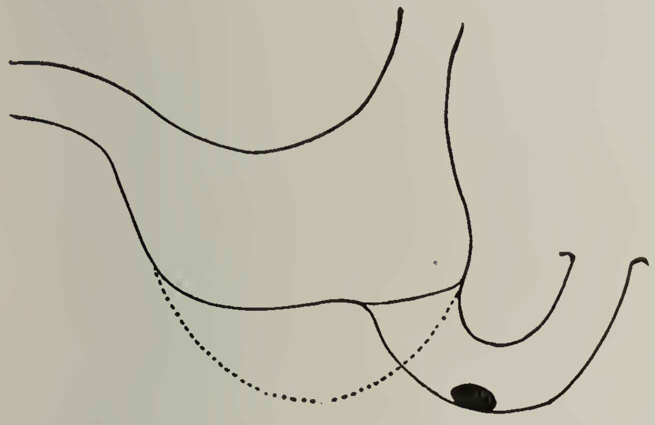

Fig. 2.—Pawlow pouch arranged to secure retention of gastric juice in the pouch.

EXPERIMENTAL PROCEDURE

1. *Preparation of Experimental Animals.*—Healthy dogs were selected for the experiments and were prepared according to the following technic: In one series of four dogs, the regular Pawlow operation, for producing a second small stomach, was done and the pouch brought to the surface through the left rectus muscle. In this case the axis of the pouch was perpendicular and there was an optimum condition for drainage of the gastric juice secreted in the small stomach (Fig. 1). In another series of four dogs the Pawlow operation was performed, but in this case the pouch was brought to the surface high up on the left side just below the costal margin (Fig. 2). Here the outlet was the highest part of the pouch, and, as a result, the gastric juice secreted could not escape until the small stomach was full. Two other factors were instrumental in keeping the pouches of the second series of dogs at all times full of gastric juice. Owing to the formation of scar tissue about the fistula and subsequent contraction, a functional valve was formed in several cases. In all of the dogs of this series, the irritation of the juice on the skin about the fistula was considerable and the animals could nearly always be found lying on the right side. Examination in these cases always showed the pouches full of juice and at times under a little pressure. In both series of dogs, the gastric juice was tested for acidity and pepsin strength.

For the experiments on the rate of healing of acute duodenal ulcers in the absence of gastric juice, dogs were prepared in the following manner: The pylorus was excised, the pyloric end of the stomach infolded and closed, and the upper part of the duodenum closed. Posterior gastro-enterostomy was then performed. In this case it is fair to assume that the upper blind end of the duodenum was free from acid chyme at all times. Whatever chyme regurgitated into the duodenum from the gastro-enterostomy opening would be neutralized by the alkaline bile and pancreatic juice, and the duodenal peristalsis incited would carry the neutralized chyme back to the jejunum. To obtain data on the rate of healing of duodenal ulcers in the presence of gastric juice, normal dogs were used.

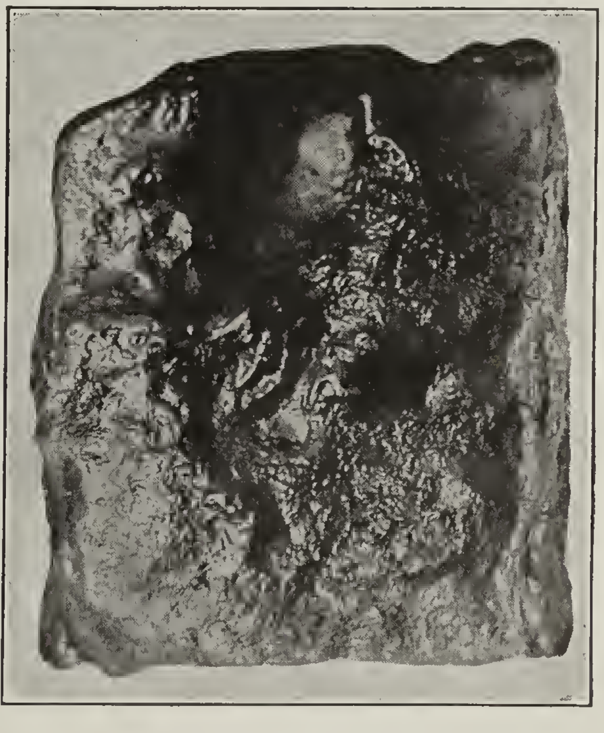

Fig. 3 (Dog 38, Table 4).—Ulcer in the duodenum (fifteen days) not exposed to the action of gastric juice.

2. *Production of Ulcers.*—Local injection of a 5 per cent. solution of silver nitrate was chosen as the surest method of producing ulcers. The technic employed was similar to that of Friedman and Hamburger.[8] For the production of ulcers in the Pawlow

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[4] Boas: Deutsch. med. Wchnschr., 1916, **42**, 64.

[5] Burge, W. E., and Burge, E. L.: The Cause of Gastric Ulcer, The Journal A. M. A., April 1, 1916, p. 998.

[6] Bolton: Jour. Path. and Bacteriol., 1915, **20**, 133.

[7] Hardt: Am. Jour. Physiol., 1916, **40**, 314.

[8] Friedman, J. C., and Hamburger, W. W.: Experimental Chronic Gastric Ulcer, The Journal A. M. A., Aug. 1, 1914, p. 380.

[9] Rosenow, E. C.: The Etiology of Articular and Muscular Rheumatism, The Journal A. M. A., April 19, 1913, p. 1223; The Newer Bacteriology of Various Infections as Determined by Special Methods, Sept. 12, 1914, p. 903; Elective Localization of Streptococci, Nov. 13, 1915, p. 1687.

pouches, 1.5 c.c. of a 5 per cent. solution of silver nitrate was injected through the mucosa into the submucosa of the wall of the small stomach. A syringe with a long hypodermic needle was used for the operation, and the fistula was held open with a small rectal speculum. The injection of silver nitrate produced a local necrosis of the mucosa, the necrotic material sloughing off in a few days, leaving an acute ulcer.

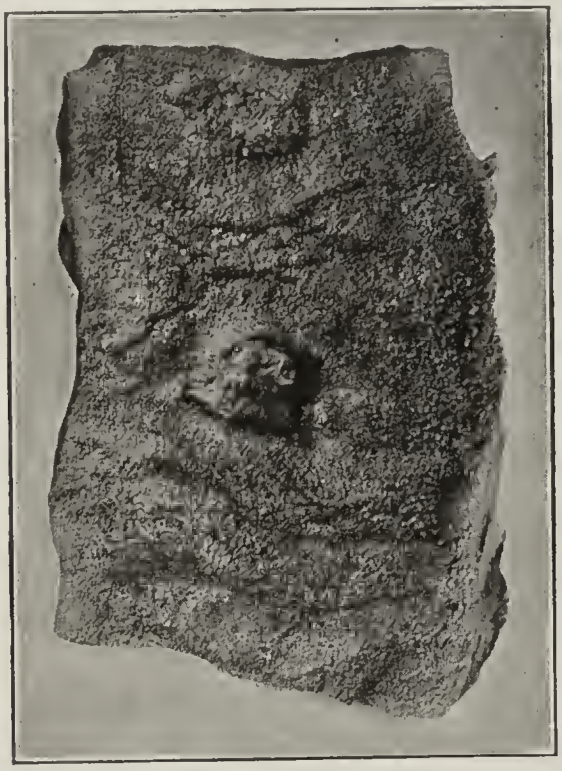

Fig. 4 (Dog 40, Table 3).—Ulcer in the duodenum (fifteen days) exposed to the action of gastric juice.

In the work on the duodenum, the technic was as follows: In the normal animals a laparatomy incision was made through the right rectus, and the duodenum secured, and lifted out through the incision. An injection of 1.5 c.c. of a 5 per cent. solution of silver nitrate was made through the serosa and muscularis into the submucosa of the intestine. A similar procedure was observed in the other series of animals, after allowing ten days for the healing of the operation for gastroenterostomy and pylorectomy.

TABLE 1.—EXPERIMENTS TO DETERMINE THE LENGTH OF TIME REQUIRED FOR THE HEALING OF ULCERS IN THE PAWLOW POUCHES, ARRANGED FOR OPTIMUM DRAINAGE OF GASTRIC JUICE, OR IN ABSENCE OF GASTRIC JUICE

No. of Dog	Number of Experiment	Number Days for Complete Healing of Ulcer	Acidity of Gastric Juice					
			Maximum		Minimum		Average	
			Free	Total	Free	Total	Free	Total
2	1	9	0.000	0.1550	0.000	0.0912	0.000	0.0912
2	2	15	0.000	0.1641	0.000	0.0912	0.000	0.0912
4	1	7	0.1915	0.2827	0.000	0.036	0.000	0.1276
4	2	8	0.1824	0.2736	0.000	0.0819	0.000	0.1094
4	3	10	0.2006	0.2918	0.000	0.036	0.000	0.1185
6	1	8	0.0912	0.1003	0.000	0.036	0.000	0.045
8	1	9	0.1003	0.2371	0.000	0.054	0.0912	0.1094

Average time for healing of ulcers is nine days.

In both the work on the stomach and duodenum special effort was made to produce ulcers of the same size in all cases. The needle was inserted into the submucosa and the same amount of silver nitrate was always injected. The silver nitrate produces an immediate coagulation necrosis of the tissue which is visible as a white or gray area about the point of injection. With this as a guide, the same amount of tissue destruction would be produced in every case.

RESULTS

The results in brief are as follows:

1. The average time required for the healing of the experimental ulcers in the Pawlow pouch, arranged so that there was at all times a quantity of active gastric juice in the pouch (Fig. 2), was eight days (Table 2).
2. The average time required for the healing of the ulcers in the pouches, in which there was a maximum drainage for the gastric juice (Fig. 1), was nine days (Table 1).
3. The average time required for the healing of the experimental ulcers in the duodenum, both in the presence and in the absence of acid chyme, was twenty days (Tables 3 and 4, and Figs. 5 and 6).

TABLE 2.—EXPERIMENTS TO DETERMINE THE TIME REQUIRED FOR HEALING OF ULCERS IN PAWLOW POUCHES IN THE PRESENCE OF GASTRIC JUICE

No. of Dog	Number of Experiment	Number Days for Complete Healing of Ulcer	Acidity of Gastric Juice					
			Maximum		Minimum		Average	
			Free	Total	Free	Total	Free	Total
1	1	9	0.045	0.2736	0.000	0.0361	0.045	0.1276
1	2	9	0.045	0.1003	0.000	0.0273	0.1003	0.1185
1	3	5	0.045	0.2644	0.000	0.1003	0.0912	0.1003
3	1	9	0.1094	0.2188	0.000	0.0912	0.1094	0.2644
6	1	8	0.0912	0.2006	0.000	0.1003	0.0000	0.2006
9	1	8	0.1003	0.1915	0.000	0.1094	0.0912	0.1459

Average time for healing of ulcers is eight days.

4. Animals, killed and examined at necropsy before the ulcers in the duodenum were completely healed, showed ulcers in practically the same stage of healing in both cases (Figs. 3 and 4).
5. Bacteriologic examination of the ulcers in five of the dogs showed a hemolytic streptococcus in pure culture in two cases, mixed staphylococcus and streptococcus in one case, *B. coli* in one case, and *B. subtilis* in one case. The examination was made with the technic of Dr. E. C. Rosenow.[9]

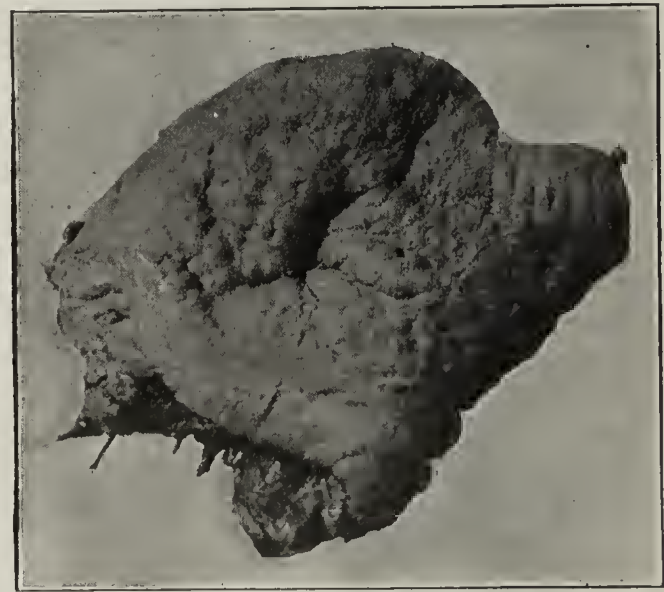

Fig. 5 (Dog 16, Table 4).—Ulcer in the duodenum (twenty-two days) not exposed to the action of gastric juice.

COMMENT

From the experimental evidence obtained, it would seem that the digestive action of the gastric juice is not the important factor in the delayed healing of acute lesions of the stomach and duodenum, and the consequent production of chronic ulcers. Acute lesions of the mucosa of the stomach and duodenum do not require any longer time for healing, or display any more tendencies toward chronicity when exposed to gastric juice of normal acidity and pepsin strength, than do similar lesions in the absence of gastric juice.

Gastric and duodenal ulcers are, therefore, locally infected areas of the wall of the digestive tract, irrespective of whether the ulcers themselves are produced by primary infection from the blood stream (Rosenow), by local circulatory disturbances, or by mechanical and chemical factors acting on the mucosa from the lumen of the intestine. It is well known that the tissues surrounding the ulcers are hyperemic. It is highly probable that in these hyperemic ulcer areas the nerves (sensory and motor) become hyperexcitable, as is the case in all other areas of infection. These hyperexcitable gastric nerves, subjected to stimulation by the normal gastric juice, may thus yield exaggerated responses (motor, inhibitory, and conscious). Carlson suggests that the favorable results from the alkaline and frequent feeding treatments in these cases may be due to the removal of this added stimulation of the hyperexcitable nerves rather than the prevention of any digestive or corrosive action of the pepsin hydrochloric acid on the exposed tissues. The degree of reflex disturbance from the acid stimulation of the nerves in the ulcer areas would vary with the individual, depending on the severity and extent of the infection, as well as on the individual stability of the entire nervous organization. We should expect it to be much greater in man than in the lower animals.

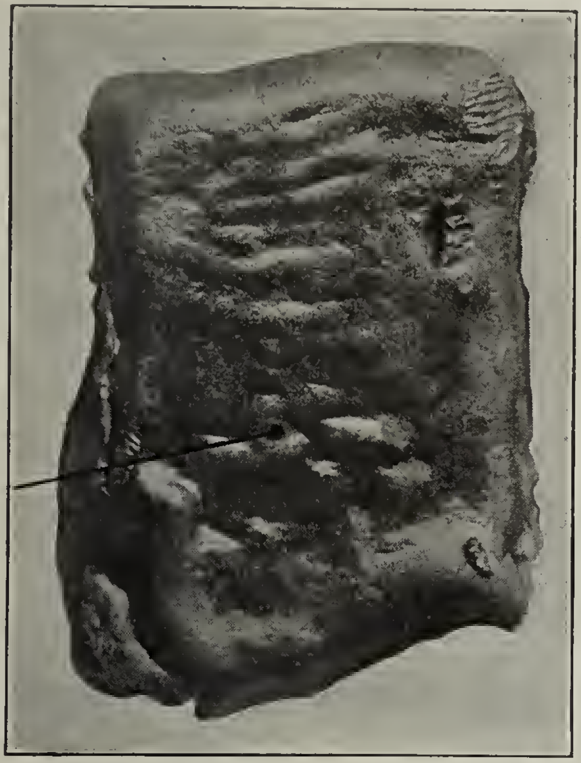

Fig. 6 (Dog 32, Table 3).—Ulcer in the duodenum (twenty days) exposed to the action of gastric juice.

TABLE 3.—EXPERIMENTS TO DETERMINE THE TIME REQUIRED FOR THE HEALING OF ULCERS IN THE DOUDENUM IN THE PRESENCE OF GASTRIC JUICE

No. of Dog	No. Days Since Production of Ulcer	Stage in Healing of Ulcer
37	10	Active ulcer; no healing
1	13	Active ulcer 1.5 by 1 cm.; no healing
40	15	Active ulcer 1 by 1.5 cm.; no healing
32	20	Ulcer almost healed
33	20	Ulcer completely healed
34	26	Ulcer healed
2	31	Small depressed area in mucosa
22	45	Completely healed

The bacteriologic examination of the ulcers is interesting in that it shows that lesions, produced experimentally by chemical means, may subsequently become infected. The bacteria are the same as those isolated from clinical ulcers in man. It seems probable that the infection is direct from the alimentary tract, since it is not likely that these bacteria would be found in the circulating blood of otherwise healthy dogs.

TABLE 4.—EXPERIMENTS TO DETERMINE THE TIME REQUIRED FOR THE HEALING OF ULCERS IN THE DUODENUM IN THE ABSENCE OF GASTRIC JUICE

No. of Dog	No. Days Since Production of Ulcer	Stage of Healing of Ulcer
36	5	Perforation
35	7	Active ulcer; no healing
27	9	Active ulcer, 0.5 by 1 cm.; no healing
11	9	Active ulcer, 1.5 cm. dia.; no healing
25	10	Active ulcer, 1 cm. dia.; no healing
38	15	Active ulcer; edges raised; indurated
16	22	Ulcer 0.5 cm. dia.; edges indurated
8	24	Ulcer nearly healed; one small depressed area
39	27	Ulcer healed
20	32	Ulcer healed
14	39	Ulcer healed

CONCLUSIONS

1. The digestive activity of gastric juice is not the important factor in the delayed healing of acute ulcers of the stomach and duodenum and the consequent formation of chronic ulcers.

2. Ulcers produced by local injection of solutions of silver nitrate become subsequently infected with organisms probably from the alimentary tract.

THE IMPORTANCE OF AURAL SYMPTOMS IN THE EARLY DIAGNOSIS OF TUMOR OF THE CEREBELLOPONTILE ANGLE *

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NEWARK, N. J.

The eighth nerve, comprising the auditory and the vestibular, from a diagnostic surgical standpoint, may be divided into three portions: the *peripheral,* comprising the end organs in the labyrinth; the *intradural,* extending from the fundus of the internal auditory meatus to its entrance in the groove between the pons and the medulla, and the *intracerebral* ramifications of its tracts in the brain to its cortical centers in the temporosphenoidal lobe and cerebellum.

The sudden and commanding character of the symptoms in inflammation of the cochlea and semicircular canal are due largely to the small, inelastic walls of the containing bony labyrinth, compelling an immediate paralysis of the function of the delicate nerve structures; their bony case not allowing the gradual development of symptoms from slow increasing pressure on the nervous structure, which frequently occurs in nervous tissue elsewhere. (The greater resistance of the auditory portion in the labyrinth in serous labyrinthitis with the preservation of hearing after the complete abolition of the vestibular function is, however, somewhat of this nature.)

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

After the entrance of the eighth nerve into the pons, its proximity to other vital centers generally causes the aural symptoms to be immediately overshadowed. The diagnostic symptomatology of lesions involving the intracerebral portion of the auditory nerve is but rarely recognized, although in my experience such lesions are far from uncommon.[1]

In the passage of the eighth nerve, through the small space from the fundus of the internal auditory meatus to the medulla, across the posterior border of the middle peduncle of the cerebellum, the nerve, while intradural, is still extracerebral, and, being in a free space, may escape for a long time a paralyzing pressure from a tumor of the cerebellopontile angle.

Many cerebellopontile angle tumors, especially dural endothelioma and neurinoma,[2] are of very slow growth, and disturbances of hearing and of the vestibular apparatus of the affected side are frequently the only symptoms of which the patient complains, the aural often preceding other symptoms for months, and sometimes for years.[3] On the recognition of the intracranial origin of the aural symptoms may depend the success of surgical intervention, and the reputation of the aurist. I know of many instances in which, after weeks and months of unsuccessful inflammations and local treatments, the development of a papilledema has first called attention to the true cause of the deafness (Fig. 1).

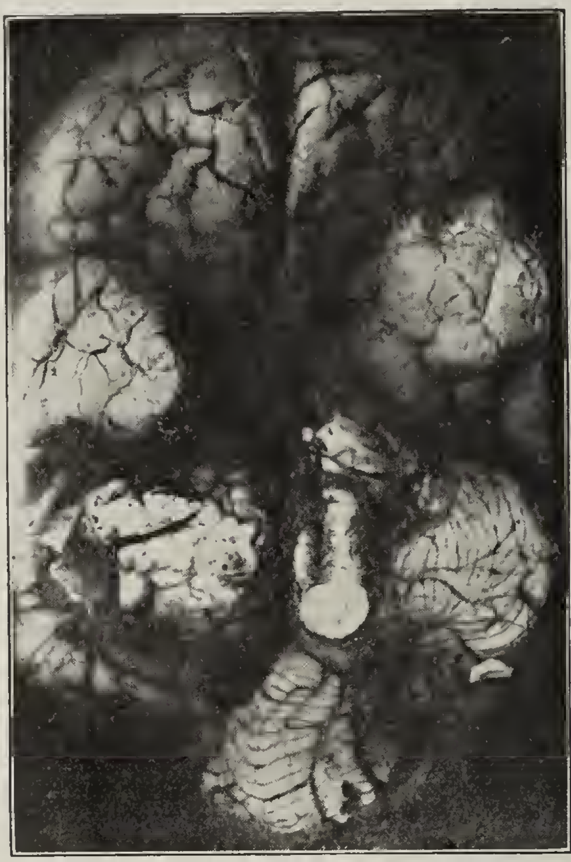

Fig. 1.—Large endothelioma springing from dura, causing great compression of cerebellum. Aural symptoms were present for years prior to general symptoms of tumor.

In studying the aural symptoms of cerebellopontile angle tumors, it should be remembered that they are but a modification of the acute aural manifestations so frequent in fracture of the base of the skull, extending through the petrous portion of the temporal bone. The end-result of compression of the eighth nerve, whether from fracture or tumor, is the same, namely, loss of function, deafness and loss of vestibular reactability. However, in one, the function of the vestibular apparatus of one side is suddenly upset; but, *in tumor, the slow pressure on the nerve allows of a readjustment of the vestibular apparatus during the process of compression.*

In fracture there are suddenly: (1) tinnitus and deafness; (2) loss of vestibular reactability, associated with (3) vertigo; (4) spontaneous nystagmus away from the affected side, and (5) spontaneous pointing deviations of both homolateral and contralateral extremities toward the side of the lesion. The deafness and loss of vestibular reactability are permanent, but the nystagmus, dizziness, and spontaneous pointing deviations rapidly disappear. The transient vestibular manifestations, the dizziness, nystagmus and spontaneous pointing deviations result from a total, sudden loss of function of the vestibular apparatus of the affected side, and the early abolition of these symptoms is due to a readjustment of the vestibular system, as a whole, to meet the changed condition.

It is through *the same* readjustment in the vestibular apparatus (*of the opposite as well as the affected side*) which, in the acute cases, so early abolishes the spontaneous nystagmus, pointing deviations and dizziness, that the slowly growing cerebellopontile angle tumors may first manifest themselves.

We have at our command for the early diagnosis of intracranial disturbances of the eighth nerve: (1) functional examination of the auditory portion, and (2) functional examination of the vestibular portion.

So important is a complete and systematic routine functional examination of the eighth nerve, that all patients presenting themselves with disturbance of the hearing or disturbance of the equilibrium should, because of the time consumed and the part played by the personal equation, be delegated for examination to a specially trained attendant.

This routine examination by an attendant in my office consists, for the auditory portion, in ascertaining: (1) the hearing distance of the (*a*) watch, (*b*) whisper, and (*c*) voice; (2) the lower and upper tone limits and the measuring of their respective durations; (3) the Rinne-positive or negative; (4) reference of the Weber at both vertex and teeth, and (5) the measurement of the duration of the bone conduction.

The routine examination of the vestibular apparatus consists of ascertaining (1) the presence or absence of spontaneous nystagmus. If from the above I suspect labyrinthitis or intracranial involvement, the attendant further (2) examines the spontaneous pointing of both arms and legs, and (3) explains to the patient the caloric test: (*a*) its inconveniences, such as vertigo, possible nausea and vomiting; (*b*) the short duration, during induced nystagmus, of the pointing deviation and falling, and (*c*) its successful application, largely depending on the patient resisting the natural tendency to close the eyes. (*d*) The attendant then proceeds to the repeated rehearsing with the patient of the pointing and falling positions.

When the patient thoroughly understands what is required of him (4) the cold caloric test is applied in my presence, and during it are noted: (*a*) the induced nystagmus; (*b*) the rapidity of its induction; (*c*) whether it is associated with vertigo or a sensation of dizziness; (*d*) the pointing deviation for both arms and legs during the induced nystagmus, and (*e*) the falling tendency.

If the patient has been thoroughly drilled by the attendant prior to the application of the caloric (cold) test, it is remarkable what a small amount of time is consumed in making the test, and how much can be ascertained in the few seconds of an induced nystagmus.

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[1] Starr: Jour. Nerv. and Ment. Dis., 1910, **37**, 401. Guthrie: Jour. Laryngol., Rhinol. and Otol., 1915, **30**, 177. Weinland: Arch. Psychiat., **26**, 375. Campbell: Histological Studies in Cerebral Localization, London, 1905. Mills: Jour. Nerv. and Ment. Dis., February, 1912.

[2] Healy: Jour. Nerv. and Ment. Dis., 1909, **26**, 229. Henneberg and Koch: Arch. Psychiat., **36**, No. 1.

[3] Wimmer: Six Cases of Acoustic Nerve Tumors with Operation, Hospitalstidende, September, 1914, p. 1169. Schmiegelow: Ztschr. f. Ohrenh., July, 1915.

In cerebellopontile angle tumors growing from the dura, endothelioma, or attached to the acoustic nerve, neurinoma or fibroma molluscum, one of the first symptoms complained of is a slight deafness with a distressing tinnitus. Routine examination with the tuning forks may make an early diagnosis of an intracranial origin by (1) a reduction of the duration of the bone conduction of the affected side; (2) the referring of Weber to the unaffected side; (3) a positive Rinne on the affected side, and (4) frequently greater alteration of the tuning fork reactions than is accounted for by the amount of the loss of hearing.[4]

All these are too well known to be discussed. In the vestibular apparatus, however, many problems are still in the realm of speculation.

Spontaneous nystagmus is generally associated with tumor of the cerebellopontile angle when the tumor causes compression of the cerebellar cortex, but its slow growth frequently allows of considerable displacement of the cerebellum without nystagmus; in fact, the slowly progressive deafness has, as a rule, long passed into total deafness before the development of nystagmus, by which time a papilledema from increased intracranial pressure may have also appeared. Spontaneous nystagmus is apt to be a late manifestation of tumor originating in the cerebellopontile angle, in contradistinction to tumors growing into it from the cerebellum.[5] Spontaneous nystagmus is also present in a certain proportion of tumors situated in the cerebrum,[6] in which case, however, there will be no disturbance of the auditory apparatus, the hearing and the tuning fork reactions being normal.

Again, in intracerebellar growths, glioma, not involving the cerebellar cortex, spontaneous nystagmus may be entirely absent, although the growth may have attained considerable size; but in these also the tuning fork reactions are apt to be normal, deafness not usually being present.

Spontaneous Pointing Deviations. — Spontaneous deviations are, in my experience, very rare during all stages of cerebellopontile angle tumors or intracerebellar lesions of slow development, in contrast to their presence in the early stages of acute lesions, fractures and abscesses. Especially in those cases not associated with a spontaneous nystagmus are spontaneous deviations uncommon. In cases associated with nystagmus, slight deviations from the normal are frequently present, but the deviations are very irregular and variable in their appearance, my experience confirming Grey's[7] observations.

Pointing Deviations During Induced Nystagmus from Cold Caloric.—In cerebellar abscess during an induced nystagmus, there is frequently an absence of the normal pointing deviation of the homolateral side, but in cerebellar growths, deviations are variable. I believe that in small tumors (especially those confined to the auditory nerve, as in a case observed by me of fibroma molluscum, causing complete deafness, and three years later involving the opposite ear) no alteration from the normal pointing deviations will be present. In the larger growths of the angle and those originating in the cerebellum and growing into the angle, the interference with the normal pointing deviations will depend on the tumor being extensive enough to interfere permanently with the functioning of the cerebellar cortex or tracts of the different parts.

In increased intracranial pressure from disturbances of the cerebrospinal fluid system, variations in the degree of increase may cause variable pointing deviations, the latter being at one time absent and at another time present (Fig. 2).

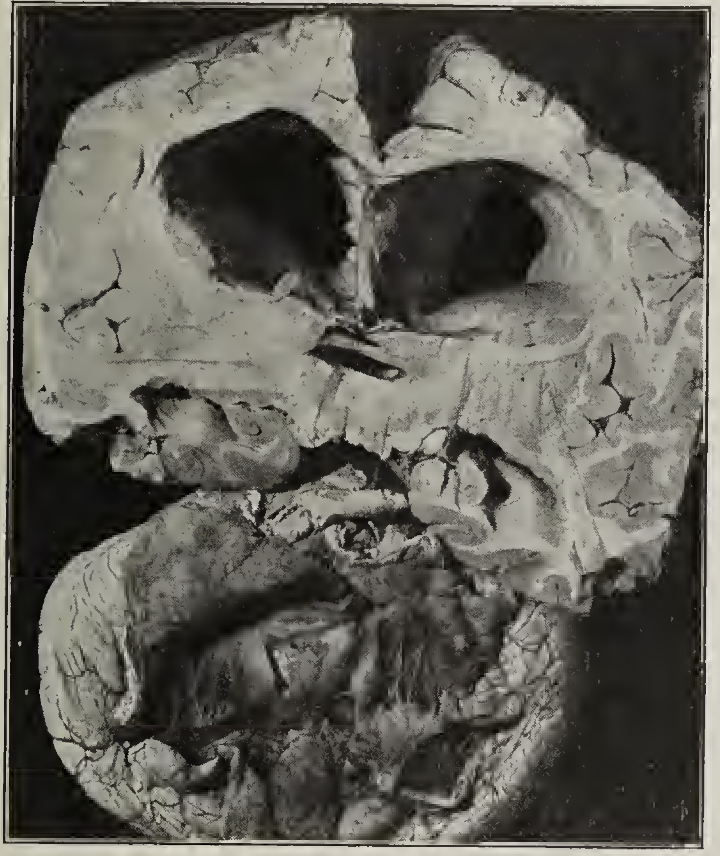

Fig. 2.—Small tumor with large secondary cyst of cerebellum causing great hydrocephalus. During life, spontaneous nystagmus was absent. Vestibular reactability was at times present and again absent.

Vestibular Reactability of the Unaffected Side.—The diagnostic assistance obtained from the cold caloric of the ear on the opposite side to the lesion has been of the greatest value in the cerebellopontile angle tumor. In cases of partial deafness of one ear, cold caloric applied to the unaffected ear uniformly gave a *greatly diminished reactability.*[8]

After the deafness has become complete and symptoms of increased intracranial pressure, such as a papilledema, present themselves in my experience, it is frequently impossible to induce nystagmus by the syringing of cold water into the ear of the unaffected side; and if a slight nystagmus is induced, it is unaccompanied by vertigo or vomiting, at most a slight sensation of momentary giddiness being complained of. Also in the early cases in which hearing of the affected side is still present, while syringing of cold water in either ear induces a slight nystagmus, this nystagmus is not associated with vomiting or vertigo, but generally with a "floating" or swimming sensation of very transient duration.

The value of the diminution of the vestibular reactability of the unaffected side, as a sign of increased intracranial pressure, was originally stated[9] in a communication to the American Otological Society in June, 1912. Confirmation of this observation has frequently occurred since that date.

Examination with regard to the reactability of the vestibular apparatus in patients suffering from marked internal hydrocephalus, the result of intracerebellar tumors, may give very conflicting findings at different examinations.

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[4] Holinger: Tr. Ninth Otol. Cong., p. 494.

[5] Weisenburg, T. H., and Work, Philip: The Diagnosis of Tumors in the Posterior Cranial Fossa, THE JOURNAL A. M. A., Oct. 16, 1915, p. 1345.

[6] Grey, E. G.: Studies on the Localization of Cerebellar Tumors, THE JOURNAL A. M. A., Oct. 16, 1915, p. 1341.

[7] Grey, E. G.: Am. Jour. Med. Sc., 1916, **151**, 693.

[8] All caloric tests were made with patients seated in an upright position.

[9] Eagleton, W. P.: Decompression for the Relief of Disturbances of the Auditory Apparatus of Intracranial Origin. Report of Three Cases with a Previously Undescribed Aural Condition, Laryngoscope, 1912.

Figure 2 shows a large intracerebellar glial cyst, with marked secondary hydrocephalus. The child was repeatedly examined during a year and a half prior to death. Spontaneous nystagmus was never present, and the spontaneous pointing deviations observed were too slight and transient to be definite. She was repeatedly subjected to the cold caloric. During a violent headache, doubtless due to a disturbance of the constantly present internal hydrocephalus, it was impossible to induce nystagmus or pointing deviations; a day later, however, cold water in either ear easily induced nystagmus, associated with normal pointing deviations and falling tendencies; but the nystagmus was never associated with a subjective sense of vertigo, or with vomiting.

It would seem, then, that alterations in increased intracranial pressure influences the possibility of the production of an induced nystagmus and of associated pointing deviations, abolishes the vomiting so often associated with the cold caloric, and lessens to a marked degree the subjective discomfort of dizziness.

The absence, following cold caloric of vertigo (the only complaint frequently being a transient giddiness) and vomiting, with a reduction of the vestibular reactability of the unaffected side, may probably be regarded as symptoms of an increased intracranial pressure.

It would appear, therefore, that the aural manifestations of cerebellopontile angle tumor are : (1) progressive deafness, beginning with a disturbance of the proper relationship between the degree of hearing and the tuning fork reaction, especially the duration of the bone conduction to the degree of deafness, and ending in (2) total deafness; associated with (3) loss of vestibular reactability of the affected side; and during the time that the vestibular apparatus is still functionating (4) a gradual readjustment of the vestibular apparatus of the contralateral as well as the homolateral side is going on, which is manifested by (*a*) a reduction or even a temporary abolition of its reactability to the cold caloric (at least when applied in the upright position); (*b*) an absence of the vertigo and vomiting which normally accompany the induced nystagmus from the cold caloric, and (*c*) absence of spontaneous pointing deviations. As the cerebellar cortex becomes affected, however, may be added: (5) spontaneous nystagmus; (6) spontaneous pointing deviations, and (7) absence during an induced nystagmus of the normal pointing deviations of the homolateral side.

15 Lombardy Street.

Women in Industry.—In December, the Committee on Labor of the House of Representatives favorably reported a bill creating a woman's division in the Department of Labor to investigate and report on all matters pertaining to the welfare of wage-earning women, and especially to investigate the competitive influence of women in the several industries, the adjustment of modern industrial mechanism and management to the nervous organization of women, and the influence of industrial employments on the subsequent home life of wage-earning women. The chief of this division is to be a woman appointed by the secretary of labor. The division will cooperate with the Bureau of Labor Statistics and with the Children's Bureau, in the same department. The bill has the approval of the secretary of labor.

CLINICAL TYPES OF LABYRINTHITIS

WITH COMMENTS ON TREATMENT *

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Preliminary to a discussion of the clinical types of labyrinthine disease, may I remind you that the hardness of the labyrinthine capsule and its anatomic structure seem to be so arranged by nature that they form an unusually strong barrier against invasion by a purulent process?

It is estimated by Bezold that the labyrinth becomes involved only once in 500 cases of purulent otitis media. Friedich and Hinsberg, on the other hand, estimate its occurrence once in 100 cases. The latter seems to me more nearly correct. The most vulnerable points in the labyrinthine wall are the horizontal semicircular canal, the fenestra ovalis, the fenestra rotunda, the promontory and, from the cranial side, the internal auditory meatus. The labyrinth may be invaded by a purulent process from three sources: (*a*) from the middle ear, (*b*) from the blood currents, (*c*) from the meninges. Our cases come chiefly from the first-mentioned type, wherein the middle ear spaces become the seat of a purulent lesion, which in turn advances into the bony structure, and during its progress attacks the labyrinthine wall and finally invades the delicate structures within the labyrinthine capsule. This gives rise to our so-called purulent labyrinthitis.

The following description of the various types of labyrinthine inflammation is based largely on clinical data. Thus, we broadly divide internal ear inflammation into circumscribed labyrinthitis and diffuse labyrinthitis. Before entering into a discussion of the subdivisions it may be well to eliminate those cases of chronic suppurative otitis media which have vertiginous attacks, but without disturbance in the functions of the labyrinth. These patients complain of attacks of vertigo, but they have hearing, a normal rotation test, a normal caloric test and no evidence of fistula. As a basis of these attacks of vertigo it is believed that middle ear disease has attacked the bony labyrinthine capsule without eroding the same. This type of labyrinthine disturbance is known as paralabyrinthitis. Probably there should be added to this type of paralabyrinthitis those cases in which the patient suffers for a few days from labyrinthine irritability as a result of irritation caused by injury to the stapes in performing a paracentesis. Such a case was recently reported by Guntzer. The family physician did a paracentesis on a patient who evidently had no infective process, but was suffering from an attack of acute catarrhal otitis media:

> There was history of pain in the right ear for two days; no discharge; since the previous evening has been unable to walk; was dizzy and vomited. Examination of the right ear showed the membrana tympani slightly reddened, no bulging, and a pinhead perforation about the center of the superior-posterior quadrant, with a droplet of serous red discharge exuding. The patient had a spontaneous horizontal nystagmus to the left and rotary on looking up; on attempting to rise fell toward the right. Hearing was not impaired, no mastoid tenderness, no fever, pulse 88. Diagnosis of labyrinthine irritation was made, but no assignable cause could be elicited. This condition lasted ten days before the patient was able to leave the bed. At a subsequent office visit the patient confided

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that his family physician was called the evening before Dr. Guntzer's visit to the patient. The patient was told he had an abscess in his ear and the doctor used an instrument to open it, when the patient at once became dizzy, nauseated, vomited and was unable to walk. The labyrinthine irritation was most likely due to disturbance of the foot plate of the stapes. Fortunately the middle ear and labyrinth were not infected, there was no discharge and the patient escaped the dire consequences that may have followed such an infection.

The writer has had similar experiences in patients whose ear drums have been opened by inexperienced operators, but more often these accidents result in at least an attack of serous labyrinthitis with partial or total loss of hearing, and occasionally the traumatisms are followed by acute purulent labyrinthitis with fatal results. The attacks of vertigo, in such cases, are probably due to circulatory changes within the labyrinth or to transient labyrinthine irritation. Their cause, however, is not definitely known.

In a certain proportion of cases of paralabyrinthitis, as the disease progresses, one of two things occur: either there is a sudden rupture of the infective material into the labyrinth, causing diffuse labyrinthitis, or gradual erosion of the labyrinthine capsule occurs at some place, with the walling off of the infective process, resulting in a circumscribed labyrinthitis. When the latter occurs there are attacks of vertigo with nausea or vomiting, which become more severe until the patient finally seeks relief. Several of these patients have come to my clinics having practically made their own diagnosis. Thus they have stated that having had chronic discharging ears they recently found, on introducing the index finger into the external auditory canal, that they were seized with vertigo, nausea and vomiting. In some instances we have been able to repeat this experiment and by firm pressure on the tragus, closing the external auditory canal, we have been able to elicit a positive fistula test. This circumscribed labyrinthitis occurs almost invariably with chronic suppuration of the ear, either tuberculous or cholesteatomatous. In such cases the disease has not invaded the endolabyrinthine spaces. Thus, in such instances, although the bony capsule of the labyrinth has been eroded, the disease has not really entered the membranous labyrinth and the end-organs within the labyrinth still perform their functions or at least are capable of irritation.

Such patients may have a fairly acute hearing, the rotation test and the caloric test are normal and the fistula test is positive. There may or may not be spontaneous nystagmus to both sides. The writer has records of five (formerly published) cases of this type and has seen many others. These cases of circumscribed labyrinthitis should be differentiated from the larger class of cases of necrosis of a part or the whole of the bony capsule, with destruction of the end-organs, many of which are discovered only at the time of performing the radical mastoid operation. The latter class will be referred to later in this paper.

Diffuse labyrinthitis may be secondary to either an acute or chronic suppuration of the middle ear. It may be metastatic or may result from an extension of meningitis through the pathways that connect the labyrinth with the subdural lymph spaces. The metastatic cases usually complicate mumps. Such a case was reported by the writer in the *New York Medical Journal* of Aug. 2, 1913, in a boy of 18 who was suffering from mumps of great severity, during which time he had extreme vertigo and tinnitus in the right ear followed in three days by total deafness. He was unconscious for four days. The vertigo continued for over two weeks, when it gradually subsided. After three months there was a partial return of the function of the static labyrinth, but he is still totally deaf. Endocranial complications, with the exception rarely of serous meningitis, never occur in these cases.

Diffuse labyrinthitis must be considered under two heads: first, those cases that present symptoms, so-called manifest or acute; and second, cases without symptoms, so-called latent or chronic cases. Cases of diffuse manifest labyrinthitis may occur with either acute or chronic middle ear suppuration. The onset is sudden, there is rapidly developing deafness, nausea, vomiting, vertigo and nystagmus. The vomiting differs from that of intracranial disease in that it is invariably associated with nausea. There is no projectile vomiting. The nausea bears no relationship to food. The nausea and the vomiting follow movements of the head. The nystagmus is of a mixed, horizontal and rotary type and is directed to the sound side. With the nystagmus there are also the subjective sense of being turned and the apparent turning or spinning of objects in the environment. The objective vertigo consists of reaction movements of the trunk and extremities in the direction of the slow component of the nystagmus, that is, toward the diseased ear. Such patients, in attempting to walk, fall toward the diseased side or stagger toward the diseased side and must be supported. There are no general symptoms, that is, there is neither rise of temperature nor acceleration of the pulse rate unless intracranial symptoms intervene. We have seen all types of labyrinthitis and are convinced that even grave intralabyrinthine suppuration may occur without fever. This history will illustrate:

The patient had had suppuration in the right ear for five months, with no complicating symptoms up to three days before coming under observation. Two days previously he had been seized with an attack of vomiting and dizziness, the latter of which had remained continuously. He had no rise of temperature and did not complain of pain in the mastoid, nor was there any tenderness on pressure. He was totally deaf in the right ear. He had spontaneous rotary nystagmus to the left. When walking he was inclined to fall toward the right. He was immediately admitted to the hospital, and the radical mastoid operation was performed. The mastoid antrum and cells contained a small amount of pus, and there was much granulation tissue in the tympanic cavity. There was no fistula of the labyrinthine capsule, but the region of the round and oval windows was granular and soft to the probe. The patient made a good recovery from the ether and passed a good night; was rational and answered questions early the following morning. Later in the morning he began to show signs of meningeal irritation, with a moderate rise of temperature. At noon of the same day there was a sudden rise of temperature to 105 F., he became unconscious, and died at 2:30 p. m., apparently of respiratory failure.

It must not be forgotten, in this connection, that diffuse labyrinthitis is a complication which often occurs during an acute exacerbation of chronic suppuration of the middle ear and mastoid, and fever, when it accompanies such a labyrinthitis, is, in all probability, due to the recrudescence of the mastoid disease.

The attempt by the Vienna school to differentiate between serous labyrinthitis, so called, and suppurative labyrinthitis, so called, leaves much to be desired. This differentiation rests on the retention or destruction of the labyrinthine functions. However, several cases which were clearly serous, in that they occurred during the first twenty-four or forty-eight hours following the beginning of the acute middle ear abscess, have had total destruction of functions during the height of the symptoms. A recent case occurring on my service at the Manhattan Eye, Ear and Throat Hospital, treated by Dr. Friesner, is of this type.

L. H., a man, aged 42 years, was admitted Feb. 25, 1916, complaining of acute suppurative otitis media on the right side. He refused myringotomy. Forty-eight hours after the spontaneous rupture of the drum he had an acute diffuse labyrinthitis with vertigo, nausea, vomiting, etc. Twelve hours after the beginning of the labyrinthitis he was totally deaf, had a spontaneous nystagmus to both sides, more marked to the diseased side, with no falling nor vomiting. Eleven days after the beginning of the acute otitis a simple mastoid operation was done. The mastoid healed and the middle ear became dry. He complains of tinnitus in the affected ear and is totally deaf. The caloric reaction is negative. Rotation to right, nystagmus 18 degrees; rotation to left, 20 degrees. A diagnosis of serous labyrinthitis was made, based on the fact that the labyrinthine invasion occurred during the first few days of an acute otitis media and the symptoms were not severe. Hence, despite the necessity to operate on the mastoid the labyrinth was untouched.

While this differentiation is unfortunate in the selection of the terms "serous" and "suppurative," it contains this truth, namely, so long as any irritability remains in the labyrinth, extension from the labyrinth to the intracranial structures does not occur. It would perhaps have been better, then, to call those cases in which the function of the labyrinth is destroyed "grave labyrinthitis," and those in which, despite the presence of labyrinthine symptoms, the function, or rather irritability, of the labyrinth was retained "mild labyrinthitis."

The diffuse manifest labyrinthitis which complicates acute middle ear suppuration may be divided into two classes, first, those which occur within the first three or four days of the disease, and second, those which occur six, eight or ten weeks after the beginning of the middle ear suppuration, in the presence of an acute mastoiditis. In the first class the labyrinthitis is almost invariably mild or so-called serous. It rarely leads to any intracranial complication and frequently, after the middle ear suppuration has run its course, the function of the labyrinth, at least of the static labyrinth, is restored. On the contrary, the cases of labyrinthitis which complicate latent mastoiditis, and occur eight or ten weeks after the beginning of the acute suppurative otitis media, are almost invariably grave, or so-called suppurative, and frequently lead to intracranial complications, that is, meningitis. As a rule, the latter cases are due to infection by one or other forms of capsulated coccus.

As has been stated above, the labyrinthine inflammations which complicate the chronic suppurating middle ear may be either manifest or latent. As in the cases which occur with the acute otitides, the manifest labyrinthitis may be either grave, that is, suppurative, or mild, that is, serous. The suppurative labyrinthitis which is progressing to the endocranial structures, that is, arousing a meningitis, is usually accompanied by fever and headache. The writer has several records of cases of this type. The so-called labyrinthine symptoms are very violent and do not become progressively less severe. On the contrary, those labyrinthine inflammations which are mild and have no tendency to involve the meninges have associated with them, as a rule, neither headache nor rise in temperature. Furthermore, in the uncomplicated cases the labyrinthine symptoms become day by day appreciably less severe. The most important signs of an extension of the labyrinthine suppuration to the meninges are headache and fever. In these cases, of course, there will be total destruction of labyrinthine irritability. The cerebrospinal fluid may also give us information regarding the extension of the disease to the meninges, even in the early stages.

There are cases of diffuse manifest labyrinthitis of the mild type which occur after the radical mastoid operation. This condition may come on any time during the healing of the radical mastoid cavity. It differs from the diffuse labyrinthitis which results from the disturbance of the stapes during the radical operation, in that in the former the symptoms do not occur for the first twelve hours after the operation, whereas, in the latter the symptoms supervene at once on the patients coming out of the anesthesia. By far the largest class of cases that we have met are those in which the labyrinth has been totally destroyed and in which there is no history of recent attacks of vertigo, vomiting, etc. These cases are discovered solely by making the functional test of the labyrinth, a test which we invariably make before performing a radical mastoid operation. Occasionally, no history of previous attacks of vertigo can be elicited. In others there is an indefinite history of vertigo and vomiting which has been referred to other organs, bilious attacks, for instance. The relationship between the vomiting and vertigo and the ear is not understood by them. There may be a spontaneous nystagmus directed to both sides which can be observed only when the eyes are turned to the extreme angle.

If the labyrinth destruction has existed for six months or more, it has been common in our experience to find a compensation test of rotation described by Ruttin. The caloric test is negative, as is the fistula test, and there is total deafness. When the labyrinth becomes filled with pus and granulations, there is an extension of the granulation tissue into the internal auditory canal and an occlusion of the labyrinthine artery occurs. This artery is a terminal artery and its destruction entails an extensive death of the bony labyrinthine capsule, with the formation of a sequestrum. In this type of cases we have frequently found a facial paralysis associated with the dead labyrinth. The facial paralysis is not invariably due to neuritis. We have seen cases in which a paralysis cleared up rapidly following the operation. Here, in all probability, the paralysis was due to pressure either of the granulation tissue or of a sequestrum on the nerve. This type of labyrinthitis is as dangerous as it is insidious, and often leads not only to meningitis, but also to cerebellar abscess and sinus thrombosis. Dr. John B. Rae in a paper read before the Medical Society of the State of New York, May, 1916, suggested the following classification of purulent labyrinthitis: acute diffuse labyrinthitis, chronic diffuse labyrinthitis, paralabyrinthitis with fistula, and paralabyrinthitis without demonstrative fistula.

The treatment of labyrinthitis varies considerably and the indications for operative interference are by no means uniformly recognized. There exists, furthermore, great difference of opinion as to when one should interfere in labyrinthine disease and as to the extent of that interference. The indications for operation depend on the type of labyrinthine involvement. In patients, for instance, with chronic suppurative otitis media, who have vertigo, but in whom there are no other signs of labyrinthine involvement, either of the auditory labyrinth or static labyrinth, the radical mastoid operation should be done, without disturbing the labyrinth. This is followed, as a rule, by a cessation of the vertiginous attacks. In the type known as circumscribed labyrinthitis, where there are labyrinthine symptoms with a normal rotation test, a positive caloric test and a positive fistula test, the radical mastoid operation, only, should be done. Relief of the symptoms, as a rule, follows this procedure.

The indication for operation in cases of diffuse labyrinthitis may be considered under two heads: first, those cases of acute diffuse labyrinthitis which complicate the acute otitides, and second, those cases of diffuse labyrinthitis which occur with the chronic middle ear suppuration. There are cases of labyrinthine invasion which supervene within a day or two after the beginning of an acute otitis media. In such instances it is rarely necessary to do more than a free myringotomy. These cases are, as a rule, mild and not prone to cause intracranial complications. Even where the middle ear infection is complicated by an acute mastoiditis which requires interference, the labyrinth should not be touched. And this is true even though the hearing be lost and the caloric test be negative. In many of these cases the function of the labyrinth, at least of the static labyrinth, is restored. There is but one exception to this rule, and that is cases in which the labyrinth has been injured by the myringotomy knife.

With regard to those cases, however, in which a diffuse labyrinthitis supervenes on an acute middle ear suppuration, and latent mastoiditis of six, eight or ten weeks' duration, the story is a different one. Here, the labyrinth operation is fully justifiable in connection with the mastoid operation. Failure to open and drain the labyrinth may result in a meningitis, which otherwise might be avoided. In the event of a diffuse labyrinthitis complicating either an acute or chronic suppurating ear, in which there is headache, fever, or any symptoms from which one might suspect an intracranial extension of the labyrinthine suppuration, the labyrinth, of course, should be opened and drained. It is not to be expected that recovery will take place in the large proportion of cases, but the fact that the meningeal infection may occasionally be localized offers sufficient encouragement to warrant this attempt to save life. In these desperate cases no half-way measures are permissible and the Neumann operation, in which the bone is entirely removed, including the border of the internal auditory canal, together with drainage of the cerebellar spaces, is the ideal procedure.

Perhaps the greatest difference of opinion exists regarding those cases of diffuse labyrinthitis which complicate chronic suppurating middle ears. This is particularly true of the manifest variety, that is, cases in which there are labyrinthine symptoms and in which the functional test shows complete deafness and loss of irritability of the static labyrinth. According to the Vienna school here are the indications for labyrinthectomy. If the labyrinth has been invaded by the suppurative process and has been destroyed, the functional tests will, of course, show total absence of hearing and total loss of static irritability. Many of these cases are discovered accidentally in making the functional test before doing the radical mastoid operation. It is this class of cases which undoubtedly, in time gone by, led to a meningitis of unknown origin after the radical mastoid operation. A trauma, incident to the radical mastoid operation, frequently causes the lighting up of the labyrinthine suppuration which has previously been walled off from the meninges. Therefore, in these cases it is wiser, in addition to the radical mastoid operation, to open and drain the labyrinth. In many instances this type of case is associated with facial paralysis and part of the labyrinthine wall has been sequestered. Wherever there are signs of an intracranial complication, combined with a destroyed labyrinth, the posterior fossa should be uncovered, irrespective of the type of labyrinth operation performed.

DIFFERENTIAL DIAGNOSIS BETWEEN PURULENT LABYRINTHITIS AND CEREBELLAR LESIONS *

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I should like to state at the outset that I have not attempted a complete résumé of the differential diagnosis between labyrinthine and cerebellar lesions. That has been done very often and very well. I have rather sketched the differentiation from the point of view of cerebellar symptomatology, paying particular attention to one or two phases of the question.

Even though the occurrence of disturbance of balance, vomiting and nystagmus are strongly suggestive of the most common cause of such symptoms, namely, labyrinthitis, it must not be forgotten that other conditions, too, may arouse almost identical phenomena. Among the conditions which may cause symptoms similar to those of labyrinthine disease the most important are lesions in the cerebellum and it is necessary, therefore, that the latter be differentiated from labyrinthine disturbances.

It is, perhaps, best to discuss this differentiation from the point of view of cerebellar symptomatology under several heads: first, general symptoms of cerebellar lesions, which may be due either to increased intracranial pressure or, in the case of abscess, to the inflammatory process in the cerebellum and, second, focal symptoms of cerebellar lesions, which may be either symptoms of disturbance in movement or symptoms of disturbance in the vestibular apparatus.

In uncomplicated labyrinthitis there is very rarely headache. In cerebellar lesions there is almost invariably headache. With abscess of the cerebellum the headache may not be constant or it may be dull and boring, with unbearably severe exacerbations, but it is present in at least 90 per cent. of cases. With cerebellar lesions there may be disturbance of the sensorium, disturbance of respiration, bradycardia, optic nerve changes, paralysis of the cranial nerves, none of which, with the exception of disturbances in the eighth nerve, and occasionally the seventh, ever occur with labyrinthitis. There is vomiting with cerebellar lesions, as well as with labyrinthine, but in the latter the vomiting is never of the projectile type, that is, it is always associated with nausea. Furthermore, the vomiting with labyrinthitis becomes daily less, so that after a few days it ceases. On the other hand, the vomiting with cerebellar abscess is frequently projectile in type and is particularly persistent, much more so, as a rule, than with abscess in the temporosphenoidal lobe.

With cerebellar abscess and with labyrinthitis the temperature may be normal; with abscess it may be subnormal or there may be fever, but uncomplicated

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purulent labyrinthitis of itself never causes a considerable rise in temperature. With abscess there is frequently marked emaciation and there may be pathologic changes in the cerebrospinal fluid. In uncomplicated labyrinthitis these, of course, do not occur.

The focal symptoms of cerebellar lesions which help to differentiate them from labyrinthitis may be divided into symptoms of disturbances of movement, and symptoms of disturbances of the vestibular apparatus. With cerebellar lesions there may be *hypermetria,* asynergy, adiadokokinesis, tremor, disturbances in speech, atony or hypotony, catalepsy, hemiparesis and fixed attitude of the head. None of these occur with labyrinthitis.

Cerebellar lesions, however, may have in common with disturbances in the vestibular apparatus abnormalities in the voluntary movements of the trunk and of the extremities. When these disturbances in movements result from disease in the labyrinth or in the vestibular nerve, they are dependent for their direction on two elements, first, impulses from the static labyrinth, and secondly, impulses from the muscles and joints of the neck. Changes in these peripheral impulses cause alterations in the direction of the deviating movements. Thus, if, as a result of labyrinthine disturbance, a person has a spontaneous nystagmus directed to the right, when he attempts to stand erect he will fall to his left, if he faces forward. The tendency to fall, then, will be in the direction of the slow component of his spontaneous nystagmus. If, however, the afferent impulses to the cerebellum from the muscles and joints of his neck are changed by turning his face to one or the other shoulder, there will occur a change in the direction toward which he tends to fall. If this objective imbalance is due solely to a pathologic disturbance of the vestibular impulses, the tendency to fall will always be in the direction, in space, of the slow component of the resulting nystagmus. This relationship between the spontaneous nystagmus and the deviations is constant and characteristic of labyrinthine lesions and applies to the extremities as well as to the trunk. In the presence of a nystagmus of vestibular origin to the right, the arms held stretched out in front of the body will deviate to the left and the direction of this deviation will change with alterations in the position of the head.

On the contrary, the objective disturbances of balance due to cerebellar lesions, that is, the falling and the deviations of the extremities, bear no definite relationship to the spontaneous nystagmus if this be present. It is believed, although by no means proved, that the vermis of the cerebellum has to do with what Edinger called the statotonus; that is, the development of such tonic influences to the voluntary muscles as cause the body to be held erect in space. In disease of the vermis there is a disturbance of body balance and a tendency to fall, usually toward the side of the lesion. The direction of this tendency to fall is central in its origin and is not influenced by changes in the peripheral impulses. Thus a person who has a positive Romberg, falling to the right, as the result of a cerebellar tumor, will fall to the right irrespective of any changes in the position of his head. Furthermore, a spontaneous nystagmus often accompanies cerebellar lesions, and if this is present, the direction of the falling will not of necessity be to the side of the slow component. What has been said regarding the tendency to fall applies equally to the deviations of the extremities.

So that, with regard to their influence on voluntary movements, the chief differential point between cerebellar lesions and vestibular lesions lies in the fact that in the former the falling and the deviations of the extremities are central in origin and their direction is not influenced by changes in the peripheral or afferent cerebellar impulses, whereas in the latter, changes in these peripheral impulses, aroused by changes in the position of the head, cause alterations in the direction of both the falling and the deviations.

With cerebellar lesions, in addition to spontaneous falling and deviations of the extremities, there may be a loss of the reaction movements which occur normally in response to artificially aroused vestibular impulses.

The response to functional tests in the presence of labyrinthine suppuration, that is, the loss of hearing, the loss of reaction to the caloric, rotation and fistula tests with the spontaneous nystagmus, etc., are so familiar that they require merely mention here. I dare say that all those who have performed the functional tests of the static labyrinth in the presence of cerebellar tumors or abscesses have seen the so-called enduring nystagmus. With cerebellar lesions a caloric nystagmus directed to the side of the lesion frequently lasts much longer than the normal two and one half or three minutes. This phenomenon is believed to be due to the loss of the inhibitory influence of the cerebellum on the vestibular centers. In two cases in which large hernias of the cerebellum occurred after decompression operations in the posterior fossa I attempted by firm pressure on the hernia, after the manner described by Bárány, to influence the duration of the caloric nystagmus directed to the affected side. In one of these I was successful, but in the other I failed, the nystagmus lasting the normal two or two and one half minutes.

I have purposely left for the end of this paper the consideration of the spontaneous nystagmus which sometimes accompanies cerebellar disease. As the result of our experience in the intervening time Dr. Braun and I, in our book on cerebellar abscess recently published, have reiterated a statement made about two years ago in a paper read before the neurologic section of the New York Academy of Medicine, namely, that the nystagmus of central origin often cannot be differentiated clinically from that due to labyrinthine disease. We have been unable to recognize any essential difference between the nystagmus of central origin and that due to disease of the labyrinth or vestibular nerve. That there are minor differences is evident. Grey, in his report of cerebellar cases from the Peter Bent Brigham Hospital, although agreeing in the main with the statement above, calls attention to the fact that in their experience the nystagmic movements are coarser with subtentorial lesions. It is true they are often more like the caloric nystagmus which one sees in the blind. With acute diffuse labyrinthitis the nystagmus is almost invariably directed to the opposite side. With cerebellar lesions the direction of the nystagmus may vary at different times. Neumann has shown that this occurs with cerebellar abscess. With tumors the direction of the nystagmus may vary sometimes with changes in the position of the head. Furthermore, with tumors it is more common to observe a nystagmus in the anteroposterior vertical plane. I have never seen this with vestibular lesions. But in the fact that it is a rhythmic movement of both eyes and in the planes in which these movements occur with the exception cited above, the nystagmus of central origin is essentially identical with that of peripheral origin.

There is, however, a considerable difference in the behavior of the two. The nystagmus with diffuse labyrinthine disease grows appreciably less in intensity from day to day, while that of central origin remains the same or may even increase in intensity.

Finally the attempt to consider the nystagmus of central origin as an oscillation, an asynergia to be differentiated from that of peripheral origin by the fact that in the latter the eye movements decrease on fixation of the vision, is not borne out by our experience. We have but recently seen a circumscribed labyrinthitis, a diffuse labyrinthitis and a fracture through the labyrinth, in all of which the spontaneous nystagmus was definitely increased on fixing the vision on the index finger held close to the patient's nose, and while this is, in all probability, not the rule, it is, at all events, too frequent an occurrence to be useful as a means of differentiation.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. EAGLETON, PHILLIPS AND FRIESNER

Dr. Horace Newhart, Minneapolis: I wish to emphasize the importance in all suppurative cases of making regular systematic examinations of the labyrinthine and cerebellar functions. By doing so we could undoubtedly reduce materially the mortality which exists with all endocranial complications of otitic origin. Take the statistics for cerebellar abscess. Unoperated, the mortality is practically 100 per cent., while the records of those best fitted to operate in such cases show a mortality of 40 per cent. Patients with cerebellar abscess too often come under observation in the latter stage of the manifest period, when interference cannot be expected to yield better results than those stated. But there is another group of cases, including the many chronic cases of temporal bone involvement, and the acute suppurative cases, if we were to apply to these our regular routine tests of the labyrinthine and cerebellar functions, we should gain some light as to what is going on within the cranial cavity, and by early operation might safely intervene before the appearance of a diffuse meningitis, with very appreciable reduction in mortality. Of great assistance in making a diagnosis of endocranial complications are the results of ophthalmoscopic and ocular examinations. Alexander, Neumann and O. Ruttin stated that in at least 50 per cent. of cases of cerebellar involvement originating in the labyrinth there are changes in the fundus. These changes are not always marked; only in the later stages, with decided increased endocranial pressure, is there a true choked disk. But the distinct alteration of the retinal vessels, usually unilateral and corresponding to the side involved, are sufficiently constant to be of diagnostic value. Disturbances arising from increased pressure affecting the cranial nerves come relatively late, but it is not unusual to find a diplopia with cerebellar abscess. In three cases coming under observation during the past six months, all terminating fatally, from several days to two weeks before a diagnosis of a terminal meningitis was made, the patient had complained of distinct throat symptoms with painful deglutition, and this without any discoverable lesion of the throat. This suggests somewhat the possibility of very early bulbar irritation associated with these cases of endocranial complication in the posterior fossa.

Dr. Isaac H. Jones, Philadelphia: A woman was referred to me with a diagnosis of tumor of the right cerebellar hemisphere. It was evident that either the ear tests were incorrect or there was nothing the matter intracranially. The right ear responded poorly; douching the left with both hot and cold water showed normal nystagmus and normal past-pointing in both directions, suggesting normal brain stem and cerebellum. Operation was postponed, she became perfectly well, has had a baby and has remained in perfect health ever since. Unquestionably it was a labyrinthitis and not brain tumor. A man getting off a train has a sudden explosive sound in his ear, falls to the platform, is dizzy and sick in bed for a week. Right ear is stone deaf, static and cochlear; Wassermann markedly positive. Could anything be simpler to diagnose—destruction of the labyrinth? But it was nothing of the sort, it was a beginning acoustic tumor. Later he showed spontaneous vertical nystagmus upward, which together with absence of responses from one ear make the diagnosis of cerebellopontile angle tumor with pressure on the brain stem. Necropsy showed cerebellopontile angle cyst. Man, neurologic diagnosis, right frontal tumor; ear tests suggested left cerebellopontile angle tumor. However, they operated in the right frontal region. Necropsy showed left cerebellopontile angle tumor. An apparently healthy man with headache showed normal labyrinths and eighth nerves and yet the vertical canals failed to produce any responses; horizontal canals produced normal nystagmus but no vertigo. This phenomenon-complex indicated pressure within the fourth ventricle; this diagnosis appeared ridiculous because the man seemed in such perfect health. That night he was rushed to the hospital unconscious; next day he regained consciousness but complained of agonizing headache. Many physicians and neurologists pronounced it hysteria. We stuck to our conviction of an organic lesion in the fourth ventricle. Necropsy three days later showed abscess in the fourth ventricle. Internal hydrocephalus shows absence of reaction from vertical canals and impaired vertigo from horizontal canals. Our operative and postmortem findings suggest that the horizontal canal fibers are confined to the medulla and inferior cerebellar peduncle, whereas vertical canal fibers traverse the pons and middle cerebellar peduncle. Cerebellopontile angle tumor shows (1) "Crossed" past-pointing; both arms point inward or both arms point outward regardless of type of stimulation. (2) Not only is there total absence of reaction from ear on the side of tumor but vertical canals of opposite ear fail to produce responses, whereas horizontal canal of opposite ear gives normal reactions. This is due to pressure on the pons involving vertical canal fibers from opposite ear. In one case a decompression was done and then stimulation of the opposite side gave normal responses, showing clearly that pressure had been removed from the vertical canal fibers.

Dr. J. Holinger, Chicago: It seems to me that we have become too sanguine by the results of the examination of the static labyrinth, and are prone to forget the examination of the ear by means of the speculum and tuning forks. The statistics of brain tumors show that tumors of the acoustic nerve are not very rare, yet they are rarely diagnosed. Tumors of the acoustic nerve are only discovered at the necropsy. As to a division of the nerve supplies of the horizontal and the vertical semicircular canals, the same is true of the vestibular and cochlear nerves. This division may also give us pointers in trying to locate a tumor, as well as the division of the nerve supply of the horizontal from vertical canals. All of these points are equally important in fractures of the base of the skull, and in locating a blood-clot. The following incident may be of interest: Last December I saw a patient who had had a fall on a slippery sidewalk, after which he got up and walked home. A few days later he became drowsy. When I examined him his mind was not clear, but he still reacted to some questions, slowly and loudly put, and several times repeated. The examination by means of speculum and tuning fork allowed me to make a diagnosis of fracture of the base, running from the external canal of the right ear, crossing the pyramid of the temporal bone and following the course of the eustachian tube. Meningitis; caloric test was contraindicated; the fluid might have gone into the skull cavity. Three days later the patient died, and I was requested by the coroner's jury to hand in a report independent of the coroner's postmortem report. A colleague who followed the whole proceedings told me afterward that my description of the fracture was more accurate than the coroner's.

Dr. George W. MacKenzie, Philadelphia: I wish to endorse practically everything Dr. Eagleton said, particularly with reference to the early symptoms that are possible of solution by careful otologic examination in cases of brain tumor long before there are symptoms of marked intracranial pressure, and, too, in reference to basal fractures. In cases of basal fracture, Bezoldt found that one fourth of the fractures involve the temporal bone. A basal fracture may involve the middle ear alone, the internal ear alone, or both combined. In a case of basal fracture involving the middle ear alone, functional tests disclose the typical findings of involvement of the conducting apparatus. When the inner ear is involved, there are the typical findings of a disease of the perceiving apparatus; furthermore, when the inner ear is involved, the facial nerve is usually involved with it. It is important in all cases of basal fracture, therefore, to make a careful examination of the hearing function as well as the static function, since it gives us an important guide as to the prognosis and method of operation to be followed. I recall one instance in which a general surgeon removed the stirrup in a case of fracture of the tegmen tympani, causing a pronounced deafness that would not have followed had the stirrup been left alone. On the other hand, there are many cases of fracture through the labyrinth in which operation could be done successfully which are allowed to go on to meningitis and death simply through neglect to operate. I believe all fractures involving the base should be examined carefully by the otologist and in case the temporal bone is involved, I would urge that the otologist perform the operation rather than leave it to the general surgeon. I also want to mention a case in which I had diagnosed a tumor of the internal auditory canal, involving the seventh and eighth nerves. I suggested the diagnosis of cysticercus, because the man had lived among dogs all his life. In the decompression operation done later by a general surgeon, a great portion of the occipital bone was removed and the tumor not reached. The patient died a short time after from shock. The postmortem examination proved the correctness of my diagnosis. Had this patient been operated on by an otologist following the method of removal of the labyrinth, slightly modified, the results would have been more favorable. My plea is for accuracy in methods of examination, using what knowledge we have concerning the functions of the inner ear and their deviations from the normal when they are involved. One of the gentlemen mentioned that a patient had a nystagmus to both sides. There is no lesion of the vestibular apparatus or cerebellum that can produce a nystagmus to both sides. When such findings are recorded, it is because of a mistaken observation. Nystagmus of reflex origin is always in one definite plane and direction and should be observed with the patient looking straight ahead while the eyes are in a condition of rest. When we record our observations in nystagmus in the side positions, we are bringing in an additional factor which has nothing whatever to do with the reflex.

Dr. Lewis Fisher, Philadelphia: In the analysis of cases showing vestibular symptoms, in order to get as clear a conception of this subject as possible, we attempt to visualize the anatomy of the parts concerned. We believe that the vestibular apparatus starts at the internal ear, and is connected with the various portions of the central nervous system by means of nerve paths. The internal ear, however, is by far the most important portion of this vestibular apparatus. Disturbances in equilibration cannot occur unless there is interference with this vestibular apparatus at some point. The same can be said of nystagmus: it can occur only when there is disease along the fibers which run to the eye muscles producing nystagmus. We try to remember that in the internal ear as well as in the eighth nerve, apart from the acoustic fibers, there also run two other sets of fibers, one set to the eye muscles producing nystagmus, and another to the cerebral cortex, producing dizziness. But these paths do not run together all the way; in the brain stem they part company. The nystagmus fibers run to the eye muscles, while the fibers carrying the vertigo stimuli have the cerebellum as their first objective point. These paths are different for the two sets of canals. The horizontal canal fibers enter the cerebellar nuclei by way of the restiform body, and from there, leaving by way of the superior cerebellar peduncles, go to the temporal lobes of the cerebrum. The vertical canal fibers continue higher up in the brain stem and enter the cerebellum by way of the middle cerebellar peduncle. There is always an inseparable association in the minds of authors between nystagmus and past-pointing. Bárány in his writings says that certain deviations in pointing occur in relation to either one component of the nystagmus or the other. This is to be greatly regretted. We have shown by experiments at the University of Pennsylvania that the slow component of the nystagmus has absolutely nothing to do with the dizziness and past-pointing that we are able to induce in patients by stimulating the labyrinth. When such a relation appears it is simply a coincident. Thus: The rule as generally postulated, namely, that the past-pointing is in a direction opposite to that of the nystagmus, is not correct, for we have shown that if an individual is turned to the right with the head back, the resulting nystagmus is to the right, but the past-pointing is also to the right, and we believe that this subject could be greatly simplified if this differentiation between the two reactions were more generally understood. In cerebral abscess, or tumor of the brain stem, or of any portion of the brain all the vestibular phenomena are produced either by irritation or by destruction of some of the vestibular fibers. In patients exhibiting such vestibular disturbances only a careful examination of the ear can tell us whether the disturbance is in the labyrinth and eighth nerve or whether it is intracranial. If in the latter, we are able to tell just where within the cranium these pathways have been interfered with. For example, if in a case presenting vestibular symptoms we are able to produce nystagmus but no vertigo with past-pointing, we know that the disturbance must be in the vertigo pathways between the cerebellar peduncles and temporal lobes. If, on the other hand, we stimulate the labyrinth and are able to produce dizziness with past-pointing but no nystagmus, then the interruption must be either in the pons or medulla oblongata. Generally speaking, a careful examination of both labyrinths, and especially of each canal separately, enables us to test the integrity of the different pathways and locate lesions with considerable accuracy.

Dr. Chester C. Cott, Buffalo: Tumors which press on the auditory nerve or involve this nerve in its growth often cause a sudden onset of symptoms. This is due to the fact that the resistance of the nerve is suddenly overcome. Before the onset of severe symptoms an examination would reveal cochlear nerve degeneration. Later there occurs a severe attack of dizziness very likely following a trauma which the patient usually ascribes as the cause.

Dr. Isidore Friesner, New York: In addition to the anatomic reasons for the priority of auditory symptoms in tumors not only of the cerebellum or pons, but also of the nerve, we must not forget that there is a very marked difference in the viability—and conversely in the destructibility—of the two branches of the eighth nerve. Not only is this true as far as the nerve trunk itself is concerned when subjected to pressure or involvement by a tumor mass, but Alexander has shown, from the examination of labyrinths which were subject to suppurative process, that this difference extends completely throughout the labyrinth itself. For instance, the hairs, which are biologically distinct from the hair cells, show a difference in viability when they are subjected to the presence of pus in the intralabyrinthine cavities. So with the tumor which involves, as far as its gross structures are concerned, the auditory and vestibular nerves equally, the primary disturbance will be in the auditory function—tinnitus or deafness. Furthermore, there have been reported numerous cases in which in addition to the eighth the facial nerve was involved, and yet there was no paresis. So that in the order of their susceptibility we consider the auditory nerve, but second the vestibular, and last, the facial. In regard to nystagmus to both sides, it is true that in many of these cases the nystagmus movements are more marked to one side than to the other. With brain tumors, however, I have seen a vertical nystagmus directed not only upward but also downward. Of course this cannot be a physiologic nystagmus. It is a rhythmic movement of both eyes, and if we do not call this nystagmus both upward and downward, I do not know what we should call it.

Dr. Wells P. Eagleton, Newark, N. J.: We have all seen cases in which the otologists should be called in. Our general hospitals are crowded with otologic cases. Every neurologic ward has its otologic problems, and we could give great assistance there, if we could see the patients in time to make an early diagnosis.

THE FATE OF PHENOLSULPHONEPHTHALEIN WHEN INJECTED INTO THE ANIMAL ORGANISM

FACTORS OTHER THAN THE KIDNEY INFLUENCING ITS "RETENTION": PRELIMINARY REPORT *

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During the past few months I have been engaged in a study of the physiologic action of the thyroid. The general scheme followed has been to treat dogs with a continuous injection[1] of amino acids, sugars and other substances in conjunction with the injection of the active constituent of the thyroid, and to study the effect of the thyroid on the metabolism of the animals. Some animals respond vigorously, the injection of the thyroid constituent producing very high pulse rate and a great increase in the respiration, accompanied by an extremely severe general tetany and terminating in a temperature which occasionally reaches as high as 112. It was soon found that all animals can be divided into two classes, those which give this reaction and those which do not.

For certain reasons it seemed probable that the condition of the animal could be foretold by the use of some substance which would be a criterion prior to the injection of the thyroid hormone. Phenolsulphonephthalein was used for such a test and a few trials demonstrated that in those animals which had a high phenolsulphonephthalein retention, little or no effect was produced by the injection of the thyroid; and in those animals having a low phenolsulphonephthalein retention a vigorous response to the thyroid might be expected. The administration of the phenolsulphonephthalein was changed somewhat from the usual procedure, and 1 c.c. per hour of the standard solution (6 mg.) was injected continuously during the entire experiment. By taking samples of the urine every fifteen or thirty minutes, the exact condition of the animal could be closely followed. At first it seemed that the type of metabolism going on had some influence on the amount of phenolsulphonephthalein excreted. With a constant injection of glucose we have recovered as high as 98 per cent. of the phenolsulphonephthalein injected. This high return was not momentary but continued for several hours. When a dog was injected with amino acids it was found that a rather low phenolsulphonephthalein output resulted, and in one instance a maximum excretion of 47 per cent. was found. In a second animal the maximum was 52 per cent. As it seemed probable that the type of metabolism going on in the animal was one factor controlling the output of phenolsulphonephthalein, we were greatly surprised to find that on the injection of amino acids in a third dog the phenolsulphonephthalein output ranged from 80 to 86 per cent. for many hours. It was necessary, therefore, to go further back for an explanation of the phenolsulphonephthalein retention.

In order to determine whether the phenolsulphonephthalein was absorbed and held in the tissues, the dogs were killed and their organs examined for phenolsulphonephthalein. In no case were we able to recover any of the dye except slight traces in the blood. Phenolsulphonephthalein retention, therefore, assumed a new aspect; that is, phenolsulphonephthalein retention really means phenolsulphonephthalein destruction. The possible mechanism of the destruction of phenolsulphonephthalein may be, first, the hydrolytic cleavage of the substance; second, the oxidation of the compound, and third, reduction.

The first is improbable because it is unlikely that there is a specific enzyme in the body which will accomplish it. When an attempt was made to oxidize phenolsulphonephthalein with hydrogen peroxid, it was found to be extremely resistant. A similar trial with nascent hydrogen showed that it is easily reduced. It thus seemed probable that phenolsulphonephthalein in the body is destroyed by reduction. In order to establish this point a dog was killed, its various organs ground to a fine mash, and 1 c.c. of phenolsulphonephthalein was mixed with the tissues. After standing some hours the amount of phenolsulphonephthalein destroyed was determined. It was found that muscle and intestine destroyed a large percentage, that the liver destroyed practically 100 per cent., and that the spleen, pancreas, lung and kidney destroyed almost none.

If the destruction of phenolsulphonephthalein in the tissues is caused by its reduction, the presence of an oxidizing atmosphere should prevent the destruction of the dye. To show this a liver mash was mixed with phenolsulphonephthalein, one portion was covered with liquid petrolatum to exclude oxygen, a second was left exposed to the air, and through a third portion air was bubbled. In the portion in which no oxygen was present, the phenolsulphonephthalein was totally destroyed; in the dish standing open, a large percentage, but not all, was destroyed; and in the portion through which air was bubbled, only a portion of the phenolsulphonephthalein was destroyed. Blood both in the oxidized and reduced form will not destroy phenolsulphonephthalein. Its destruction in the tissues is caused by a more powerful reducing action than that of completely reduced hemoglobin. Since blood is the carrier of oxygen in the body, it seemed probable that there would be a difference in the destruction of phenolsulphonephthalein by a perfused liver if the blood in the perfusing fluid was oxygenated or reduced. In the presence of oxygenated defibrinated blood, as much as 80 per cent. may be recovered after perfusion of a liver. In contrast to this, 95 per cent. of the phenolsulphonephthalein perfused through a kidney was recovered, although reduced hemoglobin was used.

These experiments have been confirmed and enlarged with the object of showing the presence of an enzyme in the tissue which is capable of exerting a very strong reducing action. It is not probable, however, that this enzyme acts on the phenolsulphonephthalein itself. Phenolsulphonephthalein is not affected by mild reducing agents such as hydrogen sulphid, sulphurous acid, ammonium polysulphid and formaldehyd, and apparently will not react except with nascent hydrogen itself. The presence of reducing enzymes in plant and animal tissues has long been known, and the fact that phenolsulphonephthalein is apparently reduced only by nascent hydrogen and is destroyed in the animal organism furnishes grounds for ready speculation concerning the possibility that hydrogen is produced by the tissues of the body. If hydrogen itself is not produced, there is at any rate a most powerful reducing substance. The reducing action appears to proceed according to the laws generally followed by enzymes; that is, it is destroyed by heat, and its activity is greatly influenced by minute amounts of acid and alkali and also by the presence of sugars and other materials. The fact I wish to emphasize is that this enzyme continues to exert reducing action both in the presence and in the absence of oxygen. Is it not probable that a primary step in metabolism is a reduction with the production of hydrogen which then reacts with hemoglobin? If the supply of oxygen from hemoglobin is adequate for the reducing action of the cells, then phenolsulphonephthalein can no longer be reduced, as it is protected by an excess of oxygen. However, if the reducing action of the cells is greater than can be satisfied by the oxygen from the hemoglobin, phenolsulphonephthalein is reduced. Fundamentally, therefore, what the phenolsulphonephthalein tests show is the ratio between the rate of reduction and the supply of oxygen in the body. Just what the phenolsulphonephthalein shows in any particular case obviously depends on so many factors that it is impossible to localize all the effects in any one organ.

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* From the Mayo Clinic.

* Presented before the Interurban Clinical Society, Rochester, Minn., Dec. 8, 1916.

[1] Woodyatt, R. T.; Sansum, W. D., and Wilder, R. M.: Prolonged and Accurately Timed Intravenous Injections of Sugar, The Journal A. M. A., Dec. 11, 1915, pp. 2067-2070.

RESULTS OF TESTS

Tissue	Amt. Gm.	Phenolsulphonephthalein Cc.	Treatment	Phenolsulphonephthalein Recovered Per cent.
Sheep's liver	..50	1	Undiluted + liquid petrolatum	0
Sheep's liver	..50	1	Undiluted; exposed to air	Trace
Sheep's liver	..50	1	150 c.c. 0.8% NaCl + liquid petrolatum	47
Sheep's liver	..50	1	150 c.c. 0.8% NaCl; exposed to air	78
Sheep's liver	..50	1	150 c.c. 0.8% NaCl; aerated	90
Human liver	..25	1	40 c.c. 0.8% NaCl	10
Human liver	..25	1	39.5 c.c. 0.8% NaCl + 0.5 c.c. 3% H_2O_2	30
Human liver	..25	1	35 c.c. 0.8% NaCl + 5 c.c. 3% H_2O_2	30
Human liver	..25	1	25 c.c. 0.8% NaCl + 15 c.c. 3% H_2O_2	44
Human liver	..25	1	40 c.c. 0.8% NaCl + 0.5 gm. glucose	9
Human liver	..25	1	40 c.c. 0.8% NaCl + 5 gm. glucose	20
Human liver	..25	1	40 c.c. 0.8% NaCl + 15 gm. glucose	33
Human liver	..25	1	39.5 c.c. 0.8% NaCl + 0.5 c.c. n/10 NaOH	11
Human liver	..25	1	35 c.c. 0.8% NaCl + 5 c.c. n/10 NaOH	25
Human liver	..25	1	25 c.c. 0.8% NaCl + 15 c.c. n/10 NaOH	77
Human liver	..25	1	40 c.c. 0.8% NaCl + boiling	100*
Human liver	..25	1	40 c.c. 0.8% NaCl; allowed to become putrid by standing 4 days	30†
Human kidney	25	1	40 c.c. 0.8% NaCl	90
Human kidney	25	1	39.5 c.c. 0.8% NaCl + 0.5 c.c. 3% H_2O_2	90
Human kidney	25	1	35 c.c. 0.8% NaCl + 5 c.c. 3% H_2O_2	94
Human kidney	25	1	25 c.c. 0.8% NaCl + 15 c.c. 3% H_2O_2	90
Human kidney	25	1	40 c.c. 0.8% NaCl + 0.5 gm. glucose	96
Human kidney	25	1	40 c.c. 0.8% NaCl + 5 gm. glucose	90
Human kidney	25	1	40 c.c. 0.8% NaCl + 15 gm. glucose	94
Cat's blood	50	1	Perfused through liver for 30 min. before addition of phenolsulphonephthalein	100‡
Dog's blood	50	1	Aerated with CO for 15 hours	95-96
Cat's blood and liver	whole	1	Blood perfused through liver 2 hours	45
Cat's blood and kidneys	whole	1	Blood perfused through kidneys 2½ hours	95
Rabbit liver	32	1	64 c.c. 0.8% NaCl + 0.25 gm. glucose	79
Monkey liver	26	1	50 c.c. 0.8% NaCl + 0.25 gm. glucose	39
Beef liver	30	1	Undiluted at 5 C.	52
Beef liver	30	1	Undiluted at 25 C.	33
Beef liver	30	1	Undiluted at 35 C.	26
Beef liver	30	1	Undiluted at 25 C. + 0.5 gm. glucose	25
Beef pancreas	30	1	Undiluted	82
Cat's muscle	25	1	Undiluted mash	38
Cat's intestine	25	1	Undiluted mash	34
Cat's liver	25	1	Undiluted mash	0
Sheep's spleen	50	1	Undiluted mash	90

* Enzyme entirely destroyed.
† Enzyme partially destroyed.
‡ Blood + phenolsulphonephthalein stood, 30 hours.

The presence of a slight acidosis increases the capacity of the tissues for absorption so that they will retain the dye so firmly that it cannot be washed out with physiologic salt. The addition of a small amount of sodium carbonate will counteract this, and physiologic salt will then remove the dye from the tissues. Furthermore, in the presence of an increase in the hydrogen ion concentration, the action of the enzyme is apparently more vigorous, resulting in greater destruction of phenolsulphonephthalein. Acidosis is not controlled by any one organ, but is a condition which may result from many causes. That it plays its part in the destruction of phenolsulphonephthalein cannot be doubted. Another great factor is the rate of the circulation of the blood. If for any reason the blood passes through the tissues at a slightly diminished rate, the amount of oxygen supplied to the tissues is reduced and the excess necessary to protect phenolsulphonephthalein from destruction is no longer present; thus a greater destruction of the dye results. Another factor would be a condition of anemia, in which the oxygen-carrying capacity of the blood is greatly reduced. Finally also the lungs must play an important part, as improper aeration of the blood would cause inability of the hemoglobin to furnish enough oxygen to protect the phenolsulphonephthalein from destruction. We have produced a drop in phenolsulphonephthalein output from 76 to 19 per cent. in an animal receiving a continuous injection of phenolsulphonephthalein, by simply interfering with its respiration. When the respiration was again normal, the output rose to 60 per cent. If the kidney does not readily pass the dye, it is returned to the circulation and the tissues have a prolonged action on it, resulting in great destruction.

There is one condition which I should like to mention in which this enzyme with its ability to produce extremely powerful reducing substances, if not nascent hydrogen itself, may play an important part. It seems highly probable that in uremia, when there is a condition in which phenolsulphonephthalein is reduced, other substances must be reduced, not directly by enzyme action but by the action of hydrogen or its substitute. Such reduction going on constantly within the tissues of the body is at least theoretically capable of producing compounds which normally could not be present; and to these compounds originating within the organism itself we may attribute some of the clinical symptoms.

For the treatment of blood, tissues and other bodily fluids so that a phenolsulphonephthalein test may be made, a method somewhat similar to one already described has been used.[2] The material to be tested is made to some definite volume and placed in a beaker. From 10 to 15 c.c. of concentrated ammonia are added, and from 5 to 10 gm. of calcium chlorid. The solution is then boiled. The calcium precipitates the proteins, and this precipitation, in the presence of ammonia, leaves the dye in solution. If there is a slight opalescence following this treatment, it has been found that the addition of ammonium phosphate, which will precipitate calcium phosphate, will remove the last traces of turbidity and leave a solution which can be accurately matched with the standard. The water is allowed to boil off until somewhat below the original volume. The solution and precipitate are returned to the original measuring vessel, cooled, made up to the original volume and filtered.

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[2] Rowntree, L. G.; Hurwitz, S. H., and Bloomfield, A. L.: An Experimental and Clinical Study of the Value of Phenoltetrachlorphthalein as a Test for Hepatic Function, Bull. Johns Hopkins Hosp., 1913, **24**, 327-342. Whipple, G. H.; Peightal, T. P., and Clark, A. H.: Tests for Hepatic Function and Diseases Under Experimental Conditions: Phenoltetrachlorphthalein, ibid., 1913, **24**, 343-357.

In the tests recorded in the accompanying table, the same procedure was followed throughout. The finely ground tissue was mixed with 1 c.c. of standard phenolsulphonephthalein solution and allowed to stand undiluted or diluted with physiologic salt and other additions, as shown. The solutions were preserved with toluene, and bacterial action can be ruled out as a possible factor of the destruction. Dilution appears to influence greatly the amount of phenolsulphonephthalein reduced, probably by simply diluting the concentration of the substance reducing the phenolsulphonephthalein. Another factor which may be of influence here is the diminished activity of the diluted solution. The partial destruction of the enzyme by simply allowing the liver mash to stand in the laboratory until in a putrid condition is of interest. Although there is no doubt about the presence of bacteria in this case, and although bubbles of gas were being given off by the solution, the destruction of phenolsulphonephthalein was much less than before the liver had become decayed. This loss of action when the tissue became decayed suggests that the reducing enzyme is more active in living functioning cells, and that the destruction of phenolsulphonephthalein in these experiments and in the body is not caused by the degenerative processes going on in dead cells. Whether or not the favoring action of glucose on the destruction of phenolsulphonephthalein is of significance is not now certain; but it is of interest to note that the solution causing the greatest destruction of phenolsulphonephthalein contained small amounts of glucose.

STERILITY STUDIES

WITH PARTICULAR REFERENCE TO WEAK SPERMATOZOA; DIAGNOSIS AND TREATMENT *

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To satisfactorily diagnose and treat sterility it is essential that it be considered a dual problem, involving both the husband and wife. At the present time there is a marked lack of cooperation between gynecologists and genito-urinary surgeons in the diagnosis and treatment of this type of patients. There are types of sterility which are definitely due to the male; there are also types, fewer in number, however, and much harder to diagnose, that are definitely due to the female, and there is a large class of patients who come stating that the wife has been examined and nothing can be found and the husband has been examined with a negative result, but no children appear. This type of case has, up to the present, been attributed to the woman, but on very insufficient evidence. Evidently something is wrong somewhere; hence my plea is that these cases should be undertaken at least with very marked and close cooperation between the different men, or one man should qualify himself sufficiently to work out these cases alone. In determining the cause of sterility of a given couple it should be considered under the following heads:

1. Obstructions in the sexual tract of the male.
2. Obstructions in the sexual tract of the female.
3. Absolute failure of, or imperfect development of, the essential male elements.
4. Absolute failure of, or imperfect development of, the essential female elements.
5. Alterations in the secretions of the female sexual tract so that her secretions are destructive to the life of the spermatozoa.

Obstructions in the Male Generative Tract: This class of cases is easily diagnosed as they discharge a semen with complete absence of spermatozoa. The only treatment for these obstruction cases is surgery, with removal or anastomosis around the obstruction. What particular operation is necessary to be performed depends on the location of the obstruction. The possible operations are vaso-epididymostomy, either with the vas and epididymis of the same side or the vas and epididymis of opposite sides; Lespinasse sac operation, resection of the vas and end to end union with the vas on the same side or with the vas on the opposite side. Urethral obstructions should receive appropriate dilatation or operation.

Obstructions in the Female Sexual Tract: There are two places in the female tract where obstructions are likely to occur, namely, the tubes and the cervix. Tubal obstructions can be definitely diagnosed by laparotomy and catheterization of the tubes. If this is not considered feasible the diagnosis must be made by inference either by a history of some pelvic disease likely to produce adhesions or (after determining that the husband has a normal sperm) by the recovery of motile sperm from the uterine fundus several hours after coitus. To aid us in recovering sperm from the fundus it is advisable to do a direct uterine insemination and from four to twenty-four hours later examine the uterine secretions for living sperm. If the sperm are actively motile we infer that the cause of the sterility is either tubal obstruction or a defect of ovulation. Cervical obstructions can be cured by direct uterine insemination easier than by operation directly on the cervix, as these obstructions are slight and do not prevent the passage of the impregnating catheter. No doubt there are cases in which it will not pass, but they are extremely rare.

Absolute Failure of, or Imperfect Development of, the Essential Male Elements: This is the type of case that I particularly wish to call to your attention and to study carefully. Semen is easily obtained and should be carefully studied, not only as to spermatozoa, but as to all the other elements as well. Pus is present occasionally and there are marked differences in the coagulating properties of the semen of different men, although sterile semen shows much less coagulating power than nonsterile. The spermatozoa deserve special study. The function of spermatogenesis is one of the highest and most differentiated of bodily functions. It is quite complicated and hence one would expect to find many defects and abnormalities in its product (namely, spermatozoa).

Process of Spermatogenesis: Spermatogenesis is, affected adversely by many things, particularly the Roentgen ray, also by environment and the state of health; in debilitated and weakened conditions spermatogenesis ceases or is markedly defective. Diet also has a great influence on the production of the spermatozoa and in animals the season is a very important factor. In man, however, there is no definite breeding season, as is proved by the fact that the same number of babies is born each month of the year. All these factors influence spermatogenesis in a destructive way. To influence spermatogenesis in

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a constructive way, one should investigate all these factors and correct whatever is wrong with any of them. There is much clinical and experimental evidence that destruction of the pituitary, particularly the anterior lobe, causes a sexual nondevelopment; also that suprarenal tumors cause marked sexual precocity. From these data it has been considered worth while to give patients with absence of spermatozoa and no obstructive lesion, and with weak or imperfectly developed spermatozoa, desiccated anterior lobe of the pituitary and desiccated suprarenal gland, particularly the cortex. In three cases in which there was complete absence of spermatozoa with very small hard testicles, spermatozoa were not produced in the semen by this therapy. In one case, that of Mr. D., in which there were few spermatozoa, and what few were present had large heads and no motion, there was a marked improvement following the administration of 40 grains of anterior lobe of the pituitary and 12 grains of desiccated suprarenal daily for one week. The second week there was an improvement over the first week. The third week the conditions were the same as at the end of the second week. At the present time (six months) the condition is approximately normal as regards morphology; the spermatozoa are slightly decreased in number and the sperms have about one half to two thirds of the normal motility and have normal staining reactions. As a matter of fact most of our clinical examinations of semen consist simply of determining the presence or absence of spermatozoa; and if present, if they are motile, and do not include careful detailed examination of the rate of movement, morphology, staining reactions and structure of the sperm. Clinically these cases are of two types, the cases in which there is absolute failure of spermatogenesis and those that show defective spermatogenesis. The first type show azoospermia, but give no history of any testicular disease or injury and on examination show a small, hard testicle with a normal epididymis. I have treated these patients with dry anterior lobe of the pituitary and suprarenal cortex, but as yet these dried glands have failed of result. I now have one of these patients on six fresh glands daily to see if we can obtain a result with the fresh gland.

Early in this work with sterility I was struck with the number of cases presented in which both the husband and the wife stated that they had been examined and were all right. On reexamination it was found that the wife was gynecologically normal, but the semen of the husband contained sperm that on careful examination showed numerous defects. The motility was much reduced and in some was practically absent. The duration of the motility was materially shortened, from a normal of five to six hours down to a few minutes. The character of the motility was changed. In normal sperm one to two hours old practically every sperm has a progressive movement. In these specimens it was noted that many of the sperms had no motion at all, many had a lashing to and fro motion, but progressed very little, while a few only had a slow progressive movement taking as high as thirty-two seconds to cross the one sixth field with No. 1 eye piece, as compared to a normal of about eight or nine seconds. Likewise the morphology may be markedly altered. The following types of semen have been observed: 1. The heads may be about twice as large as normal and may take the pink of the Jenner stain; frequently the neck and tail stain blue. This picture is frequently given by sperm from the vagina one or two hours after intercourse. 2. There may be sperm with a U-shaped tail and normal head and always motionless. 3. We have the wryneck sperm usually with considerable motion. This type has been found in one of my sac cases practically constantly. 4. There may be a large head stained blue with a very thick neck piece and a short tail with slight motion.

Motility of the Sperm: In examining a specimen of semen as to the motility of the sperm there are several factors that should be considered: (1) the time that has elapsed since the semen was ejaculated; (2) the conditions under which it has been kept, and (3) the viscosity of the semen.

In a normal semen one to two hours old and kept either at body temperature or around 60 or 70 degrees practically every sperm should be motile; most of them will be progressing, some few will simply be moving in situ or making little progress. If the semen is markedly clotted, the progressive motion will be much slower, but the attempts at progression and the movement in situ will be very active. As time goes on and the clot thins, the progressive motion will become more and more active, so that a sperm that would take ten seconds to cross the one sixth field will cross it in from six to eight seconds. From now on one will notice more and more sperm that have ceased to progress, showing a backward and forward movement only, and even this motion gradually becomes less and less and finally ceases.

Coincidentally with these changes, the general rate of progressive movement lessens, and we have in the picture many motionless sperms, many moving in situ, and a few actively progressing. In from five to ten hours in normal cases, depending on external conditions, all movement ceases. In the specimens which I have considered to be weak spermatozoa, we find many absolutely motionless and at the end of from one to two hours some few only slightly moving, and a few that will have various grades of motion up to approximately the normal. In other words, the motility of the spermatozoa grades from normal to those that show absolutely no motion at all. The weakest case I have encountered with any movement at all was of spermatozoa which was absolutely motionless at the end of one hour after intercourse; at the end of one-half hour there was some slight motion and at the end of three quarters of an hour there was very slight motion. The semen in this case was examined many times and these conditions were always observed; careful account of the time of ejaculation was taken in each instance and the spermatozoa transported in an ideal and constant manner.

The normal rate of movement (always timing the fastest sperms) across the one sixth field No. 1 eye piece is as follows: In semen two and one-half hours old on a cold, rainy spring day at room temperature the speed was 6, 12, 8, 14, 6, 20, 8, 20, 16, 6, 8, 8, 26, 14, 10, 4, 8, 14, 12, 16 seconds. The same semen three hours and ten minutes old showed none motionless, few moving in situ, and the following speeds: 14, 18, 16, 19, 10, 18, 12, 14, 10, 12; 12, 10, 13, 16, 18, 16, 12, 14 seconds. The same semen five hours old shows many motionless sperms approximating one half as many just moving to and fro and not progressing and those that were progressing gave the following speeds: 18, 8, 15, 14, 14, 8, 18, 10, 11, 15, 12, 24, 22, 18, 18. The same semen nine and one-half hours old showed two sperms with their tails moving.

Cases Showing Decreased Motility: Mr. B., electrician, denied any testicular disease. Examination showed the semen deficient in coagulating properties and the spermatozoa took an average of twenty-three seconds to cross the field at one examination, thirty-two seconds in another.

Mr. D., first examination, showed a few spermatozoa with large heads and absolutely no motion. After taking pituitary gland for about one month examination five months later gave the following findings: Spermatozoa numerous, semen 8 c.c. in amount, specimen one and one-half hours old showed as the speeds of the spermatozoa 18, 36, 10, 14, 15; two hours old 12, 15, 10, 16, 18, 20. In four hours all motion had ceased. It was noted with each examination that there were many spermatozoa that were absolutely motionless.

Mr. T., millinery salesman, small man, not particularly robust. Semen one and one-half hours old showed slight coagulating properties. The spermatozoa took the following time to cross the field: 14, 26, 17, 28, 30 seconds.

I have noted that many of these cases of weak spermatozoa show slight malformations of the urethra and testicles, such as hypospadias and nondescended testicles of slight degree.

In this connection Cole's experiments with alcoholized sperm are of marked interest, namely, a female rabbit was bred to an alcoholized male and immediately afterward was bred to a normal male, using different breeds so that the young of the two males could be easily identified. All of the young born were from the normal male. When the alcoholized male was used alone, impregnation took place, evidently the alcohol diminished the motility of the spermatozoa, so that the normal spermatozoa reached and impregnated the ova before the alcoholized sperms arrived; but if the alcoholized ones were given time enough to reach the ova, they were capable of impregnation.

Absolute Failure of, or Imperfect Development of, the Essential Female Elements: We cannot obtain the ova for direct examination and can only infer from symptoms and signs that ovulation is lacking or imperfect. (See under diagnosis of tubal obstructions.) Defective development of the uterus can be determined by proper gynecologic examination.

Secretions: The normal secretions of the vagina are acid and the secretions of the cervix are alkaline. Secretions can affect the spermatozoa in two ways: either the normal secretions can be changed in such a manner that they are destructive to spermatozoa or the blood serum of the individual may be lytic for the particular spermatozoa that are introduced into the vagina, in the same manner that some blood hemolyzes other blood after the operation of direct transfusion.

Destructive secretions can be diagnosed by one of two methods: Huhner's cervical test, or by mixing the semen and the secretions from the vagina, cervix and uterine fundus on different slides and observing the motility of the spermatozoa from time to time. The cervical test is carried out as follows: The couple have intercourse in the normal manner and the wife comes to the office one hour afterward. Normally there should be motion in the spermatozoa in the vagina, which are protected from the direct action of the vaginal secretions by the coagulating properties of the semen. The spermatozoa that are intimately mixed with the vaginal secretions are practically always dead at this time. Spermatozoa at this time obtained from the cervix normally show very active motion. If the vaginal secretions are excessively destructive to the spermatozoa, or if the spermatozoa are weak and the secretions are normal at the end of one to two hours, most of the spermatozoa in the vagina are dead. To determine the lytic action of blood serum on the spermatozoa, simply mix the blood serum of the wife with the semen to be examined and observe the motility of the spermatozoa from time to time. Normally, motion should persist for several hours. Alien blood serum kills spermatozoa in a few minutes. In one of my cases blood serum of the wife killed the spermatozoa of the husband in a few moments, whereas controls in other serums showed the spermatozoa to move normally and other spermatozoa in the wife's serum moved for several hours. This patient was treated with antispermatoxic serum prepared after the method of Metchnikoff. As yet there has been no pregnancy. Excessive acidity of the vaginal secretion is treated by an alkaline douche or by direct uterine insemination.

Treatment of Weak Sperm Cases: As the vaginal secretions normally are quite destructive to spermatozoa and as the distance from the uterine fundus to the fallopian tube is much less than from the vagina to the tube it seems rational to think that if these weak spermatozoa were placed directly into the uterine fundus they would have a much better chance of reaching the ovum and impregnating it than if they are thrown free into the vagina, as in normal intercourse; consequently, the best treatment for these weak sperm cases is the direct injection of the spermatozoa (uncontaminated by mixture of vaginal secretions) into the uterine fundus. The best time to perform this operation is a few days before or a few days after the menstrual flow. If done before, time should be allowed for the spermatozoa to reach the fallopian tubes before the menstrual flow commences. If performed after the menses, the sooner after the cessation of the menstrual flow the better. For this procedure it is necessary to obtain the semen as free from bacterial contamination as possible; hence one instructs the husband to thoroughly wash the penis with soap and water and thoroughly clean the folds of the preputial cavity. The condom is rolled up and boiled and then applied to the penis. After intercourse the condom is removed, a knot tied in the top and it is placed in a Dewar flask, corked and brought to the office. In the Dewar flask the spermatozoa should be very actively motile at the end of two to three hours.

The patient is now placed on the table in Sims' position, the cervix pulled down, the impregnating catheter passed for a distance of 1¾ to 2 inches into the uterus and then from 0.1 to 0.5 c.c. of semen are injected into the uterine cavity. The catheter is withdrawn, the patient rests for ten or twenty minutes and then can get up and go home.

CONCLUSIONS

Many cases of sterility attributed to the woman are due to weak spermatozoa.

This type of case can be diagnosed by careful examination of the semen, as has been described in the foregoing.

The cause of sterility is as often in the male as in the female, if not oftener.

Treatment depends entirely on the cause.

Obstructive cases, male or female, are operative.

Weak sperm cases would indicate direct uterine insemination and glandular therapy, diet, modes of life, etc.

Secretion cases necessitate appropriate therapy to check or modify the destructive secretions.

Nonproduction of the essential elements, namely, spermatozoa or ova, would indicate glandular therapy.

ABSTRACT OF DISCUSSION

Dr. W. C. Quinby, Baltimore: We know little about the physicochemistry of spermatogenesis; and, as suggested, the question of the relation of the chemical environment to motility of the spermatozoon is a very important one. We may learn in the future that by changing either the reaction or the viscosity of the surrounding medium, it may be possible to prolong the life and activity of the spermatozoa. My own experience with sterility has been confined almost entirely to the mechanical or obstructive type, and I should like to mention, besides those obstructions which Dr. Lespinasse has outlined, some instances in which the obstruction to the seminal passages is either in the ampulla of the vas, or even possibly in the ejaculatory duct. I am sure that we are going to be able in the future to perform various plastic operations in these regions with a fair chance of restoring patency. In regard to weak motility of the spermatozoa, or their absence without previous disease as a cause, there is in the literature a great deal which speaks for the importance of the so-called ductless gland therapy. There have been several very suggestive observations in regard to infantilism in school boys. Some of the big English schools have been tabulated, and out of several thousand boys those showing tardy puberty were found to be very markedly benefited by the administration of thyroid extract. Its use is purely empirical, but in these cases thyroid extract caused descent of the testes and the normal development of those manifestations which we call the secondary sexual characteristics which had been lacking previously.

Dr. H. L. Sanford, Cleveland: I have not studied the pathology of the semen as thoroughly as has Dr. Lespinasse. I have done some plastic work on dogs, but I have never tried Dr. Lespinasse's sack operation. I would like to ask Dr. Lespinasse to give us a little of his technic of uterine insemination. I have tried it in several cases, and in two or three instances pregnancy has resulted. I do not know whether it was a result of my work or whether it was Providence.

Dr. A. L. Wolbarst, New York: The genito-urinary man who is treating sterility in the male ought also to know something about the sterile woman in the case. That is to say, it is not enough to know that a man has sperm in his emission. He must have more than that. He must have a sperm that will survive the vaginal secretion, and that is one of the things we overlook when we examine a specimen in a condom. I have examined any number of specimens in condom, and while I find that the spermatozoa may be apparently normal, when I study that same spermatic secretion in the vagina of the woman, the behavior of those spermatozoa is very different. Spermatozoa may survive in a condom in a warm temperature for five, six or eight hours; and the spermatozoa of the same person, when the secretion is very acid, may not survive in the vagina more than half an hour or twenty minutes or ten minutes. They vary considerably. I examine the vaginal and cervical secretions before coitus in order to determine whether they are acid or alkaline, then I examine the spermatic secretion immediately after coitus, ten minutes after coitus, twenty minutes after coitus, and an hour after coitus, and the amount of information obtained in these cases is sometimes startling. You will sometimes find very active spermatozoa soon after they are deposited in the vagina, but within an hour the great majority are dead. The inference to be drawn is very clear, that the man is not at fault—or rather, to put it another way, his sperma are not at fault, because they are deposited in the wrong kind of vagina. I imagine that is why it happens that a man and woman may be sterile when living together, and then in subsequent marriages both the man and the woman may be fertile, because the spermatozoa are deposited in the proper soil. Just what effect the vaginal secretions have on the sperm is not clearly understood. Broadly speaking, a very acid vaginal secretion destroys the sperm, but how to make an acid vaginal secretion alkaline the gynecologists do not seem to know. They say if you will irrigate with sodium bicarbonate it will make the secretion of the vagina alkaline. I find that that is not at all effective. The vagina is not a test tube, any more than the male urethra is a test tube, and something must be done by the gynecologists to prepare the soil for the spermatozoa by restoring the acid vaginal secretion to its normal character. Probably in the normal case the spermatozoa have sufficient inherent vitality to overcome the hyperacid secretion, or better still, in the normal case they are deposited right in the mouth of the cervix and thereby escape the vaginal secretion entirely. In these weak cases their action must be accelerated by improving the secretion of the vagina. The second point that is often overlooked in connection with sterility is this: In doing the Martin operation of the epididymovasotomy we are apt to place too much dependence on the finding of the spermatozoa in the testicle. Assuming that you are ready to make your anastomosis, you will find very often that the vas deferens itself is choked up with cheesy secretion undefinable under the microscope, and which I understand Dr. Martin himself has observed but has been unable to determine the nature of. I have found the vas occluded so that it has been absolutely impossible for a fine filiform to pass into it for any appreciable distance. I do not know that this has ever been studied, nor do I know how it can be determined previous to operation. But I do know that in trying to pass a probe or in trying to inject argyrol from the point of anastomosis to the vesicles we fail because of this cheesy stuff, and at the point of incision you can scoop it out of the vas with a fine spoon. The thing to do in these cases would be to try to curet the vas deferens and empty it of this substance if it could be done.

Dr. Charles M. McKenna, Chicago: The question raised by Dr. Wolbarst can be answered in the following manner: Strictures of the vas can be treated in the same way that strictures of the urethra are treated, viz., by dilation. This can be done by making a small incision in the vas below the external inguinal ring and passing a fine piano wire through the narrow portion of the vas until the vas has reached its normal capacity. If necessary the piano wire can be left in the vas from five to fourteen days. By this time, the lumen will be of normal size. I also believe that this same treatment can be carried out in strictures of the fallopian tube when the woman is sterile. I have sounded the fallopian tube and women have become pregnant afterward, while in the case of men, living spermatozoa have been found when they were sterile before.

Dr. J. Leland Boogher, St. Louis: Sir Henry Thompson fifty or seventy-five years ago succeeded in producing a living English lord by injecting the uterus of a woman after copulation. I believe it to be the duty of every genito-urinary man to examine the woman in these cases where sterility is pronounced and the desire for children is great. It is not always possible for the uterus to be in a position to receive the spermatozoa, even when they are living and motile, which depends on the prostatic secretion. Displacements of the uterus frequently prevent conception. Secretions are accumulated in the uterus that are antagonistic to the development and growth and inception of the spermatozoa.

Dr. Louis E. Schmidt, Chicago: It is practically a weekly occurrence for me to see some one who is unable to have children. Only recently I have seen several individuals of unusual physique and manly appearance, with absolutely no history of venereal disease. In fact, they had never had intercourse previous to marriage. Both these gentlemen were examined by our foremost physicians previous to marriage and pronounced absolutely well and fit for marriage. I am under the impression that the general medical man does not take this functional condition into account. He simply looks them over in a general way, as far as medical matters are concerned, and advises the individual to get married. After he has been married a few years and there is no offspring there is always trouble. I can recall numerous instances like that. In connection with the examination of semen I am not in accord with the statement that, in the absence of spermatozoa, most of these cases will fall into the so-called obstructive type. I can recall offhand dozens and dozens of cases in which I am absolutely positive no obstructive condition ever existed, and where the elements present were practically only prostatic in character. I am under the impression that in all those instances there is some change or some cause for the lack of formation of the spermatozoa, and in these cases up to the present time treatment of all kinds has been of no avail. For the past four or five years or longer I have tried these different methods, but with absolutely no sign of change in any of these cases.

Dr. V. D. Lespinasse, Chicago: In reply to Dr. Wolbarst I would say that the spermatozoa are protected from the vaginal secretion by the physiologic clotting of the semen, and not, I think, by any change in the reaction of the vaginal secretions. The semen deposited in the vagina clots around the cervix, forming a sort of cup around the os, and from there the spermatozoa get into the cervix and into the uterus. In cases in which the spermatozoa are intimately mixed with vaginal secretions the spermatozoa are killed quickly as a rule in one hour; but if you obtain a mass of semen and get the spermatozoa from the center, you will find that they will be normally motile even two or three hours after intercourse. The yellowish white material that I spoke of I have observed in the vas several times. The first time I saw it I thought it was normal sperm. It is very deceptive. When the vas is exposed it appears as if the vas was distended with normal sperm. When you put this material under the microscope you see little globules that look like fat, but they do not take the sudan III and osmic acid stain. Just before leaving Chicago yesterday I submitted some of my slides of this material to Prof. F. R. Zeit, and he was not willing to express an opinion as to the exact character of these globules. He would not say it was débris, but thought it was some degenerative product. When you find this material you can be sure there is an obstruction further down in the vas, and the material itself is not so thick but that it will come through on intercourse. In regard to the technic of uterine insemination, there are two or three points about it. The first is, you cannot inject very much into the uterus. The second is, you must use a very soft and very small catheter so that you can deposit not to exceed five or six minims, better about three, in the uterine fundus. If you do not have a small catheter you will not deposit any semen in the uterus or you will deposit too much, and the woman will have a very severe colic. Before insemination the presence and motility of the spermatozoa should be determined. We have tried to standardize this work on an hour. Let the couple have intercourse at home, and then get right up and come to the office. It is remarkable the difference in the motility of the sperm that you will find. Just recently I had a case in which I examined a woman who as a young girl had had a tuberculous peritonitis. She is a strong and healthy woman now. The husband is a healthy man with absolutely normally movable sperm. There was a striking difference in the motility of the sperm taken from the vagina and those taken from the cervix at the end of an hour. Those taken from the vagina were barely moving, while the cervical ones had an absolutely normal motility. One little by-product of this work is the length of time of pregnancy. We have had one baby now from this work, and the baby was born 280 days after the insemination, and that checks up with most of the literature of the cases in which they could check it from one intercourse—it runs from 270 to 290 days.

Need for Improvement in Care of Pregnant Women.—According to S. G. Moore (*Med. Press and Circular,* Nov. 15, 1916), who advocates the notification of pregnancy, mothers are dying in excessive numbers just as children died and still die in excessive numbers from preventable causes. The majority of them do not come under the care of a duly qualified and legally registered medical practitioner until their condition is desperate, and until the opportunity of taking measures to prevent catastrophe is overpast. Pregnancy cannot be concealed, and ought not to be concealed, whether it be legitimate or illegitimate, and since it cannot be concealed, what valid objection is there to comply with a provision which has for its sole and exclusive object the welfare of the woman and her baby?

THE OPERATIVE TREATMENT OF CRYPTORCHIDISM *

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The object of this communication is not to discuss the propriety of attempting to place the retained testicle in its proper place in the scrotum, but simply to describe in detail the method we employ to achieve this result. The operation is essentially that described by Bevan, but we feel that many of its details have never been thoroughly discussed, and it is our purpose to describe these. Such a description appears particularly opportune, since we are convinced that practically every testicle can be placed in the scrotum if the operation is carefully performed. Several recent publications describing series of cases of which as many as 30 per cent. have resulted in leaving the testicle within the abdominal cavity seem to call for some such detailed description.

Let us preface our description with a few statements that appear to us axiomatic, and on which we justify the employment of an operation.

1. The testicle retained within the abdomen is doubtless much more liable to teratomatous change than the normally situated testicle. The testicle retained in the inguinal region perhaps shows a similar though lesser liability to malignant disease.

2. Yet we find no evidence that the testicle which has been placed in the scrotum by operation is unusually subject to teratoma.

3. The retained testicle has often lost its spermatogenetic function either by congenital deformity and obliteration of the epididymal tube, or by atrophy of the spermatogenic elements in the testicle itself. Such atrophy is not likely to occur before puberty in an organ otherwise normal and with normal epididymis only.

4. Hence there is every reason to operate at about the time of puberty in order to forestall atrophy. If the operation discloses grave deformity and separation of the epididymis from the testicle, the occlusion of the duct may be taken for granted. Yet this is no reason for not proceeding with the operation, since the testicle is doubtless safer from teratomatous malignant change and is certainly more decorative when in the bottom of the scrotum.

5. Almost every retained testicle is associated with either clinical hernia or with a pouching of the peritoneum, which predisposes the patient to hernia. The operation thus indicated for the cure of hernia is somewhat prolonged but not gravely complicated by the effort to replace the testicle in the bottom of the scrotum.

6. The safety of the operation is attested not only by our own series of thirty-three operations with no deaths, but also by similar statistics from other authorities.

7. Unless operation is called for by grave hernia at an early age it is safer not to attempt the procedure much before puberty, for the vessels are so small and delicate that they are likely to be torn unless the operator is unusually expert.

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TECHNIC OF THE OPERATION

The skin incision is made as for inguinal hernia, extending obliquely from a point over the internal adbominal ring to a point about 1 inch below the external abdominal ring, the incision lying parallel to and about a finger's breadth above Poupart's ligament.

As in the operation for hernia the dissection is carried down to the external oblique aponeurosis, which is then split, thus opening the inguinal canal. Until this step has been made no attention is paid to the testicle, for any effort to free this is likely to result in mixing the operator up in a mass of adhesions.

The inguinal canal having been opened, the cremasteric fibers lying over the contents of the canal (cord, testicle, hernia) are picked up and divided between two thumb forceps.

Working within the fascial layer inside of the cremaster the contents of the cord are then separated and delivered as in the operation for hernia.

The hernial sac is now sought for, in the upper part of the canal if necessary, opened and separated by blunt dissection from the spermatic cord.

The testicle is now freed from the gubernaculum and other attachments below it, leaving it attached to the patient only by the spermatic cord.

Now comes the delicate part of the operation, the lengthening of the vas and vessels. In a minority of cases this can most readily be done by treating the spermatic cord as if one were about to operate for varicocele or for division of the vas. First, the muscular and fascial compartment in which the pampiniform plexus lies is incised longitudinally and the veins picked out. Then the smaller compartment, in which lies the vas with its vessels, is similarly opened and the vas picked out. The spermatic cord is now represented by three separate bundles, the pampiniform plexus, the vas and its vessels, and the musculofascial envelope. This last is divided and its ends carefully stripped back over the vessels and vas, the exuberant tissue being cut away. This dissection is carried with especial care up toward the abdominal cavity until the point is reached at which the vas distinctly separates in its intra-abdominal course from the pampiniform plexus. It will now usually be found that there is ample length of spermatic cord to permit the testicle to descend well into the bottom of the scrotum without any tension whatsoever.

Certain exceptions may be noted, however, as follows:

1. The younger the patient and the smaller the testicle, the less developed is the cord likely to be and the more intertwined with muscular and fascial fibers, so that in such cases (and they constitute the majority) it is impossible to make a clean separation of the vascular elements from the fascial capsule without tearing many and perhaps all of the vessels. It will be found in such cases that fascial separation by snipping may be made here and there along the vessels and that a great deal of slack may be obtained by separation within the abdomen.

2. If the testicle is originally found near the internal ring or within the abdomen, it is usually necessary to divide the pampiniform plexus, although atrophy will doubtless result from this, in order to bring the testicle down to the bottom of the scrotum.

3. If the testicle is at or near the external abdominal ring the slack obtained in the veins is usually greater than that obtained in the vas, so that there is no reason to divide the pampiniform plexus.

4. If, in spite of a deep dissection within the pelvis, the vas remains too short, about 1 cm. may be gained by displacing it to the inner side of the internal epigastric vessels. It has been suggested that the vessels be cut for this purpose, but we have found it perfectly feasible to perforate the fascia to the inner side of the internal epigastric vessels without cutting them, and to slip the testicle through the opening thus made. As far as we are aware no direct hernia has resulted from this procedure.

5. Retention of the arterial supply is of utmost importance, and it will sometimes be found that the artery of the vas short circuits, as it were, a loop of the vas itself, so that in order to save the vessel we must omit the unfolding of this loop.

6. In four cases all of the vascular supply of the testicle was apparently destroyed, only the vas remaining to connect it with the body. Yet in only one of these cases did sloughing result. The others were considerably atrophied already and there is no evidence that they atrophied any further.

The cord having thus been lengthened, the tunica vaginalis, which has doubtless already been opened, is inverted as for the operation of hydrocele.

With two fingers the scrotum is opened down to its very base for the purpose of receiving the testicle. This simple procedure would seem scarcely worth insisting on did we not know that one of the most experienced hernia operators in New York City has confessed that he has in the past placed almost 50 per cent. of his retained testicles in the thigh instead of in the scrotum. Apparently his surgical modesty was such as to forbid him from looking to see where he was putting the gland. The dissection of the scrotum must be carried rather toward the perineum so as to get to the bottom of the sac and deeply enough so as to open the fascia right to the skin.

The scrotum is now inverted on a finger so that it is turned inside out and brought up into the inguinal incision. With a straight needle and a fine suture of chromic gut the testicle itself is then sutured to the bottom of the scrotum. Two precautions are here necessary. In the first place the suture must be placed in the testicle itself, for if the surrounding fascia is sutured there is so much laxity that the testicle may not be drawn down into the scrotum. It is obviously improper to suture the epididymis to the scrotum for fear of obstructing the excretory duct, whereas a suture in the testicle itself does no harm. The second precaution is to avoid very carefully any torsion of the testicle.

With the finger withdrawn, the testicle enters the scrotum and is pulled down into place. There it should lie without any tension whatsoever at least well below the pubic bone, preferably so low as to be opposite its fellow. If the testicle does not lie spontaneously in good position it is our belief that no amount of suturing about the neck of the sack or suturing the testicle itself to the thigh will better the situation.

The wound is now closed in the usual manner, beginning with closure of the hernial sac and then passing to closure of the inguinal canal. It has not been our custom to transplant the cord as in the usual Bassini operation.

It is noteworthy that three patients have come for a second operation, one a personal failure, the other two failures at other hands. Each of the three was reduced with no real difficulty although the separation of adhesions considerably prolonged the operation. The ultimate result was just as good as that obtained in primary cases.

RESULTS

We have operated on forty-two testicles, twenty-two right, nineteen left, nine bilateral. The average age of the patient was 19, the youngest was 5, the oldest 33. Five of the patients were between the ages of 5 and 9 years; all had excellent results excepting one operated on in 1907. He was 9 years of age at the time of operation, and both of his testicles were in the inguinal canal. They were placed in the scrotum and sutured to the thigh, but they broke away and retracted into the inguinal canal again. Eight years later the right one could not be felt, the left one lay near the external ring and was, by our present method of operating, readily placed in the scrotum, giving a good result. One other patient, aged 16, had an extremely bad result. The right testicle sloughed, the left retracted over the pubes. In one other case the testicle is not in good position, being only just below the pubes and in danger of injury. All of the other testicles operated on are in excellent position, that is, they hang free in the scrotum, although many of them are rather in the upper part of this sac. On the other hand, a few of the testicles operated on are lower in the scrotum than their unoperated fellows.

We have three times operated on testicles that have been badly operated on before. All three operations were complete successes.

Before operation three of the testicles lay in the abdomen, thirteen in the inguinal canal, twenty-three at or about the external ring. Hernia was noted in all but eight cases.

During the operation the pampiniform plexus of veins was cut to reduce all of the abdominal testicles, one half of the inguinal ones, and 30 per cent. of those at the external inguinal ring. Most of these operations, however, were performed before we had perfected our present technic. With the present technic we have only once had to cut the vessels of any testicle that lay outside the abdominal cavity. Including even our earliest cases, however, we claim 88 per cent. good results, and no mortality.

We have little to say about ultimate results. A number of our cases have been followed several years, and we are fully satisfied that a patient whose testicle is in good position a month after operation is safe from any retraction of that organ into the inguinal canal. We have no observations of any value on the spermatogenetic function in bilateral cases after operation. None of the testicles operated on by us showed, either at the time of operation or subsequently, any evidence of neoplasm.

ABSTRACT OF DISCUSSION

Dr. John A. Hawkins, Pittsburgh: There is no question that moving pictures such as Dr. Keyes has shown illustrating nephrolithotomy and suprapubic cryptorchidism are of inestimable value and will be of more value as they are worked out. In Pittsburgh, Dr. C. L. Bradford about nine months ago started to take some of these pictures, and kept it up for three or four months. I have an idea that he became bankrupt and had to quit. The expense is very great. It is also rather hard on the operator. The lamps used create an intense heat, which is all right for cold weather, but in hot weather it is awful.

DIVERTICULUM OF THE URETHRA *

SIMON ENGLANDER, M.D.
CLEVELAND

Diverticula of the urethra, whether congenital or acquired, are of very rare occurrence, Ehrlich[1] having reported but seventy cases all told up to and including the year 1908. Haberern[2] three years later conceded that but twenty cases found in literature up to that time were authentic cases of congenital diverticula, the rest being of the acquired type.

Of the two cases mentioned in this paper, Case 1 probably represents the acquired type, while Case 2 probably represents the congenital type as described by Grünfeld[3] and De Keersmaecker, who have seen six or seven similar cases and believe they are of the congenital variety. These authors have described cases of small diverticula in the bulbous or prostatic urethra which they accidentally discovered during a urethroscopic examination for the purpose of discovering the cause of a persistent urethral discharge. There was, as in our case, no stricture or other obstruction present, nor was there any history of trauma, and the writers think that they are due to a defect in the urethral groove.

Case 1.—H. W., aged 30, referred by Dr. W. O. Osborne, had a mucopurulent discharge of several years' standing, and wanted to know whether the discharge was infectious. Externally the genitalia presented no abnormality, no tumors, scars, etc., being evident. At about the junction of the membranous and prostatic portion a No. 28 F. sound met some resistance, but was finally passed into the bladder. Cystoscopy revealed bladder capacity good, mucous membrane apparently normal, except at the trigon, where it seemed to be slightly congested. The sphincter was regular. Anterior urethroscopy, except for a very pale mucosa, was also negative. Posturethroscopy with the Wossidlo showed a cavity on the right side in the membranous urethra, about 1.5 cm. high by 0.5 cm. in breadth. Catheterizing this opening did not produce any pus. The patient was seen only once and has not been heard of since.

I believe that the diverticulum in this case was due to passage of sounds, was a false passage in fact, made while attempting dilation of the stricture.

Case 2.—H. L., aged 32, referred by Dr. W. G. Mussun, complained of discharge of two years' standing. There were no abnormalities, and no tumor visible or palpable externally. Cystoscopy was negative. Anterior urethroscopy showed a very pale mucous membrane, studded with many inflamed, gaping morgagnian crypts.

Posturethroscopy with the Wossidlo irrigating urethroscope also shows a chronic fibrous condition of the mucous membrane; the colliculus was small and pale. Just anterior and to the left of the colliculus, a small cleft presented itself transversely across the urethra, which on treatment with the Geraghty syringe could be catheterized to the depth of about ⅜ inch. Its walls seemed rather resilient, as they gave way under the pressure of the irrigating fluid. Its capacity was very small, but could not be determined accurately. This case was very similar to the cases described by Grünfeld and De Keersmaecker, and later quoted in this paper.

The patient was treated by instillations of silver nitrate up to 5 per cent. into the diverticulum, and also by anterior and posterior dilations, and cauterization of the morgagnian crypts, but with practically no improvement in his condition.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Ehrlich: Zur Kasuistik und behandlung der Divertikel, Beitr. z. klin. Chir., 1908, **59**, 193.

[2] Haberern: Kongenital Divertikel der Urethra, Ztschr. f. Urol., 1911, **41**, 734.

[3] Grünfeld: Zur Lehre von der Divertikula der Harnröhre, Halbmonatschr. f. Haut. u. Harnkr., 1915.

Congenital diverticula present themselves usually as more of less spherical saclike dilatations of the urethra usually just behind the glans and always on the lower surface of the penis. They are occasionally found at the penoscrotal angle, and may vary greatly in size from that of a pea, or they may take in the whole area from the scrotum to the glans penis. In a case reported by Hendriksz, the capacity of the diverticulum was greater than that of the bladder. The orifice of communication with the urethra may be very large, or it may be so small that no urine whatever enters it.

No unanimity of opinion exists as to the etiology of congenital diverticulum of the urethra. Voillemier believes diverticular formation due to partial lack of development of the spongy tissue of the urethra, and believes that it is almost identical with hypospadias formation in which there is in addition a defect in the skin. De Paoli, likewise, is of the opinion that there is a primary atrophy and therefore an unresisting corpus spongiosum which allows of the dilatation of the urethra. The most plausible and simple theory is that of Kaufmann, who ascribes the condition to the failure of the distal and proximal end of the urethra to unite at the time when the urine begins to flow out of the bladder. The proximal end of the urethra becomes dilated, and when finally the union is made the dilatation remains as a diverticulum. This theory explains very satisfactorily the frequent occurrence of congenital diverticula in the anterior urethra, and as further proof of his theory he cites the fact that the diverticula are immediately behind the glans penis.

Dittel believes that diverticular formation is really a dilatation of the wall of the urethra, and attempts to prove this by microscopic findings, which show a mucous membrane identical with that part of the urethra from which it springs. He does not consider the absence of the corpus spongiosum as opposed to his theory, as he believes this is easily explained by a pressure atrophy or by inflammation within the diverticulum.

Bokay believes that diverticula are simply dilatations of the normal urethra.

Of the French school, Dr. Durand, quoted by Cabezas,[4] who reports two personal cases, believes that the condition is not one of simple arrested development but is more complex and should be considered as a disturbance of development, for microscopically he found the corpus spongiosum was perfectly formed, though varying in thickness, and covered the entire dilatation of the mucosa; consequently this lining does not form a simple hernia through an opening in the corpus spongiosum.

Cabezas further goes on to say that in congenital diverticulum not only is the mucous membrane of the diverticulum continuous with that of the urethra but histologically the structure is the same as that part of the urethra from which it springs.

Of American authors S. H. Watts[5] is the only one who has written extensively on the subject. He cites in full all cases of congenital diverticula reported up to 1906, and believes that at least a very fair proportion of them can be explained by some form of obstruction to the urine in fetal life, such as valve formation, as described by Englisch, congenital strictures, narrowing of the preputial orifice and adhesions of the prepuce to the external meatus.

Von Grigolow believes that diverticula are due to dilatations of accessory periureteral ducts which are themselves due to partial defects of the genital gutter. When these ducts empty at a very acute angle into the urethra, they form valvelike obstructions which are often responsible for considerable difficulty in emptying the diverticulum in postnatal life.

Suter[6] too explains the formation of diverticula by some congenital defect in the genital gutter. In reviewing the literature up to 1908 he found only four cases which had been carefully examined histologically and presented a similarity in structure. The lining membrane in these cases presented a papillary connective tissue layer and a stratified epithelial layer, which resembled the structure of the skin to a marked degree. There was no spongiosum present surrounding the sac. Suter's personal case presents a like structure; in fact, so marked was the line of demarcation between the tough white wall of the diverticulum from that of the bluish soft unresisting corpus spongiosum that there was no difficulty in separating the two, and removal of the diverticulum presented no difficulty. He therefore concludes that from a histologic standpoint, at least, congenital diverticula are not simple dilatations of the urethral wall but must be looked on as epidermal pockets that communicate with the inferior wall of the urethra. While he concedes that the diverticula are usually in the anterior urethra and often immediately behind the glans penis, he insists that they communicate with the urethra oftentimes at a point a considerable distance behind the glans, and were Kaufmann's theory correct, the orifice of the diverticulum should be a very short distance behind the glans.

Embryologically he explains the defect in this way: The urethra takes its origin from the genital furrow which, covered with epidermal epithelium, forces its way into the position which it is to occupy later as the urethral canal. This canal, at first partially open, has at this time a communicating bridge of epithelium with the external surface. The epithelium of the canal becomes cylindric; that of the communicating epithelial bridge remains squamous. Normally the walls of the canal coalesce and become the urethra, and the epithelial bridge is absorbed. It is the persistence of this communicating epithelial bridge that Suter believes is the cause of diverticular formation or of dermoid.

SYMPTOMS

The first symptom, which is noticed in infancy, usually is the presence of a tumor and a disturbance in micturition. Dittel, however, reports a case of a man of 57, whose symptoms had begun but a year or two before, yet histologic examination of the sac led him to believe the diverticulum of congenital origin. There is an increased frequency, and as part of the urine is diverted into the sac, a stream lessened both in force and caliber; and as the diverticulum becomes further distended it encroaches more and more on the lumen of the urethra, causing an increased obstruction to the urinary stream. The rapidity with which a diverticulum fills depends on the size of the orifice and to some extent also whether the opening is valvelike, with the free edge of the valve pointing toward the bladder. In most cases, however, the diverticulum empties itself slowly drop by drop, after the urinary act is completed, and does not give rise to a great deal of trouble unless the sac becomes infected. Not infrequently it becomes necessary to empty the sac by manual compression, especially when the opening is very small; or a valve interferes with the emptying of the diverticulum, causing dribbling of urine, and when communicating with the posterior urethra may cause an incontinence. Laugier's patient voided normally, but the diverticulum filled first, and then the urinary stream commenced. Should infection occur in the sac, the obstructive factors may make themselves much more evident and may become very acute and cause considerable apprehension as to life, or the condition may become chronic and may be the cause of the usual sequel of a long continued urinary obstruction, such as cystitis, hydronephrosis, pyelitis, pyelonephritis, etc. Sudden urinary obstruction due to diverticular formation may follow excesses in drinking or in venery.

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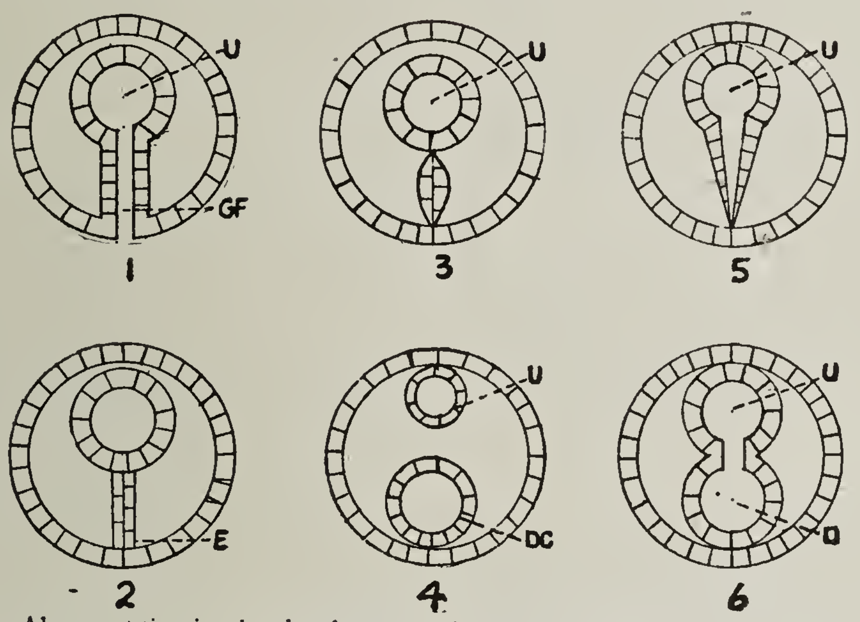
[4] Cabezas: Congenital Dilatation and Diverticula, with Case Reports, Am. Jour. Urol., 1913; Von Denk über Harnröhren divertikel, Ztschr. f. Urol., 1912, **6**, 621.

[5] Watts: Urethral Diverticula in the Male. Johns Hopkins Hosp. Rep., 1906.

[6] Suter: Ein Beitrag zur Histologie und Genese der congenitalen Divertikel der m. Harnröhre, Arch. f. klin. Chir., 1908, **87**.

Stone formation is very common in diverticula. It is remarkable how many and how large the stones may be and not cause any serious discomfort. Grube, quoted by Roith,[7] reports a case of diverticula containing 182 stones. In the same paper the author describes his own case of stone in a diverticulum weighing 125 gm. and measuring 6 by 5.5 by 4.5 cm., which to the patient's knowledge had existed since earliest childhood, and up to two years previous (he was now 36) had caused him no trouble whatever. A soft rubber catheter, 20 F., passed by the stone with ease, and except for a little dribbling, for two years past, there was no interference with the urinary stream. It is sometimes of interest to know whether the stone is the causal agent in diverticular formation or vice versa.



Abnormalities in the development of the genital furrow: *U*, urethra; *G F*, genital furrow; *D C*, dermoid cysts; *D*, diverticulum.

Goldberg[8] reports a case of persistent gonorrhea which was finally cured by lavage of a diverticulum the size of a hen's egg in the perineum. The patient may first become aware of the diverticulum when, during an acute gonorrhea which is apparently cured, pus may be expressed at intervals from the urethra and with no reference to the length of time the urine was withheld, or to the time of day, and disappears just as quickly at it came. Occasionally with irrigation under pressure with a Valentine syringe, some of the irrigating fluid may be forced into the diverticulum and cause a tumefaction.

DIAGNOSIS

This is usually easy, for the patients usually come with a characteristic history, that is, the formation of a tumor on the ventral surface of the penis during micturition which gradually decreases in size after the urinary act is completed. Occasionally the swelling is not noticed until infection, whether gonorrheal or otherwise, sets in. Another method is to empty the bladder of its urine, and as the catheter is withdrawn and its eye is opposite the opening of the diverticulum, there is a sudden gush of urine as the sac empties itself. Endoscopic examination, especially under water dilation, will often reveal the opening of the diverticulum. A congenital diverticulum, too, will give some history of urinary disturbance, such as dribbling, straining or even complete obstruction since early infancy or childhood.

The etiology of acquired diverticula is varied and may be due to one of many diverse causes. Dilatations may form on the proximal side of strictures or at the site of postoperative scars. Stagnation of urine may occur, and the weakened unresisting wall may give way, and form diverticula.

Injuries to the urethra, whether accidental or operative, as also fistulas, retention cysts, hematomas or abscesses which burst into the urethra, may be the cause of the formation of diverticula. In the male, retention cysts of Cowper's ducts or abscess formation of Cowper's glands, or chronic inflammatory conditions of the mucous follicles of the urethra, or the bursting of dermoids into the urethra are the most frequent causes. It is evident, therefore, that acquired diverticula may be situated anywhere in the urethra, contrary to the congenital, which are practically always in the anterior portion of the canal.

Careless instrumentation, followed by more or less urinary infiltration, abscess formation, and finally formation of diverticula, is the sequence of events sometimes experienced by the careless worker in the genito-urinary field.

In the same manner, falling astride the perineum may cause formation of diverticula first by secondary stricture formation and diverticula formation behind it; secondly by breaking down of a hematoma and the rupture of the abscess subsequently formed into the urethra, or thirdly by leaving at a traumatized area a locus minoris resistentiae and consequent dilatation and diverticular formation. When calculi obstruct the urethra, they may be an etiologic factor.

According to Watts, in diverticula formed behind strictures, the lining mucosa is always inflamed, often even destroyed, this being due to the hard, friable, almost nonelastic nature of the wall of the urethra behind the stricture. When the diverticulum is due to an abscess formation or following the rupture of a cyst, the lining membrane is either granulation or scar tissue. The mucous membrane of the diverticulum behind a stone is usually smooth and well preserved. In all other respects the acquired resemble the congenital diverticula, that is, in their tendency to stone formation, obstruction to urine, etc.

TREATMENT

For congenital diverticula this consists if possible in removal of the sac over a catheter in the urethra and the sewing of the edges into the canal so far as pos-

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7. Roith: Ein Fall von ungewöhnlich grossem Divertikel der Harnröhre, Beitr. z. klin. Chir., 1908, **74**, 267. Aronstam: Urethral Diverticula and Cul de Sacs, Med. Rec., New York, 1906, **70**, 298.

8. Goldberg: Verhandl. d. deutsch. Gesellsch. f. Urol., 1908, **24**, 622.

sible to restore its normal caliber. Should there be any congenital obstruction such as stricture or valves they must be removed.

In acquired diverticula, the cause, such as stone, must be removed. If the case is a recent one, the removal of the stone will at once cure the condition, while in an older case in which extensive changes have taken place in the wall of the sac, the return to normal will be much slower. Diverticula due to stricture formation are cured by dilatation of the stricture, and owing to the fact that there are marked changes in the wall of the urethra, the restoration of the wall to normal is very slow.

Diverticula due to rupture of dermoid cysts, abscess of Cowper's gland, etc., can as a rule easily be cured by excision of the offending sac.

CONCLUSIONS

Congenital diverticula may be due to any one of several causes, and the theories of epithelial rests advanced by Suter, the theory of defect in or weakened corpus spongiosum as advanced by Kaufmann and others, or the theory of congenital obstruction as advanced by Watts are in the main correct, the various authors encountering a case or cases that they believe prove their contention.

Diverticula may be the cause of persistent urethral discharge, whether specific or otherwise, and sometimes when infected may become a menace to life, may cause serious urinary obstruction, cystitis, pyelitis and pyelonephritis.

While diverticula of the urethra are much rarer than bladder diverticula, and can usually be recognized easily, there are some cases in which there is no tumor evident, and only a casual urethroscopic examination or one for a persistent discharge will discover it.[9]

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ABSTRACT OF DISCUSSION

Dr. F. W. Robbins, Detroit: Through the kindness of Dr. MacGowan I recently saw an interesting case of diverticulum of the urethra. This patient had been treated for stricture of the anterior urethra. The young man had never had any venereal disease whatever, and had been under the care of an irregular physician for some little time. The interesting part was that his symptoms were those of severe stricture of the urethra to the extent that he was obliged to wear a rubber blanket at night to keep the bed from getting wet. We found the diverticulum about an inch from the meatus. After incising the diverticulum and gradually dilating the urethra up to 28 the symptoms subsided. The man had been a great sufferer mentally, but entirely recovered after a diagnosis had been made and proper treatment instituted.

Dr. Arthur B. Cecil, Los Angeles: I had thought that diverticula of the urethra were rather infrequent until I heard the discussion of Dr. Englander's paper. On account of the supposed rarity of the condition the following case might be of interest: A man thirty-six years of age was seen by me in consultation with Dr. McNab, of Los Angeles. He complained of having a stricture and was in severe pain due to retention of urine. A silver catheter was passed into the bladder with ease and emptied about 800 c.c. of urine, but as the catheter passed through the bulbous portion of the urethra there seemed to be pressure against it. Examination of the scrotum showed a rounded sac about as large as an egg which fluctuated on pressure. On turning the beak of the silver catheter downward it could be passed into this sac in the scrotum and when pressure was made on the sac it emptied through the catheter about 80 c.c. of cloudy urine. The opening of the diverticulum was just back of the external sphincter muscle.

Dr. David W. MacKenzie, New York: About a year ago I reported a case of double urethra with a review of the literature. There is no doubt that some of these cases are typical diverticula, but many of them are misplaced periurethral glands with dilated ducts, small paraurethras with one or more openings into the urethra, and the complete double urethas ending in blind pockets. The patient I had last year had a stone in this canal, and when the stone was removed, he started passing his urine through it. He came to our service to have the sinus closed up. On opening the sinus we found a double urethra extending from glans to membranous urethra which we removed en masse. I do not think we can catalog the congenital diverticula as belonging to any one class. They come under true diverticula ducts of misplaced lobes of the prostate and periurethral glands and double urethras.

Dr. Charles M. McKenna, Chicago: Some of those cases are overlooked in the diagnosis. I recall a patient, a man about 27 years of age, who came to me for advice regarding marriage within the next year. He gave a history of gonorrhea of about two years' standing. He had a hypospadias with an opening about one fourth of an inch back of the meatus. I noticed on examination of the urine that the first glass was always cloudy and filled with pus while the second glass was clear. He gave the history of being treated for about two years and could not notice any change. I noticed after irrigation that I could expel pus from the urethra by running my finger along the posterior wall. One day I noticed that the urethra was enlarged at one particular place and on pressure I was able to expel about half a dram of pus. It contained gonococci. The patient was sent to the hospital and the diverticulum cut down on and ligated off; the mucous membrane was examined. It was found to correspond with that of the urethra and gonococci were found in the pus of the diverticulum.

Dr. Simon Englander, Cleveland: I think that the acquired diverticula are a great deal more frequent than the congenital. For this reason I think it depends on one's conception of what a diverticulum is as to which is the more frequent. Just before I came here we had a case in the dispensary. The man had had an operation for a bulbomembranous stricture. You could with the Wossidlo irrigating cystoscope, as well with the Buerger cysto-urethroscope, see a scar in the membranous urethra. The posterior urethra was considerably distorted. Back of the colliculus was an overhanging shelf and under that a diverticulum. Perhaps some would call that a diverticulum and others would not. We did. Since preparing this paper I have seen five or six of these cases, all of which I think were acquired rather than congenital, because there is a history of something having happened, traumatic or otherwise, and then some of these patients presented other symptoms which strengthened our opinion that etiologically the diverticula were acquired. As to the question of cure of diverticulum, unfortunately I have not had an opportunity to do any operative treatment. My treatment up to the present time has consisted of silver nitrate instillation. I admit I have not had much success.

The Aim of Medical Science.—Of all the sciences, medicine has always worked and studied that the lot of man might be easier—that the diseases which threatened the human race might be checked, that inhospitable climes might be made fit for human abode. But of all the sciences, medicine alone has never had as its goal the discovery of agents for the destruction of man. We have never prostituted our mighty enginery to the destruction even of an enemy. This is, indeed, a glorious heritage and one we must not lose sight of. —James M. Putnam, M.D., Address before Buffalo Academy of Medicine.

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[9] In addition to the references already given, the following will be found of interest:
Bagat: Urethral Diverticula, Med. News, 1895, **67**, 240.
Eitner: Zur Kasuistik der Harnröhren Divertikel, Wien. Med. Wchnschr., 1909, **59**.
Lessing: Ein perineales Harnröhrendivert, Monatschr. f. Urol., 1904, **9**.
Von Zeissl: Ueber den Blasen verschluss und über die Trichter bildung der Hinteren Harnröhre, Wien. med. Presse, 1896, **37**, 697.

CONCEPTIONS AND MISCONCEPTIONS IN PSYCHANALYSIS *

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Not infrequently a discussion purporting to relate to a given subject expresses nothing more than the unsophisticated views of the speaker concerning some notion or other which he mistakenly conceives the subject to be. Perhaps no theme has suffered more from the disfigurements of these naive tendencies than psychanalysis, so that one does well to distinguish between psychanalysis and rumors of psychanalysis.

The truth is, psychanalysis labors under the grave difficulties surrounding any subject which offers us an entirely novel point of interpretation; and far more formidable than the barriers of novelty and strangeness is the fact that psychanalysis is a method which is essentially revolting to our conventional social consciousness, entailing harsh incriminations from which we would prefer to turn away. It is a therapeutic procedure which our moral conventions hold in natural repugnance; it is an unpleasant discipline that thrusts before us those things which we dislike to look on. But if the theory on which the method rests is correct, such an inbred antagonism to the precepts of psychanalysis is of the very essence of its thesis, for psychanalysis, rightly understood, is a method of treatment based on the recognition of a psychic conflict in the life of the patient arising precisely from his inherent revulsion against the artificial inhibitions which are imposed on him under the constitution of society. The conflict is therefore a social one.

It would seem, then, that we all have within us the elements of the neurotic diathesis; that the difference between the normal and the neurotic is more a matter of circumstances than of constitution; that the interval between the two is proportional rather than generic.

If, therefore, psychanalysis, unlike the gently conciliatory procedures characteristic of other forms of psychotherapy, is a method whose specific task it is to lay bare the pious devices through which we seek to evade life's sterner verities, we shall very naturally incline to resent it as an impertinent intrusion. Indeed, it requires no small measure of courage to view with equanimity the unwelcome factors which psychanalysis thrusts before our eyes.

It is, then, because of the essential significance of psychanalysis, with its open hostility to the wide social repression of those insatiate biologic demands which belong, broadly speaking, to the sexual sphere, and the consequent affront it offers to our habitual sense of outward reserve, that I am led to utter a warning lest in estimating the value of this inimical method we allow traditional prejudice to distort our judgment.

The psychanalytic method, introduced by Sigmund Freud, is, of course, concerned solely with the treatment of nervous disorders. In reality the term "nervousness" or "neurosis," as commonly applied, is etymologically misleading, for the morbid condition involved in such psychic disturbances is not neural; it is moral. There is question not of a disease of the tissues but of a disharmony of the personality; not of a lesion of organs but of a schism of consciousness. We are dealing not with the pathology of the neural elements but with the psychology of the social element as presented in the individual unit, for the disturbances with which psychanalysis has to cope entail in every instance a psychic disharmony based on the individual's relation to the social environment. It is an interesting fact that in every psychanalysis there is discovered the influence of some hidden presence who stands in each instance in the closest personal relation to the patient and constitutes the important factor in the production of the neurosis.

Before considering, however, the theory, the instruments and the aims of psychanalysis, it may be well to mention certain misconceptions in regard to the method. Perhaps we shall gain ground if, before attempting to say something of what psychanalysis *is*, I say a word as to what psychanalysis is *not*.

Already I have made intimation of the element of sexuality as an etiologic factor in the manifestations we call neurotic. Many will doubtless have heard of the inevitable implication in the psychanalytic method of treatment of the sexual sphere of the patient's life. Some probably will either have explicitly heard, or have tacitly gathered, that psychanalysis presupposes the existence in the life of the patient of some secret perversion of the sexual instinct, and that it is the task of the psychanalyst to extort a confession of some such hidden misdemeanor. Therefore it is but natural if, from the prevailing trend of current hearsay, it will have been inferred that this new method of psychotherapy proceeds on the assumption that nervous disorders—hysteria, obsessional and imperative states, so-called neurasthenia and psychasthenia—are invariably to be explained by the hidden presence of some abnormal mode of sexual indulgence, and, therefore, the origin of a neurosis, according to Freud's interpretation, is linked with the idea of some species of sexual delinquency.

As widespread as this conception has become, nothing could be further from the truth. In point of fact, the proposition it maintains is precisely the contrary of that posited by psychanalysis. In his "Drei Abhandlungen zur Sexualtheorie," Freud[1] clearly defines the neurosis as the negation of abnormal sexuality. He distinctly says that the neurotic and the sexual delinquent stand at exactly opposite poles to one another. It cannot be too strongly emphasized, therefore, that the manner in which the patient's sexuality is related, according to Freud's interpretation, to the etiology of neurotic disorders is one which, far from incriminating him, wholly absolves him from the stigma of abnormal sexuality.

Still another very prevalent misapprehension is the view that psychanalysis is synonymous with the obtaining of a general confession from the patient.

Far be it from me to deny the time-honored psychotherapeutic axiom that an honest confession is good for the soul. No one, I think, realizes better than the psychopathologist the undoubtedly remedial effect which follows on the unbosoming of some secret conflict in the mental life. But the whole point in the psychanalytic interpretation of the neuroses is that these disorders arise precisely from conditions which render voluntary confession impossible, it being the nature of the disturbing element that it remains of necessity wholly unknown to the patient himself.

The typical clinical picture confronting the psychanalyst is that of an individual who, on examination, either reveals no evidence of disease whatever, or else presents a condition which cannot be accounted for by any demonstrable physical lesion. Indeed, it is not infrequent that in the opinion of the ablest clinical experts he is pronounced absolutely free from organic disorder. Often the patient himself declares that he feels in excellent physical condition, that he eats wholesomely, sleeps soundly, and realizes that he has everything that ought to make a man well and happy, and yet whose every moment is one of unmitigated wretchedness. He is perhaps a prey to phobias, obsessions, apprehensions, depressions, sudden and unremitting imperatives, the appalling loss of the sense of reality, to mention the most characteristic symptoms of neurotic states, or he may suffer from digestional disturbance, respiratory inhibition (stammering), muscular contractions, etc., and yet is utterly perplexed to account for the plight in which he finds himself, and completely powerless to furnish any data that might throw light on these abnormal manifestations.

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* Read before the Huxley Society of the Johns Hopkins University.

[1] Freud, Sigmund: Drei Abhandlungen zur Sexualtheorie, Vienna, Deuticke, 1910.

In other words, we are in the presence of factors which operate *unconsciously*. That is, we have to do with organic effects and reactions which fail to attain the level of conscious perception and which are therefore from the conscious standpoint equally impalpable to patient and physician. Let us bear in mind, then, that *the sphere of psychanalysis lies exclusively in the field of unconscious mentation.*

With these distinctions before us, I shall try to explain briefly the basic principles of psychanalysis, and to show something of what the method seeks to attain.

In many fundamental respects, Freud's teaching, as has been said, marks a wide departure from the hitherto prevailing view as to the interpretation of neurotic states.[2]

In the first place, Freud ascribes all neurotic disorders to the existence in the patient of wishes which are unrecognized, that is, not directly envisaged by him. Wishes of this unpremeditated character he subsumes under the term "unconscious," and gives to the realm of psychic activity constituting, as it were, the abode of such unconscious trends, the name of "the unconscious" (*das Unbewusstsein*).

Secondly, he regards the neurosis as a spontaneous expression of the tendency toward the fulfilment of such unconscious wishes. Thus he ascribes to the neuroses a purposive significance — a moral import. The neurosis contains a motive. It embodies an underlying intention: tends to supply a void not clearly cognized and defined, because existing outside the precincts of consciousness.

Thirdly, the ideas or wishes which thus occupy the sphere of unconsciousness possess the generic character of being invariably such as are ethically inadmissible in the sight of consciousness, so that the psychologic account of the creation of this limbo of the unconscious is to be found in the psychic conflict arising out of the opposition of consciousness to these ethically unwelcome desires and their consequent enforced banishment from consciousness — a process which Freud calls the mechanism of repression (*Verdrängung*).[3] Hence, in accordance with the hypothesis, a psychic conflict, with the attendant repression of the unseemly element, is the basic factor in the production of the neuroses.

Fourthly, it is Freud's thesis that all such conflicts as issue in such unconscious repression have their ultimate basis in the sphere of the sexual instinct. In other words, psychanalysis posits a sexual *repression* as the essential condition in the etiology of a neurosis.[4]

And lastly, the theory assumes that such symptoms as are the expression of a tendency toward the fulfilment of these forbidden trends are but an indirect, cunningly veiled representation of them; that they are substitutions employed by reason of their associative affiliation with the original underlying idea. Each symptom is the dramatic portrayal of the repressed wish subjected to a process of modification through the effort of consciousness to evade its real significance. The symptoms thus expressive of a neurosis are in each instance the resultant of contrary and opposed psychic trends, and represent in their outcome a compromise between the two.

Such remodeled, distorted expressions of the brute, primitive instincts as appear in the symptoms of neurotic disorders, Freud has called the phenomena of unconscious symbolization. This unconscious symbolization of instinctive trends whereby is effected the necessary palliation required by the censor of consciousness is the crux of Freud's interpretation of the neuroses.

According to Freud, the instinct of reproduction is paramount in the life of the individual. Yet the sexual trend is not the simple, unitary, static phenomenon it is generally assumed to be, but, like other factors of evolution, is a dynamic process having its integrative components derived from simpler elements. Freud points out that the sensations contributory to this impulse are originally composed of dispersed and inarticulate components, having their seats in various erogenic zones located over the body surface and situated chiefly in the regions composing the body orifices. The sensations arising from such erogenic zones are present, he tells us, in earliest infancy, and it is of these scattered, incoherent elements that the characteristic sexual feelings pertaining specifically to the organs of reproduction are later constituted. The ultimate attainment of the instinct directly conducive to reproduction consists, then, of a process of integration representing the product of individual evolution. Accordingly, there are three possible courses in the development of the ultimate sexual life of the individual:

First, the sexual life may take a normal course leading to the gradual absorption, so to speak, of these scattered auto-erotic trends into the resultant allo-erotic instinct comprised in the ultimate reproductive quest, and having its physiologic center in the organs of generation. In such case we have the integration which results in the individual of a normal sexual life.

Secondly, there may be a persistence of the original auto-erotic interests and of the sexual satisfaction attaching to these primary erogenic zones, with failure of the aforesaid integration into the sexual impulse which tends toward the goal of reproduction. In this case there are presented the variations of the normal sexual impulse which constitute the *perversions.*

Finally, the sexual interest or *libido* pertaining to the different erogenic zones through repression may be deflected into vicarious avenues of sexuality corresponding symbolically to such frustrated interests. Such an outcome epitomizes the mechanism of the neuroses as envisaged by Freud. Of course no rigid line of demarcation separates these three possible developmental issues, but there is among them more or less of interlacement of the characters distinctive of each.

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[2] Forchheimer, Frederick: Therapeusis of Internal Diseases, New York, D. Appleton & Co., 1913, **4**, 569.

[3] Brewer and Freud: Studien über Hysterie, Vienna, Deuticke, 1910.

[4] It should be explained, however, that the word "sexual," as Freud uses it, has a far more general and inclusive meaning than is conveyed by the term as commonly employed. Contrary to the specific connotation of conventional usage, the term denotes, with Freud, the entire sphere of the primary, biologic pleasure-affects.

The neuroses, then, represent in a negative way a miscarriage of the sexual instinct analogous to that represented in a positive way in the sexual perversions. Freud's thesis, therefore, is that the neuroses betray an inadequacy in the development of the psychosexual life. This inadequacy marks a regression toward a sexual mode appropriate to an earlier, infantile period and postulates a latent, unconscious fixation of the *libido* on its original, infantile object. Hence the sexuality of the neurotic is hindered, repressed and, as it were, preoccupied elsewhere than with the immediate and contemporary object of sexual interest, and the psychologic situation presented by the patient is summed up by Freud in what he terms the patient's "sexual resistances" (*die sexuelle Widerstände*).

Such is the fundamental idea of psychanalysis in regard to the origin and development of the neuroses. The primary factor in the production of the disorders is the repression of the individual's sexuality due to the ban set on the manifestations of this elemental instinct by the strictures of social and religious conventions. It is the conflict between the forces of artificial culture and those of an inherent instinct of sex, the former imposing the repudiation of sexuality, the latter insisting as resolutely on a due recognition of the basal significance of this elemental factor in the biologic economy. The sexual instinct stoutly insists that it be granted recognition in consciousness, and consciousness, in its narrow intolerance, is as fiercely resolved to debar so unseemly an intruder. The final upshot of the situation is a compromise. It is agreed that the unruly element be admitted to consciousness on condition that it soften its tone and, as it were, adopt conventional apparel conformable to the requirements of adult, social consciousness. It is to this end that the psychic organism assumes the social defense it finds in the elaborate metaphorical usages presented in the patient's "symptoms." For it is only through dissembling that the repressed complex can succeed in evading the anathema of the conscious censor. But, though disguised in consciousness, this discordant, outlawed element still lurks in the unconscious, where, acting surreptitiously, it incites dissension amid the constituents of the personality, impairing its unity and destroying the mental synthesis requisite to the purposes of concerted function.

It is Freud's thesis, then, that the neurosis entails a psychic conflict due to an attempt to exclude from a fit acknowledgment, in consciousness, the biologic factors whose prerogatives are fundamental and inalienable. As has been said, such an exclusion of normal interests from participation in current consciousness Freud calls a *repression*. A psychic repression being the essential mechanism of a neurosis, the question for psychotherapeutics is, How may disorders arising from a psychic conflict, issuing out of the arbitrary and extraneous repression from consciousness of such contraband associations, be remedied? Freud, seeking to give the direct logical answer, contends that disorders embodying psychic conflicts due to repression of elements which have a right to tenancy in consciousness are to be effectually cured only by removing the repression and freely admitting such contingents to their hereditary rights in consciousness.

So much by way of outline of the principles contained in Freud's system of psychotherapy. Now as to the method.

METHOD OF PSYCHANALYSIS

It will be clear from the foregoing that the task of the psychanalyst is to bring into the high light of consciousness the ideas or associations which have been relegated to the recesses of the unconscious. The sole clue, however, to such repressed fancies lies in the symbolic equivalents into which these unconscious ideas have been converted through the process of repression. And the source of such surrogate symbolizations is to be sought in the symptoms themselves, in every spontaneous, unguarded reaction of the patient, and, most critically of all, in the patient's dreams. For it is in the drama of dream imagery, which the mind enacts during sleep, when the sentinels standing guard at the outposts of consciousness grow lax in their vigil, that these harpies of the unconscious most easily escape durance and venture to disport themselves with least danger of surprise.

Here, then, is our opportunity to take the demon of the unconscious unawares. Not that this unconscious ogre, be it remembered, is wont, even in dreams, openly to expose itself, but there are revealed in the creations of dream phantasy traces of its presence whereby it may be tracked to its hiding. This tracing of the repressed interests contained in the ideas lying behind the dream images constitutes the method of dream analysis, as developed by Freud, and it is the analysis of the patient's dreams which is by far the most important resource of the psychanalyst.

In Freud's conception, the actual dream, as revealed to consciousness, that is, the *manifest content* of the dream, is but an enigmatic congeries of psychic images — a charade that condenses in scenic productions a whole mass of related, interconnected meanings or dream thoughts, and it is the latter which constitute the real or *latent content* of the dream. Dream analysis or dream interpretation consists precisely in reaching these concealed fancies and so correlating them in accordance with precepts empirically determined as to render them coherent and significant. To do this it is required that the patient retrace the mental threads out of which he has woven together the elements of his dream tapestry. Such threads are composed of links in interconnected chains of associations, and it is the task of psychanalysis to follow these threads of associations to their source, in order to reach the material out of which the dream images were originally spun.

Such a proceeding is fraught with difficulties, for obviously as the dream creation is precisely the outcome of the effort of consciousness to disguise, and so evade, the real meaning underlying the manifest dream elements, analysis involves a task no less formidable than that of pitting the patient against his own inherent will. It really means setting the patient at cross purposes with himself by forcing him to face frankly the thoughts and wishes which he has perhaps for a lifetime sought to repudiate; that is to say, the ideas which have been ruthlessly debarred entrance into consciousness and which in consequence pursue their career beyond the pale of apperception, manifesting themselves subtly in the symptoms and obsessions characteristic of neurotic states. These ideas are one by one readmitted into consciousness and are through this procedure deprived *de facto* of the essential motive of their existence.

As the analysis constitutes per se the entire system of psychotherapy introduced by Freud, an adequate account of the psychanalytic method would entail a full description of its technic. The technic of psychanalysis, however, is too varied to be susceptible of definite formulation. Indeed, the technic of psychanalysis is too intimately bound up with the delicate psychologic *rapport* existing between physician and patient to be separable from it, for each detail of the patient's behavior conveys its own nuance of meaning that is of the utmost import to the psychanalyst.

The practical procedure which is followed in the analysis of dreams, however, may be broadly indicated. The patient, having repeated his dreams, is asked to relate quite freely whatever occurs to his mind in connection with the different elements of which the dream is composed. This method Freud calls that of "free-association." From the ultimate ideas at which the patient arrives at the end of each of the chains of associations leading from the several elements of the *manifest dream content,* the physician is enabled to reconstruct the underlying trend contained in the latent content of the dream and so discover the patient's dream thoughts.

The links in the chains of associations do not succeed each other at regular temporal intervals, but frequently the patient halts, showing signs of discomfort and unwillingness to continue. It is apparent that in such instances the patient's flow of thought is blocked by resistances, that is, he has come on a trend which he has long put away from him as distasteful, as unfit to hold a share in his contemporary consciousness. At such crises, the patient must be encouraged to continue without fear or reserve. He is reminded that the self-criticism which interposes itself in the current of his spontaneous associations tends to thwart the course of the analysis and to frustrate the whole purpose of the procedure. So when he resumes again the thread of associations, concentrating his attention anew on the reminiscences occurring at the point of interruption, it is usual that he will be brought to reveal some incident or trend of marked significance in his affective life. In other words, one comes in such intervals on psychic material which has been submitted to the process of repression and which, with its clusters of associations, constitutes a deterring "complex" in the patient's psychic life.

In fairness it must be said that the psychanalytic method of procedure is far simpler to set down in writing than to carry out in actual practice. From the very nature of the neurosis, with its repression or rendering unconscious of the most vital trends in the psychic life of the individual, there are, of course, enormous habitual resistances to be overcome. To lead the patient to break through this habitual reserve is a task requiring the utmost expenditure of time, patience and ingenuity on the part of the physician, so that not infrequently hours are consumed in arriving at the determination of an objective statement which it would require but a few minutes to set down in writing.

Of course the central interest in dream analysis lies in Freud's dynamic theory of dreams. Freud teaches that the basic factor in every dream is an unconscious wish fulfilment: that whatever the manifest content may be, however foreign apparently to the idea of a coveted purpose, every dream will, on adequate analysis, reveal the presence of a repressed wish. How totally dissimilar in their content are the repressed wishes of the unconscious from what we commonly accept as the interests of our conative life, how utterly abhorrent to our ethical sensibilities such latent "wishes" invariably are, what, in short, is the real nature of an unconscious wish, in the sense of Freud, may be gathered only from a thorough study of Freud's dynamic psychology of the unconscious as contained in his major work "Die Traumdeutung."[5] It is here alone that one is enabled to comprehend the very original and revolutionary conceptions on which Freud bases his theory of the unconscious and in which he elaborates the principles underlying his searching study of the biology of mind.

Next in importance to dream analysis is the association experiment which Jung of Zurich has adapted to practical psychanalytic application.[6] The association experiment is useful chiefly as an instrument of diagnosis and for the purpose of a long-continued study of some specific problem, as the differences of reaction types. But it is also most valuable to the student in beginning psychanalysis as a means of obtaining a preliminary survey of the general reaction of the patient and of opening the way toward gaining insight into his unconscious mental processes.

The association experiment has three chief advantages: First, it affords a *direct* avenue to the patient's repressed interests; second, it offers access to such repressed spheres of affectivity in spite of the patient's own unyielding resistances, and, third, it affords us a means of investigation which includes in it the conditions of an objective control so essential to an exact experimental study of the data required in comparative psychologic tests.

In arrangement and actuation the association experiment is very simple. The idea of the test is this: Every word represents for each person a psychologic situation. This may have, according to individual circumstances, an accent of greater or less emotional value. To say that a word possesses an emotional value is the equivalent of saying that it makes a deep impression on the psychic organism, that is, that it stirs a strong wave of response in the consciousness into which it falls.

Manifestly, if the length of such emotional wave may be estimated, we have obtained a measure of the relative strength of the emotional tone represented by it. This is precisely the result which is effected by the conditions of the association experiment.

A series of words called test words, usually 100, are repeated to the patient, who is required to respond at once with the first word associating itself in his mind with the test word given. By measuring with a stop watch, recording fifths of a second, the interval occurring between the stimulus (the calling of test word) and the reaction (the patient's response), a mathematical estimate is given of the relative emotional value of the situation recalled by the test word in question; for the more profoundly the consciousness of the patient is stirred, the longer will be the interval required in order to return to the mechanical routine of response required by the concrete conditions of the experiment.

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[5] Freud: Die Traumdeutung, Vienna, Deuticke, 1910, translation by A. A. Brill.

[6] Jung, C. J.: Diagnostische Associationsstudien.

Hence, having obtained the length of the patient's probable average of reaction time, any marked excess of this interval indicates the presence of a significant reminiscence, that is, of an underlying complex. A marked variation in the length of reaction time is, then, the most important of the complex indicators.

A further aid in unearthing the hidden complexes is that of obtaining the patient's "reproductions," that is, having obtained his responses to the series of stimulus words, to test his memory of each of his responses by again repeating the test words. In this procedure a wrong reproduction or failure to recall at all the original reaction word is indicative of a complex having been stirred. Here again the excess of the affect carries the mind of the patient from the immediate verbal image to some intimately associated impression, and the significance of the reaction word as such is lost in the greater emphasis of the remembrance awakened by it.

Still a further complex indicator consists in the successive decrease of the heightened interval of reaction time effecting the three or four immediately subsequent reactions. To this species of complex indicator Jung has given the name "perseveration."

The frequent recurrence of the same reaction word throughout the experiment, the assimilation of the test word in an unusual sense, repeating the stimulus word before reacting, replying with more than a single word, offering explanations, etc., are among the many additional indications that a complex has been excited.

Such are the chief means affording a clue to the lines along which the analysis may most judiciously direct its inquiry and so contribute to effect the release and thorough ventilation of the repressed affects which are responsible for the inner psychic disharmony.

It is thus that the physician succeeds in establishing a synthesis amid the discordant, mutually exclusive elements of the personality. It is thus that the psychic tension due to the mental conflict is eliminated and the dissociated elements of the ego are brought together in a simple unitary stream of consciousness.

Such is the treatment of psychic disorders by the method of psychanalysis. The statement given here affords but the merest hint of the full import of the method. This is long and laborious, often entailing in actual practice many months for the adequate analysis of a single case. To gain anything like a commensurate idea of the full significance of the psychanalytic method, one must put himself in touch with Freud's conceptions of the unconscious as presented in his writings. In his various contributions to the literature of psychopathology, Freud has presented an account of the system of psychology on which he bases his explanation of the essential processes underlying neurotic disorders and in which he defines the rationale of the psychanalytic method of treatment.

USES OF PSYCHANALYSIS

While, in my opinion, the discoveries made by Freud through his long and laborious investigations are as sound scientifically and as important economically as any in the history of modern medicine, I do not by any means regard psychanalysis as a universal panacea for nervous disorders, but on the contrary consider it as the particular method of psychotherapy that is most restricted in its possibilities of application,[7] a reflection, however, which is rather comforting than otherwise when we consider the length of time required — frequently, as I have said, as much as an hour daily for weeks and even months — for the adequate analysis of a single case. This being true, it seems a fortunate circumstance that psychanalysis is not the suitable method in all cases — that other and simpler methods of psychotherapy are applicable in many types and degrees of nervous manifestations, and even if sometimes unscientific, they are at least effective for the ignorant masses to whom they are applicable.

The fact is that psychanalysis is practically adapted to only a few persons, but those few belong, generally speaking, to the most educated classes and are precisely those personalities who, from the nature of the conditions of the onset of a neurosis, are the most sensitive, highly developed and worth while among us, and whose reeducation through self-analysis will be most far-reaching in its influence on the body social.

Psychanalysis can never hope to become popular for the reason that it is honest. It does not flatter or cajole the patient or seek to appease him with subtle blandishments; on the contrary, it mercilessly thwarts and assails him. The mawkish and artificial will find in it little unction for their boredom. Psychanalysis offers nothing brilliant or spectacular, but, being a robust, uncompromising method of scientific investigation, it proceeds in the laborious, unobtrusive manner of all earnest research, and is adapted to the needs of only earnest and intelligent men and women.

Though lacking in frills, the method is not without its practical compensations. One need not be irresistible to be a psychanalyst. In psychanalysis "personality" is no asset. The method places no premium on the personal charms of the physician.

The misconception concerning psychanalysis which seems to me of all the most unfortunate is the view that there exists an inherent opposition between the principles of psychanalysis and those of experimental psychology. On the contrary, the psychanalyst of far perspectives can hardly fail to recognize the possibilities of mutual gain in the complementary positions which these two departments of research occupy in relation to one another, nor can he fail to see the opportunity he has in the objective controls of the experimental method for the substantiation of his results. Nothing, it seems to me, can more certainly cripple the researches of the psychanalyst than this very fundamental misapprehension.

I believe William James once said that when any discovery is newly given to science the cry at first is that it is not true, but that later, as the truth of the new theory becomes manifest, this attitude is replaced by the admission, "Yes, it is true, but *I* discovered it." Now that psychanalysis is entering this latter phase of its career, there begin to appear various bogus psychanalytic procedures which are in truth mere travesties on the original method of Freud, and we need be on our guard against the cunning decoys of such spurious artifices.

We shall do well, therefore, to discriminate between psychanalysis as represented in the systematic, laborious, time consuming method of psychotherapeutic research introduced by Sigmund Freud — a method imbued throughout with the spirit and ideals of the laboratory — and the pseudopsychanalytic substitutes which pervert Freud's method to sensational uses. Psychanalysis proper is wholly incompatible with the business of medicine. The hurrying practitioners who say that they use psychanalysis as occasion arises, as though they kept it on a shelf in bottles, simply fail to understand the first principles of the method; for psychanalysis is not a tablet but a system. It is not to be summoned by caprice or expedience but must be acquired by careful study and training, and above all by the exacting discipline of a thoroughgoing self-analysis.

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[7] Freud has himself been most explicit in the practical limitations he has recognized in the use of the psychanalytic method.

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GROUP STUDY

A REPORT OF ONE HUNDRED AND FIFTY CASES *

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In a recent article on group study,[1] Birtch has described the methods in use in the Diagnostic Section of St. Luke's Hospital Clinical Club, of San Francisco. He has shown the advantage of correlated study in the investigation of patients, and has explained the details of the diagnostic team work. Since the publication of that article, numerous inquiries have been received which indicate that this method of clinical study is not clearly understood. In order that the profession may understand the character of this work, a brief review of the important features will be presented here.

The most important phase of the work is the thoroughness of the examination. Each patient is examined by each member of the diagnostic section. The purpose of such an examination cannot be clearly appreciated by every one, inasmuch as questions such as the following have been received within the last month. One prominent clinician asked, "Don't I do as much for my patients when I call various specialists in consultation?" In answer to that query, it may be stated that in ordinary practice only those consultants are called who, in the opinion of the patient's physician, are necessary to clear some point in diagnosis or treatment. It is conceivable that an extraordinarily keen physician may be able to discover every lesion in a patient with or without the aid of other individuals. On the other hand, a patient may have early signs of disorder in a certain part of the body, without presenting symptoms of sufficient importance to draw his physician's attention to that region. It is not likely, therefore, that a specialist of diseases of that region would be called in consultation. From a prognostic point of view, the recognition of such a disorder may be of the greatest importance to the patient.

Therefore, in order to eliminate such errors, the members of the diagnostic section decided that each patient should be examined by all the clinicians of the group. By this method, an early retinitis, or a beginning ostearthritis of the spine would be recognized by the oculist, or orthopedist, respectively, even though subjectively the eyes and spine were negative. Through this plan of investigation, the responsibility of seeking advice does not rest on one individual, for each patient receives the examination of a specialist in the latter's particular domain.

To perform this series of examinations, the patient is in the hospital for an average of 100 hours, and during this period is under the direct control of the resident physician of the diagnostic section. This enables the section to perform all the necessary tests which are so much a part of medical diagnosis at the present time. A daily consultation of all the clinicians is held, and the case is thoroughly discussed from every angle.

Finally, after definite conclusions have been reached, a written report of the history, of the clinical and laboratory findings, of the final diagnoses, and of suggestion as to future therapy is sent to the patient's physician, who again assumes full charge of the case.

This method of group study has been in existence for almost a year. When the work was begun, the diagnostic section had no idea of the many obstacles which had to be overcome, or of the many pleasant surprises which were in store for the members of the section. It is my endeavor to present a few interesting facts concerning the first 150 cases which have been investigated by this method.

A brief consideration of the histories of these patients is of more than passing interest. In an unpublished article, Read has clearly shown that from a careful history one can make a positive diagnosis of the primary or major condition in 53 per cent. of the cases. The same care in taking a history will make possible a positive diagnosis of the secondary conditions in 41 per cent. of cases. It is therefore obvious that an accurate record of the patient's past and present history is of the utmost value for the proper consideration of data elicited on examination.

In order that there may be no omissions in the record of the past, a printed form for the history was prepared and a definite statement required after each question. No such routine could be employed in recording the present illness. Therefore a detailed record of the present illness has not been obtained through any set questionnaire. Omissions by the historian have been corrected by secondary questioning on the part of the clinicians who examine the patient. Through this method few details have escaped the notice of the examining group.

A decided advantage to be derived from such a method of recording histories is the ease with which one may determine the frequency of any symptom, or group of symptoms, in some special disease. As an example, one may desire to know how frequently night sweats have been present in the past history of patients in whom the diagnosis of tuberculosis has been made. Inasmuch as each record contains a statement concerning this fact, one may readily find the answer to such a question. A tabular review of the prevalence of each symptom is periodically made, in an endeavor to confirm or correct clinical impressions which have been gained from the literature. The results of this investigation will appear at a later date.

Turning now to the diagnosis of the case, it has been taught in the past to make as many of the signs and symptoms agree with one clinical picture as it is possible to do. While this is still the aim of clinicians, there has been a tendency to overlook pathologic conditions of apparently little consequence, which, a few months or years later, may be of greatest importance to the welfare of the patient. How often this is true of patients who have been subjected to surgical procedure is only too well known to physicians.

In this series of cases, the major diagnosis has not always followed the prominent symptoms of which the patient complained, but has frequently been more inti-

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* Read before St. Luke's Hospital Clinical Club.

* From the Diagnostic Section of St. Luke's Hospital Clinical Club.

[1] Birtch, F. W.: A "Group Study" Plan for a Diagnostic Team Acting as a Laboratory for the Profession, The Journal A. M. A., May 27, 1916, p. 1672.

mately related to the prognosis. Such an instance may be cited in the case of a patient who came to the hospital for surgical treatment of a gastric ulcer. Before the operation had been definitely decided on, the patient was examined by the diagnostic section. Conclusive evidence of peptic ulcer was found, but also definite signs of active pulmonary infection of probable tuberculous origin were obtained. In view of these facts, operation was not recommended, and the final diagnosis placed pulmonary tuberculosis first, and ulcer of the stomach second. One might go into greater detail in discussing this most interesting phase of the work.

From a tabular study of these 150 cases, it is interesting to note that of the forty-eight surgical cases, only seventeen patients were operated on immediately after the diagnosis was made. Of the remainder, three were recommended for operation without further treatment, and for five it was suggested that medical therapy be instituted before operation was performed. This is in marked contrast to the usual procedure in the average surgical case.

STATEMENT IN REGARD TO FOLLOW-UP LETTERS IN THE FIRST ONE HUNDRED AND FIFTY CASES

	No. of Cases
Diagnoses proved (80); partially proved (2)	82
Not proved	39
No report as to condition of patient	28
Not heard from	1
	150
Methods by Which Diagnoses were Proved:	
Operation	14
Necropsy	5
Laboratory	8
Therapeutic test	11
Clinical course	16
Method not stated	28
	82
Condition of All Cases Reported:	
Improved	82
Not improved	26
Cured	14
Dead	17
No report as to condition of patient	10
Cases not heard from	1
	150
Results of Recommendations Regarding Therapy:	
Carried out	99
Partially carried out	18
Not carried out	17
No report	15
Cases not heard from	1
	150
Impression of Physician Concerning Report Submitted to Him:	
Satisfactory	141
Unsatisfactory	6
No report	2
Cases not heard from	1
	150

Furthermore, it is of interest to note that the patient's own words, as given in the complaint, conveyed a definite idea concerning the ultimate diagnosis in approximately 60 per cent. of the cases as far as the primary diagnoses were concerned.

This is of course noteworthy, showing, as it does, the importance of laying considerable emphasis on the actual complaint of the patient. In this day of ultra-scientific medicine, we are too prone to forget that the patient has come to us for a definite complaint. In view of the experience in these few cases, it would certainly behoove all of us to pay more attention to the real troubles of the patient, rather than wander off into the by-ways of medicine in an endeavor to establish some extraordinary diagnosis.

Naturally, one hesitates to draw any conclusions from such a small number of cases. My associates are convinced that group study is a most interesting and instructive method of practicing medicine, in that it gives the patient what he asks for, it aids the average practitioner, and it creates a desire on the part of the members of the group to enhance their medical knowledge.

The best criterion of the success of this method must necesarily be the reports of the practitioners who have sent their patients to the diagnostic section for information concerning the morbid processes of the patients themselves. In accordance with recognized principles regarding hospital statistics, the diagnostic section has sent out the so-called follow-up letters, in an endeavor to determine just how well or how poorly the section was doing. The accompanying report presents the answers to the letters concerning the cases presented above.

A superficial analysis of the report would give the skeptic plenty of opportunity to criticize the principle of this method of investigation. When, however, it is realized that thus far only cases which have been obscure in the minds of the patients' physicians have been referred for diagnosis, it is surprising that the results have been as good as they are. Two features of the report are worthy of note, without further comment: first, 141 cases were satisfactorily investigated; second, in only ninety-nine cases were the recommendations regarding treatment carried out. Early in this work, and even now, there are many who are decidedly skeptical. Unfortunately, they expect that a correct diagnosis must necessarily result in a favorable prognosis. It must furthermore be remembered that many of the cases reported were decidedly unfavorable, prognostically, from the very beginning, inasmuch as the patients came to the diagnostic section as a last resort.

Considering these facts, it may be stated that while the members of the diagnostic team are far from pleased with the reports received from the physicians who referred cases, yet with due regard to the circumcumstances attending the patients, I feel that the percentage of favorable results certainly proves the value of such a method of clinical investigation.

CONCLUSIONS

1. Ten or twelve physicians, each interested in a certain field of human ills, working together, will discover ailments which one physician of more than average ability will not be able to discern.

2. The discovery of symptomless disorders may be of the greatest importance to the patient in after years.

3. A thorough history will make the ultimate conclusion a matter of considerable less difficulty than if that thoroughness was neglected.

4. The keeping of records is an important feature of medical practice, inasmuch as many hard and fast ideas derived from incomplete observations and transmitted from one book to another may be found to be incorrect.

5. The average patient will certainly benefit by the group method of consultation.

6. The average physician in the majority of cases has thus far placed on this method of investigation his stamp of approval, and it is believed that when the idea of group study of patients is better understood, the majority of physicians will give their hearty approval not only to the principle on which it is founded, but also to the method itself.

233 Post Street.

THE TREATMENT OF GONORRHEAL INFECTIONS

BY THE INTRAVENOUS INJECTION OF KILLED GONOCOCCI, MENINGOCOCCI AND COLON BACILLI *

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After the intravenous administration of a highly polyvalent gonococcal vaccine, Bruck and Sommer,[1] in 1912-1913, observed striking therapeutic results in gonorrheal complications, especially arthritis, epididymitis and acute prostatitis. These results, within certain limits, ran parallel to the severity of the reaction following each injection. A specific temperature increase was noted which was higher in gonorrheal than in nongonorrheal patients; hence this method was suggested as a diagnostic as well as a therapeutic agent. At this time the entire process was attributed to the production of a specific immune substance, caused by the intravenous injection of the gonococcal vaccine.

It has been clearly demonstrated that, in typhoid injections, a nonspecific reaction follows the intravenous injection of colon bacilli, pyocyaneus bacilli, and secondary proteose preparations. These substances give results clinically and therapeutically quite like an injection of killed typhoid bacilli.

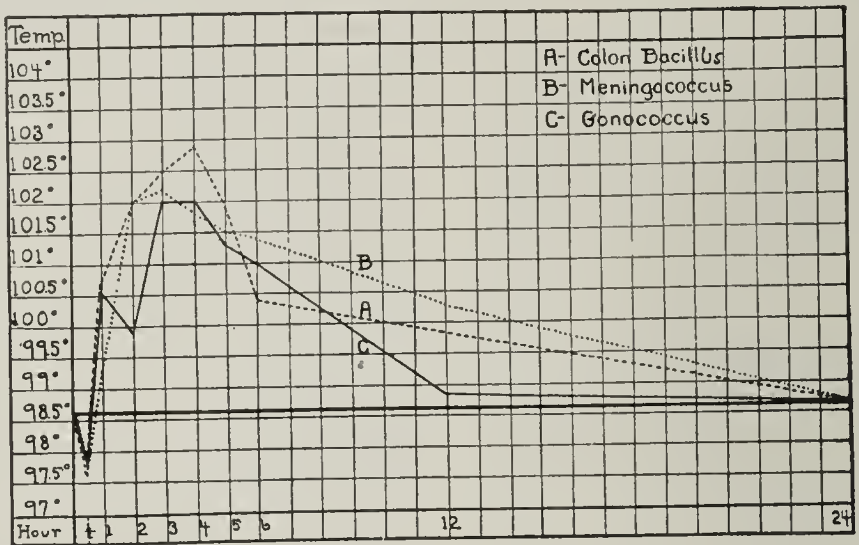

Chart 1.—Composite temperature curves following intravenous injections: fifty-four gonococcal injections in fourteen patients, twenty-three meningococcus injections in twelve patients, and eight colon bacillus injections in seven patients are represented.

In order to determine the degree of specificity, if any were present, following the intravenous injection of gonococcal vaccine, three series of patients suffering from gonorrhea and some complication, such as arthritis, epididymitis or acute prostatitis, were chosen in the order in which they had entered the hospital,[2] no attempt having been made to classify them as to severity or complication. The first series was treated intravenously with a strongly reacting dose of gonococcal vaccine; the second series received a similar dose of meningococci, while the third series received a suitable dose of colon bacillus vaccine.

The patients, when possible, were kept in bed throughout the treatment, special care being taken to keep them quiet for two days following each injection. No local or internal treatment was given for the gonorrheal infection other than an elevation of the scrotum in all instances of acute epididymitis. The temperatures were taken and the leukocyte and differential counts were made just before each injection and at regular hours thereafter for the first forty-eight hours.

VACCINE TREATMENT

Gonococcus Vaccine.—The first thirteen patients were given intravenously 100 million killed gonococci, and the same or slightly varied dose was repeated every fourth or fifth day until treatment was suspended. The greatest number of injections given one person was six; most of them received five, while one received but one injection.

The injection is followed by a chill of variable severity coming on in from twenty minutes to one hour and lasting from fifteen to thirty minutes. This chill may or may not be accompanied by headache, which is usually of short duration and passes away shortly after the chill is over. Exceptionally there are nausea and vomiting during the first few hours, but it is never severe and is always transient. This occurs always in patients who have disobeyed instructions, by eating heartily within a few hours of the injection.

At the onset and during the chill the patient often complains of severe pain in the affected parts. Whether this is due to some internal cause or to the unavoidable motion produced by the chill it is impossible to say. The pain, however, is variable in different patients and in the same patient at different times.

It is usual for the severity of the reaction to decrease following repeated injections, and this decrease is directly proportional to the number of injections previously given. In order to maintain a constant reaction with each succeeding ininjections of gonococcal gradually and cautiously increased.'

In two of these patients, both of whom had had numerous subcutaneous injections of gonococcal vaccine, there appeared immediately following each intravenous injection a very transient reaction characterized by flushing of the face, cyanosis, dyspnea, and a tingling sensation over the surface of the whole body. These reactions lasted from one to two minutes, after which the patients felt perfectly at ease until the usual reaction appeared in from twenty minutes to one hour. This anaphylactic-like reaction may have been due to a partial sensitization from the previous subcutaneous injections. Three other patients in this series developed a mild type of a very similar condition on their third intravenous injection, but had none following the first two, or after the fourth and fifth injections.

The typical temperature curve following these injections reveals a slight fall during the first part of the chill, followed by a gradual rise, which reaches its maximum in from one to four hours and gradually falls to normal in twenty-four hours. The average maximum temperature for the thirteen patients was 103.9 F., the highest temperature being 104.6 and the lowest a maximum temperature of only 102.8.

The leukocyte counts during a reaction and following it are somewhat variable. Usually there is a mild leukocytosis just before and during the first part of the chill, soon followed by a marked leukopenia, which appears toward the end of the chill. A count as low as 2,000 has been observed repeatedly during this stage of the reaction. This condition is soon followed by a gradually developing leukocytosis which reaches its maximum in from five to seven hours, and remains moderately high for from twenty-four to thirty hours. A return to normal occurs in about forty-eight hours.

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* From the Department of Experimental Medicine, University of Illinois, College of Medicine.

[1] Bruck and Sommer: München. med. Wchnschr., 1913, **60**, 1185.

[2] All patients here reported were from the services of Drs. Harris, Simpson, McEwen and Stillians of the Cook County Hospital, to whom I wish to express my thanks for the privileges granted.

The average of the highest counts made in the first thirteen patients was 33,300, the highest individual count being 55,000. The lowest count of one patient was only 22,000. This marked and sudden change in the leukocyte count is due almost entirely to an increase or decrease of the polymorphonuclear leukocytes in the peripheral circulation, their percentage being as low as 50 during the leukopenia stage and as high as 96 during the height of leukocytosis.

Meningococcus Vaccine.—The second series of fifteen patients was treated with killed meningococci in the same dose and at similar intervals as in the gonococcus series.

The reactions as far as could be determined were similar in every detail to those produced by the gonococcus vaccine. One instance of a double reaction occurred following the first injection, and one patient developed this condition after two injections. None of this series had had previous subcutaneous or intravenous injections. The average maximum temperature for this series was 103.5 F., the highest single temperature being 105.2, while the lowest reached only 102. The temperature curves were uniformly like those following injections of gonococci.

The leukocyte curve in general likewise followed those of the first series very closely, the average maximum count being 27,800; the highest single count was 46,400, while the lowest had a high count of 20,000. The type of cell varied as in the first series. One very striking difference was observed between the two series. Over one half of the meningococcus series developed a more or less severe herpes of the lips and mucous membrane of the mouth, first appearing in forty-eight hours and remaining for from four to seven days. This condition did not occur following any but the first injection, and did not become aggravated or recur when further injections were made in a susceptible individual. No such reactions followed the gonococcus injections.

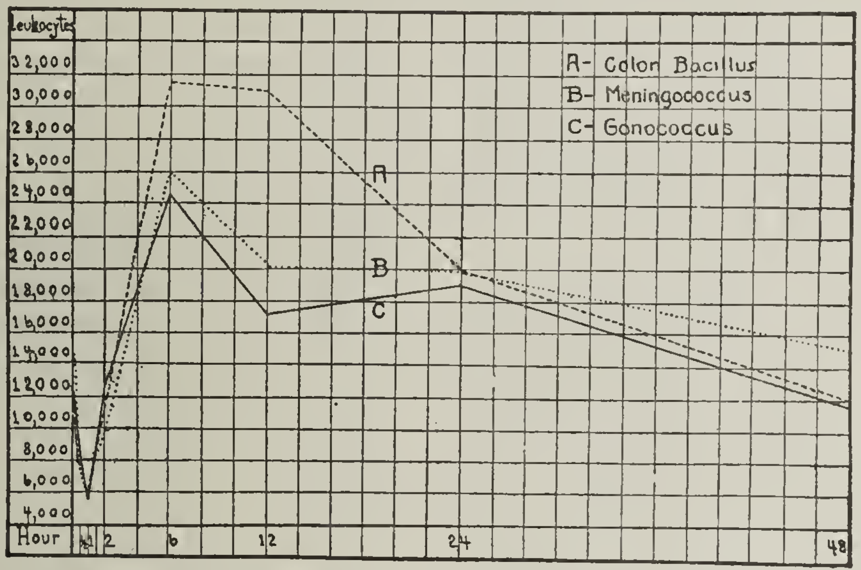

Chart 2.—Composite leukocyte curves following same intravenous injections as represented in Chart 1.

Colon Bacillus Vaccine.—This series contained but seven patients. The reactions were in every way like those produced by meningococcus and gonococcus, with the exception that the size of the dose required to produce the same results was very much less. At first a dose of 100 million organisms was given, but the reactions were so severe that 25 millions were finally used as the initial dose, this to be increased if necessary to produce the desired results.

The average maximum temperature was 104 F., while the average highest leukocyte count was 35,500.

There can be no question that the homologous curves representing the reactions produced following the injections of each organism are very similar, as seen in the accompanying charts; however, the curves representing the colon bacillus seem to reach a higher point in both instances; this is due to the smaller number of injections represented in the curve. The crest of a curve of this kind is obviously not so high as one representing a single typical reaction, since the time of the maximum temperature and leukocytosis may vary somewhat for different individuals, or for the same individual following repeated injections.

As far as therapeutic results are concerned, there is no noticeable difference between the three bacterial suspensions, once the proper dosage is established. To produce results therapeutically, a reaction is necessary. That is, a chill must occur which is invariably followed by the temperature and leukocyte changes noted above. A dose insufficient to produce a definite chill is not followed by so marked a temperature and leukocytic reaction, and clinically no therapeutic benefit is derived. At times there may be some fever production and a moderate leukocytosis not preceded by a chill. The reactions and therapeutic results appear very distinctly similar for the three organisms used when gonorrhea-infected patients are considered. The reactions following injections in nongonorrheal patients are not to be distinguished from those produced in infected patients, nor is there any noticeable difference in the reactions produced here between the three organisms.

These observations were made by injecting a series of patients having chronic skin lesions but no history or indication of gonococcal infection. The size of the dose required to produce a reaction, the chill, temperature and leukocytosis were alike in every way in the infected and noninfected patients.

Twenty-four patients suffering from arthritis associated with gonorrheal urethritis were treated. Naturally most of these cases were acute or subacute, but some were of five months' duration and many were of over ten weeks' duration when the treatment was begun.

As might be expected, the most striking results were obtained in the acute and subacute cases; the most refractory cases, however, were also in the acute class. Those suffering for long periods appear to respond more slowly to the treatment, but fortunately seem to suffer from no recurrences or new joint involvements during the course of the treatment, as some of the more acute cases do. All but two of the arthritic patients were completely cured or manifested a decided improvement. The length of treatment varied from two days to one month.

Unusual effects were seen in three patients with acute arthritis so severe that sedatives were necessary to give them rest for the first two days in the hospital. After a single reacting dose in each instance they felt so well that they insisted on getting out of bed, and in three days they walked out of the hospital. Two of the patients had effusions in the knee joint, which completely disappeared before their discharge from the hospital. Unfortunately none of these men have been heard from since, so the permanency of the striking results in these instances is not known. The fact that they have not returned to the hospital suggests at least that a recurrence as severe as the original attack is not probable. Equally striking was the following instance:

J. R., a man, aged 28, had been confined to his bed for four weeks with arthritis of almost every joint of both lower extremities. These lesions had come on during the third week of gonorrhea. After the third injection he was up and walking about, and after the sixth injection he was apparently completely cured. He went back to his work as a cook and has been at work for three months with not the slightest indication of recurrence. At present he says he is gaining in strength daily.

The two refractory cases mentioned were both acute and seemed not to respond at all or very slowly to this form of treatment. One would show considerable improvement for a day or two but invariably would lapse back to the original condition; the second patient recovered completely excepting one knee joint which contained a marked effusion, and seemed not to be affected by repeated injections.

Bruck noticed similar instances, which he explained by the absence of the homologous gonococcus strain from his polyvalent vaccine. It is very evident that this explanation will not suffice, but whether it is due to a special resisting power of the particular gonococcus responsible or to some peculiarity of the infected host, it is impossible to say. Such patients react with fever and leukocytosis, as do all others.

Twelve patients with acute epididymitis were treated, and invariably the pain would subside after the first injection. Usually not more than two injections were necessary, and, indeed, in most instances one, to effect a cure. The swelling begins to subside within twenty-four hours after the first injection. In no instance did the patient remain in the hospital over a week, except in one case in which an overdose was given which will be mentioned later. The patients usually left the hospital on the fifth or sixth day, or just after recovering from the reaction following the second injection.

One patient entered the hospital suffering from acute epididymitis and prostatitis and almost complete retention of urine. About four hours after an injection of meningococci, he passed urine with no apparent obstruction. After three injections he left the hospital apparently cured. No gonococci could be found in the urethra, prostate or vesicles. After he had been at work for five weeks without inconvenience, he went on an alcoholic and sexual dissipation lasting several days, at the end of which period he developed an acute epididymitis on the previous sound side. Even then gonococci could not be found in the urine or urethra.

That these injections are not prophylactic against the development of new complications is evidenced by the fact that one occasionally sees a patient, under treatment, develop an acute epididymitis or an involvement of a new joint. Again a patient may leave apparently completely cured of arthritis to return in a few weeks suffering from epididymitis.

The effect on the urethral discharge is decidedly variable. The discharge in some patients is more profuse for two or three days following the injection, and then rather suddenly subsides entirely; in others a marked decrease in the discharge following each injection occurs, while some of the very chronic discharges seem not to be influenced at all. Regardless of the amount and type of discharge, the gonococci are noticeably decreased in number, and in most instances apparently entirely disappear after from four to six injections.

An attempt was made to follow these patients after their discharge from the hospital. Three months have now elapsed since the first were discharged, and all have been away for at least six weeks. Other than the development of acute epididymitis in three after their discharge there have been no complications or recurrences of any kind. One of the three has been previously mentioned, the second after the cure of a left epididymitis developed epididymitis on the right side one week from the day he left the hospital, while the third developed epididymitis one month after having been discharged as cured of arthritis. All three patients returned to the hospital, without sign of recurrence of the former condition. Over two thirds of all these patients have been heard from directly; some are at work and appear to be gaining in strength daily. Others feel too weak as yet to carry on the heavy work which they have to perform, although they have no pain to prevent them from doing so.

On account of the fact that the reaction following these injections is followed by a chill and general reaction of more or less severity, a very complete physical examination is necessary beforehand. Such a reaction necessarily calls for the increased cardiac activity, so one should proceed with caution when a patient with a coexisting organic heart disease presents himself. The smallest reacting dose of meningococci was given in the following case:

J. W. was suffering from mitral regurgitation of long standing but perfectly compensated, together with acute epididymitis. He passed through the chill with no distress, but in three hours after the injection he became cyanotic, his pulse became irregular and feeble, and he had marked precordial pain. This condition lasted from ten to fifteen minutes, and he had no further inconvenience.

No other cardiac irregularities were noted in the entire series. Arnold and Hölzel[3] cite Lewiniski's case of acute cardiac insufficiency developing after an intravenous injection of gonococci. Heart disease was not known to be present. On the other hand, Luithlen[4] reports a case of gonorrheal endocarditis successfully treated in this manner. There are many instances reported, however, of cardiac symptoms developing in the presence of organic heart disease following these injections, so one should exercise care and judgment in the selection of cases.

From the proper reacting dosage in this series there were noted no other symptoms attributable to the injections. Special attention was given the kidney function, particularly in three patients who had received large doses of colon bacilli. In no instance did albumin appear in the urine, nor did any indication of kidney involvement arise. One patient having a chronic diffuse nephritis with considerable albumin in the urine had two injections with no appreciable change in the kidney function.

Foekler,[5] however, reported epileptiform seizures after similar intravenous injections, and Fischer in one instance noted cerebral symptoms, which passed off in twenty-four hours.

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[3] Arnold and Hölzel: München. med. Wchnschr., 1914, **61**, 1967.
[4] Luithlen: Wien. klin. Wchnschr., 1915, **28**, 533.
[5] Foekler: Med. Klin., 1914, **10**, 47.

Delirium was noted in three patients of this series, all having received a large dose of colon bacilli. This condition was of short duration and completely disappeared in twenty-four hours, leaving the patients in a weakened condition, from which they recovered slowly. All of these patients had a diarrhea of moderate severity for two or three days. One man became so weak that he was kept in bed for ten days, and left the hospital after two weeks. As far as could be determined he had completely recovered, and he appeared physically and mentally normal in every respect.

COMMENT

It is apparent that any therapeutic effect obtained by the intravenous injection of killed bacteria is not due to any specific reaction in the sense that antibody production is stimulated by specific substances contained in the organisms. Jobling and Petersen[6] cite the work of Dunklin, who used protéose injections in typhoid immune rabbits and found a decided increase in the antibody titer, which is explained by a selective stimulation of the hematopoietic system by a nonspecific substance. Walther, Hildebrand, Engelhardt, Rolly and Meltzer have reached the conclusion that high temperatures artificially produced have a favorable influence on any established infection; on the other hand, cold seems to retard the formation of immune bodies.

The optimum temperature for the growth of the gonococcus in vitro is from 97 to 98 F. Any appreciable increase in temperature has a deleterious effect on the life and growth of the organism. A sudden rise to 102 F., or over, means certain death of the culture. Boerner and Santos,[7] using a diathermic apparatus, found that when subjected to a temperature of 102.2 F. for ten hours, the gonococci in the urethra are killed, while an exposure of six hours at 104 F., three hours at 105.8, and one hour, fifty-seven minutes at 107 is necessary to obtain the same results.

This principle has been used in various ways in the treatment of local gonorrhea, with considerable success.

When acute epididymitis develops and is recovered from, does the fever produced thereby have anything to do with the spontaneous cure of gonorrhea? Many patients with infections terminating thus have had considerable fever during the onset of the complication. On the other hand, patients are seen with infections terminating in a similar manner and having had a normal temperature throughout; this, however, does not seem to be a common occurrence.

Experimental urethritis in man by the application of a pure culture of gonococcus to the urethral meatus is known to be very constantly produced; but Finger, Ghon, and Schlagenhaufer[8] regularly failed when the experimental patient had a temperature of from 102.2 to 104 F. due to some existing disease.

A patient recently entered the hospital with acute urethritis of three days' duration. A positive gonococcus culture was obtained on entrance. The second day in the hospital he had a chill, followed by a temperature of 105 F. Malarial parasites were found in the blood, but the chills and fever were allowed to continue for four days, at the end of which time the discharge had stopped, and no gonococci from the urethra or urine were found. He remained in the hospital for two weeks, without recurrence of the discharge, having had no local treatment whatever.

Equally noticeable is the influence of fever on those infections in the medical wards. One rarely if ever sees a gonorrheal infection coexisting with some fever-producing disease like pneumonia, typhoid or malaria, while gonorrheal infections are relatively common among the chronic, nonfever producing conditions.

By the intragluteal injection of boiled milk or sodium nucleinate, Müller and Weiss[9] produced temperatures as high as 104.7 F. in from six to ten hours. Satisfactory results were obtained in epididymitis, prostatitis and arthritis by repeated injections. Smith,[10] using normal horse serum, had results corresponding favorably with those produced by antigonococcic serum in gonorrheal complications. His therapeutic results ran parallel to the reaction produced, which in turn was proportional to the temperature obtained.

On the other hand, Jobling and Petersen[6] assert that intravenous injections cause a fluctuation in the ferment-antiferment balance of the serum as well as changes in the coagulation mechanism and the opsonic complement properties. "No single factor can be identified as responsible for all the changes" resulting from this fluctuation, but "a whole train of events is inaugurated, . . . all of which tend toward a condition favorable for recovery from infection." That there are factors at work other than fever seems probable. Miller and Lusk[11] have found striking therapeutic results in arthritis due to other infections than gonorrheal, as well as in gonorrheal patients, by the intravenous injection of typhoid vaccine. These results, obtained in patients with nongonorrheal infectious arthritis, could not consistently be attributed to fever alone, as the streptococcus and other organisms commonly associated with this condition are known not to be especially heat sensitive. Again, why should a patient completely recover from arthritis by this treatment and occasionally still harbor live, cultivable gonococci in the posterior urethra? The temperature and leukocytes presumably being equally distributed, why should the organisms in a joint disappear and those in the urethra remain? Numbers and arrangement in clumps may be of some importance, while a less resistant organism may be developed by its growth on a new type of tissue. Possibly a continuance of the treatment after recovery from the complication would be sufficient to eradicate the urethral gonococci in all instances.[12]

The therapeutic results in the group which forms the basis of this report noticeably correspond to the temperature increase and to hyperleukocytosis. Considering the facts that the gonococcus is heat sensitive both in vitro and in vivo, that fever patients cannot be experimentally infected with the gonococcus, and that a fever-producing disease spontaneously cures previously existing gonorrheal infections, there can be but little question that fever artificially produced plays some part in the recovery from these infections.

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[6] Jobling, J. W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, The Journal A. M. A., June 3, 1916, p. 1753.

[7] Boerner and Santos: Med. Klin., 1914, **10**, 1062.

[8] Cited by Kyaw: Med. Klin., 1912, **8**, 1829.

[9] Müller and Weiss: Wien. klin. Wchnschr., 1916, **29**, 249; abstr., The Journal A. M. A., April 15, 1916, p. 1281.

[10] Smith, L. D.: The Value of Anaphylaxis in the Treatment of Gonorrheal Complications, The Journal A. M. A., June 3, 1916, p. 1758.

[11] Miller, J. L., and Lusk, F. B.: The Treatment of Arthritis by the Intravenous Injection of Foreign Protein, The Journal A. M. A., June 3, 1916, p. 1756.

[12] This question is now under investigation, as is also the question of finding a substance which may be given safely in standard doses at certain intervals. The difference in reaction caused by two supposedly equal bacterial suspensions may be very variable, and thus almost necessitates some standard substance if this treatment is to be used by persons other than those familiar with the dangers of a too severe reaction.

It cannot easily be determined how much influence, if any, the leukocyte increase in the peripheral circulation has, for when artificially produced in the manner employed here, the fever and hyperleukocytosis are invariably present together.

It is apparent that the usual treatment of gonorrheal arthritis is not satisfactory in all instances when almost daily one can see an ankylosed joint and atrophied muscles following this condition. Should this treatment by intravenous protein injections prove to give permanent results in these conditions, as present data seem to indicate, are we justified in using such measures?

In view of the chronicity of the disease and the destructive complications which commonly arise, it would appear to be a rational procedure when properly used and controlled. Until some substance is obtained, however, whose dosage can be more definitely standardized, it seems that this form of treatment should not be used generally by those not thoroughly familiar with the reaction and the manner of regulating the size and interval of dosage of such as used in the work here reported.

SUMMARY AND CONCLUSIONS

Intravenous gonococcal vaccines have no specific action either as a diagnostic or a therapeutic agent. A similar reaction is secured by suitable injections of meningococci and colon bacilli. There is no noticeable difference in the temperature or leukocyte curves produced after the intravenous injection of the foregoing bacterial suspensions.

The reactions produced in nongonorrheal patients in every way resembled the reactions in gonorrheal patients, there being no noticeable difference in the temperature and hyperleukocytosis produced.

Twenty-four patients with gonorrheal arthritis were treated. Complete recovery or marked rapid improvement was observed in all but two instances. Eleven patients were treated with gonococci with one failure, and eleven patients with meningococci with one failure, while but two were treated with colon bacilli, and both recovered.

Twelve patients with acute gonorrheal epididymitis were treated, and all were apparently completely and permanently cured within a week. There was no difference in results produced with the gonococcus, meningococcus and colon bacillus.

This mode of treatment in gonorrheal arthritis and epididymitis and at least in some instances of acute prostatitis possesses a decided therapeutic value. The results appear to be permanent in character. It possesses, however, little or no prophylactic value against the development of new complications.

Great care must be exercised in the selection of cases, and patients with organic heart disease should not be treated in this manner. No other definite contraindications have been observed.

Clinically the benefit to the patient runs parallel with the fever and hyperleukocytosis produced. It would seem that these factors play an important rôle in the treatment.

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SYPHILITIC BONE AND JOINT LESIONS SIMULATING TUBERCULOSIS *

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Every paper should present its special points in the beginning so that the attention of those really interested may be fixed. This paper aims to give two special points: first, that there is a considerable number of syphilitic cases simulating tuberculosis and other bone and joint lesions that escape recognition; second, that there is a considerable number of cases of bone and joint syphilis that do not give a Wassermann reaction.

In the past year or two I have seen at least eighteen cases of bone and joint syphilis that have given negative Wassermann reactions. Some of these were unmistakable syphilis, as revealed by Roentgen-ray examination. In others the nature of the process could not be told in this manner. In these two groups of cases the clinical histories are strikingly similar in the individual cases in each group. In those frankly syphilitic on Roentgen-ray examination the histories are all the same, pain in the affected part, frequently more marked at night, and little or nothing else. They have each been in the hands of one or more physicians, some of whom have suspected syphilis, but on account of the negative Wassermann they have been regarded as something else. In this group there were four patients, all of whom promptly improved on the administration of mercury and iodids.

In the second group, the larger numerically, the lesions were in and about the joints, rather than in the shafts of the bone as in Group 1, and in these cases, too, there was great similarity in the histories. Each of these cases had been treated by one or more doctors, many of these patients had been in institutions, teaching institutions or hospitals, and their trouble had been regarded as tuberculosis and they were treated accordingly by immobilization or operation.

As case histories are exceedingly boring, I will cite but a few and make these as short as possible.

Case 1.—L. L., Chinese boy, aged 5 years, came to the Stanford University children's clinic with a sore on the back of his hand. He was sent to the surgical clinic, where, after a little time, the diagnosis of tuberculosis of the carpal bones was made and confirmed by the Roentgen ray. He was kept under observation in the surgical department for about a month; then, as the lesion was regarded as tuberculous, the child was transferred to the orthopedic clinic. It was then ascertained that he had had this sore on the back of his hand for about ten months. At this time he had the hand in plaster of Paris, and through a window in the plaster it could be seen that there was some swelling and two sinuses. The sinuses did not seem to be tuberculous, so the boy was put on mercurial ointment and iodids and improved rapidly in spite of the fact that the Wassermann had been negative shortly before the treatment was begun. All plaster was removed, and the boy made a rapid recovery. A guinea-pig injected with some of the material from the sinus remained perfectly well.

Case 2.—F. M., white man, aged 42 years, sustained a fracture of the lower end of the radius in December, 1913, which healed without any trouble. Oct. 7, 1914, the man returned to the surgical clinic, complaining of pain and swelling of the right wrist. There was diffuse swelling, pain and limitation of motion. Roentgen-ray examination at that time showed probable tuberculosis of the wrist, with a possibility of

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

syphilis. He was transferred to the orthopedic clinic six months later after having been treated by immobilization by means of plaster of Paris. As the diagnosis was not clear, the man was allowed to go without any support, to see what would happen. The condition remained the same, certainly no worse. The man had no knowledge of any syphilitic infection and his Wassermann was negative in July, 1915. He was put on mercurial ointment and potassium iodid. His pain and swelling disappeared and motion in the wrist increased. By the middle of August the man was practically well, though with some limitation of motion in the wrist, probably due to his old fracture.

CASE 3.—This case was extremely instructive. A white child, aged 2 years, was brought to the clinic complaining of swelling in the foot and lameness, which had begun about two months before and was gradually growing worse. At that time in the children's clinic syphilis was suspected, but the mother took the child away and did not return for seven months. During these seven months the child had been operated on by two surgeons, independently, and the mother was told by each one that the condition was tuberculosis. When the child was brought back a Wassermann was made, which was negative (there had been no medication). There was a small sinus at this time at the seat of one of the operations. This child was also treated with mercurial ointment. The sinus closed rapidly and the child improved very quickly. This child gained 2 pounds in weight in three weeks after beginning the mercury. In six weeks all the signs and symptoms had disappeared.

CASE 4.—K. H., white, aged 2½ years, was brought to the clinic with swelling of the ankle that had appeared at 2 months of age. This child had been treated at one of the teaching universities over a period of twenty-two months as a case of tuberculosis. The treatment was immobilization by means of plaster of Paris. During this time two sores appeared about the ankle which kept discharging. Wassermann on the mother, father, and child were all negative. There seemed to be a slight fusiform swelling on the fibula, which showed some periosteal thickening on Roentgen-ray examination. The Roentgen-ray report read in part, "suggests syphilis of fibula, possible tuberculosis." On this finding the child was put on mercury and all plaster removed. The sinuses healed quickly and the child improved rapidly. In about two months the symptoms all disappeared and the child was practically well. Treatment was, of course, continued. A fusiform swelling at the upper end of the ulna, discovered accidently in the examination of the child, seemed to remove all doubt as to the nature of the process.

CASE 5.—Mrs. G., aged 32 years, was admitted to the hospital complaining of pain and swelling of the right ankle. Without going into all the details, as this was an extremely obscure case extending over a long period of time, suffice it to say that it was at first considered to be an infectious arthritis, then as tuberculosis of the ankle, and finally as syphilis, on account of improvement under mercury as a therapeutic test, even though the Wassermann was negative. Following an intravenous salvarsan and continuing the mercury this patient has remained entirely well.

These five cases were selected at random, and on account of this method of selection the proportion of ankle cases is unduly high. Practically all the large joints have been represented in this series of cases. Eighteen such cases have been seen, five of the ankle and foot, three of the wrist, three of the hip, one each of the elbow, knee, and back, four of the shafts of long bones, all of which have been under the care of competent physicians, and all of which had been regarded as some condition other than syphilis, most frequently tuberculosis. This would seem to indicate that a large number of such cases are going about, for the experience of no one man or institution is peculiar.

The consideration of these cases brings up several interesting questions: Why do we get so many negative Wassermann reactions in bone syphilis? The percentage I am not able to state, but it seems fairly high, at least 10 per cent. Is it because of the chronicity of the disease, and the lack of amboceptors in the blood, not sufficient being set free to bind the complement? In a manner, it is, perhaps, somewhat comparable to the fact that in a chronic, pyogenic abscess there is no increased leukocytosis. Another point that these cases emphasizes is that fixation of syphilitic joint neither gives relief nor aids in a restitution of the part to normal.

Another point is the large proportion of children in these cases, eight out of eighteen, or really eight out of fourteen, being under ten years of age, quite a contrast to the ordinary teaching that syphilitic joints are not common in childhood.

Another question that comes up is what we are to consider as the most reliable test of syphilis. To my mind it is unquestionably the therapeutic test, and lastly the question of the therapeutic test as a diagnostic method. It is my impression that this should never, or almost never, be omitted in trying to arrive at a conclusion concerning the nature of a chronic process in and about a joint. Exception may be taken to this, but in the present state of our knowledge it seems to be the best test we have for syphilis, and without it one is never sure of his diagnosis.

ABSTRACT OF DISCUSSION

DR. H. W. FRAUENTHAL, New York: Ten years ago, I read a paper on syphilitic bone and joint conditions, and I was surprised at the small amount of literature in America on the subject. The orthopedic institutions in the United States had few cases of bone and joint syphilis in their records. I was also convinced of its rarity in another way; in asking some of the leading specialists in New York to discuss the frequency of these conditions, most of them said that they had never seen bone or joint syphilis. After collecting a number of cases I concluded that syphilis of the bone and joints was much more common than it appeared to be. The reverse was true on the continent. Most continental observers said it was common in children and adults. Fournier says 42 per cent., and Von Hipple 56 per cent., or more than half. In New York I found it almost impossible to convince others that the Roentgen-ray findings meant syphilis, and that antisyphilitic treatment cleared up the joint conditions. After the Wassermann test came into vogue, and was used uniformly in all our cases, we were surprised at the result. We now find that in almost all blood tests we have 15 per cent. of Wassermann positives. These findings are checked up by other laboratories. Where we failed to get Wassermann positives and the roentgenogram indicated that it was syphilis, by giving salvarsan and neosalvarsan, we later often got a positive Wassermann. When the reaction in the child and father was negative, as the father took treatment, and the child did not show a positive Wassermann the mother never was treated. She often showed a positive Wassermann. I have seen persons treated from six months to two years for tuberculous joints in cases regarded as tuberculous who yielded promptly to salvarsan and mercury. Some of these are interesting in their apparent persistence in the appearances of tuberculosis before mercury and salvarsan were tried. One patient, a married woman, had brace treatment for a time. Then as the appearances of the roentgenogram were such that one would think that she would get motion in the joint, she had treatment at another institution for a year and a half with the Zander apparatus and massage, in order to get motion. They failed to obtain any motion in the knee joint. She gave a 4 plus positive Wassermann. A single dose of salvarsan and inunctions over her joint resulted, inside of ten days, in giving her 45 degrees of motion. Another patient, a child with keratitis and Hutchinson's teeth, who had been treated a year and a half at another institution for tuberculous knee joint, under a single injection of salvarsan and inunctions of mercury for two weeks got a normal range of motion; although there was an inch and a half difference in the two limbs at the beginning of treatment. After four weeks both were alike. I think that if it were a custom to take a Wassermann blood test in the case of every child, and then extend it to the mother and father, a number of cases thought to be tuberculous would prove to be syphilitic.

Dr. John Ridlon, Chicago: About thirty years ago, I showed a group of cases before the orthopedic section of the New York Academy of Medicine that I believed to be cases of syphilitic joint disease in children; but not one man there would admit that they were syphilitic, and Dr. Shaffer even went so far as to say that the result of antisyphilitic treatment proved nothing, because Dr. Knight, at the Hospital for the Ruptured and Crippled, had always given mercury and potassium iodid for tuberculous joint disease and had obtained wonderful cures in such cases by this means. That was before we had the Roentgen ray, the Wassermann test or tuberculin test to help us in the diagnosis. There is no question of the fact that some children have syphilitic joint disease who do not give a positive Wassermann reaction; and it is also true that a certain number of syphilitics do have tuberculous joint disease which can be demonstrated to be tuberculous. Therefore, the difficulty is very great in making the diagnosis between a chronic syphilitic joint disease and a tuberculous joint disease. The acute cases are quite different from the chronic syphilitic joint diseases, and the patients rapidly get well under treatment; while the patients with chronic cases get well much more slowly, but do get well much more rapidly under immobilization and mercury and potassium iodid than do patients with ordinary tuberculous joint disease. The diagnosis has to be made by instinct in many cases, instead of by positive clinical facts.

Dr. James T. Watkins, San Francisco: Taken as a whole the paper is important, first, because it points out the danger even painstaking observers run of mistaking a syphilitic bone lesion for a tuberculous condition if they put their trust implicitly in the absence of a positive Wassermann reaction. Those of us who see much bone and joint disease must agree with Dr. Fisher that bone and joint syphilis is much more prevalent in childhood than the literature would seem to indicate. Second, of those cases which are clinically syphilitic, Dr. Fisher finds that 10 per cent. do not give a positive Wassermann reaction. I am of the opinion that to estimate them at 20 per cent. would be to get nearer the mark. Third, of these Wassermann negative syphilitics, those with involvements of the shafts of the bones only present pain worse at night as the one constant symptom. These have, however, definite Roentgen-ray changes. Fourth, in the group which presents joint involvements, the Roentgen-ray changes may be misleading, suggesting tuberculosis. Therefore, all you have to go on is limitation of motion and pain, pain which is not relieved by mechanical protection of the involved joint. The only reliable test is the therapeutic one. If one would reduce the teachings of this paper to a sentence, one would have to go back to the dictum of the pre-Wassermann clinicians and say with them "When in doubt treat for syphilis."

Dr. Edward Hatch, New Orleans: During the last few years I have seen several cases in adults, some of whom came for frank, and some for indefinite joint pain. The diagnosis was made by the Roentgen ray, and in each case, the Wassermann test was negative. In practically all, the luetin test was positive. Therefore, I should like to ask Dr. Fisher whether he has made tests of the luetin reaction, and whether he considers this an aid in the diagnosis.

Dr. Edwin W. Ryerson, Chicago: It is important, in this connection, to remember that some cases with a negative blood Wassermann may give a positive spinal fluid Wassermann. This is not recognized quite enough, nor is quite enough advantage taken of it. I have seen about ten cases in the last few years in which the blood Wassermann was negative, and the spinal fluid Wassermann was absolutely positive.

Dr. Walter G. Stern, Cleveland: Let us clinicians not forget that Wassermann stated in his original paper that a negative blood reaction is of no diagnostic or prognostic value, unless the reaction continues negative for as long a period as a year to a year and a half; so that one must not be too hasty in ruling out syphilis on the basis of one or two negative serologic examinations.

Dr. Reginald H. Sayre, New York: I think that the old Scotch verdict, "Not proved," is very applicable to this case; and I only wish to question the writer of the paper in regard to one point. I agree with everything else. This point is that he feels that these patients are not benefited by protection. Now, I believe that in a great many cases it is as wise to give protection to the syphilitic as to the tuberculous joint. I have seen syphilitic hips that went for a considerable period of time with protection and hip splints not undergoing any shortening, and that, when the weight bearing was again permitted, began to telescope. It seems logical, in a soft bone, to relieve it from strain, if you wish to preserve continuity.

Dr. C. B. Francisco, Kansas City, Mo.: In the years 1907-1908, at the Hospital for Ruptured and Crippled, before the time of the Wassermann test, in admitting the children we did not label a single case syphilis of the joint, diagnosing these cases as tuberculosis, but I hesitate now to make that diagnosis. I should like to go a point further in these cases, more especially in those involving the bone near the joint, which are very difficult at times to diagnose. Strange to say, some of these patients will get well without antisyphilitic treatment; and you think that you have a tuberculous joint, only to have the patient come back, in the course of a few years, with a chronic syphilitic joint somewhere else, proving that the condition was probably syphilis from the start. Nichols says that 50 per cent. of the cases of latent bone syphilis give a negative Wassermann, and that we should rather rely on the Roentgen ray than on any one other factor for diagnosis. There is one difficulty with the therapeutic test: it will not relieve the endosteal bone changes. Mercury and iodid will relieve the periosteal changes and the gummatous changes, but the endosteal thickening will remain. Another point, advocated particularly in England, is that salvarsan is of no particular value in bone syphilis. Mercury and potassium iodid, in the periosteal and gummatous type, should be the treatment of choice.

Dr. Leonard W. Ely, San Francisco: Opinion in regard to bone and joint syphilis has changed. There used to be skepticism concerning the occurrence of joint syphilis in childhood. The essayist has brought out the lack of reliability of the Wassermann test. There is no reliable test for joint syphilis. The Wassermann test, the Roentgen ray, the clinical course, the history, must all be considered, and then we are not certain about a diagnosis. The gross bone changes in syphilis of the joints are exactly the same as those of tuberculosis. The changes in the synovial membrane are, in gross, also the same. The microscopic and histologic changes are not absolutely reliable. If we find what we consider a tubercle, we say the joint is tuberculous; but the pathologist tells us that we cannot depend on the presence of giant cells, and what we are wont to regard as the characteristic changes of tuberculosis. The guinea-pig test is the most satisfactory; and yet, we have just had a case in our clinic that we have been working over for the past six months, the diagnosis lying between so-called Legg's (Perthès') disease, syphilis and tuberculosis. The patient went to another clinic and was operated on for giant-cell sarcoma. The tumor was sent to a pathologist, who said that it was probably tuberculosis. The material when injected into a guinea-pig gave a negative tuberculous reaction, and we thought that the case was closed. Later, however, the operator told us that he had administered tuberculin and got a reaction, and that he regards the case now as tuberculosis. Personally, in the absence of the animal test, I regard the therapeutic test as the most reliable.

Dr. Emil S. Geist, Minneapolis: I have had several cases in my practice in the last few years in which the diagnosis of bone or joint syphilis was made. The history was positive, the Wassermann reaction was also positive, and the roentgenogram showed definite joint lesions; yet when the therapeutic test was applied, it did not give any results. When the physician who had correctly diagnosed the case came in, we told him that we thought we were dealing with tuberculosis or some other bone or joint trouble. Nevertheless, the cases turned out to be syphilitic. It has been my experience that in some of these cases, we must push the treatment to the limit, and that really the therapeutic test had not been tried when it had been found wanting in the minds of these men. The point that I would make is that bone and joint syphilis is more resistant to treatment than other forms and I have been accustomed to transfer these cases to the syphilologist, because he has been handling more syphilitic remedies and knows better how to apply them than I.

Dr. Henry Ling Taylor, New York: Not infrequently, when the Wassermann is negative in the child, it may be positive in one or both parents; this has been found true in several cases lately. It pleased me very much to hear one of the speakers say that the old fashioned mixed treatment is more reliable than salvarsan in bone and joint cases. I have also found this to be the case, and it does not seem to be generally known. Some men think that they are giving antisyphilitic treatment when they give potassium iodid, but this is a delusion; mercury is the active agent.

Dr. Robert W. Lovett, Boston: Most of the remarks have been coincident with my own experience. One point I should like to mention is the stimulation of chronic osteomyelitis by syphilis. I have had patients with chronic osteomyelitis who gave a positive Wassermann reaction and improved under antisyphilitic treatment. About a year ago I went through some plates with Dr. Post, professor of syphilis at Harvard University, who has given great attention to the appearances in bone and joint syphilis. Some of the plates showed bone syphilis very clearly. Some cases that we had diagnosed as osteomyelitis, he thought were characteristic of syphilis. Many of them were old plates.

Dr. A. E. Horwitz, St. Louis: We see a surprising number of these cases in St. Louis, probably because we look for them. In most of these cases the Wassermann is negative, the percentage of negative results being fully 50 per cent.; so we do not, as a rule, rely on this test, but look for other essential points. In the congenital form, there is usually multiple joint involvement; so we have come to rely on this. It is essentially polyarticular, not like tuberculosis, with one or two joints involved, but, in most cases, quite a number of joints. One strong point is the shaft involvement. In the joint where the involvement occurs, by looking carefully, we can find some slight involvement in the opposite end of the shaft. If we do not, we find a symmetrical involvement of the opposite limb in the same joint. That has been very striking and very often demonstrated. In spite of a negative Wassermann reaction, we can, therefore, make the diagnosis, because of the fact that the disease improves under antisyphilitic treatment. Another point is that in the congenital cases, which are essentially polyarticular, the condition is not entirely articular, but extends into the shaft somewhat; and even in the acquired form of syphilis, wherever there is bone involvement, it also extends into the shaft, and possibly from the shaft to the joint. So much is this so that we tried to claim that acquired syphilis is not an actual joint condition, but an extension from the shaft, while the congenital form is joint involvement proper, extending to the shaft.

Dr. Arthur L. Fisher, San Francisco: My object in bringing up the subject was to set forth the fact that the Wassermann test is unreliable in two ways: first, that in a large proportion of syphilitic cases one gets a negative Wassermann; and second, and more important, because of the interpretation given by the profession at large to the Wassermann, that a negative Wassermann means no syphilis. We know that this is not true, and I have tried to bring out the fact that all these patients have been in the hands of competent physicians who, on account of the negative Wassermann, regarded the cases as not syphilitic. In answer to the remark about the spinal fluid Wassermann, I would say that it is unquestionably a fact that it happens with great frequency that a blood Wassermann is negative, and a spinal fluid Wassermann positive. These cases, however, are usually central nervous system syphilis—tabes or cerebrospinal syphilis; and you get in them the so-called Charcot joints. I have not seen any joint involvement, except these, in such cases. With regard to the protection of the joint, I would say that it does not give relief of symptoms in these cases, and does not tend to a restoration to normal. Of course, if a diseased area is bearing weight it is wise to protect it. I am glad that the subject of the histology of the condition was brought up, because there is a broad general statement that can be made in regard to it, and that is, that without finding the tubercle bacillus, you cannot be sure whether you are dealing with syphilis or tuberculosis. You can usually, if you look at a slide, say, "This is a tubercle" or "This is a gumma"; but you can never be sure, and even an expert pathologist will not usually give a definite diagnosis on this point. Dr. Lovett brought out an interesting point, the difference between syphilis and chronic pyogenic osteomyelitis. We have been coming to believe that when pyogenic osteomyelitis is multiple, it is usually in a syphilitic patient, either congenital or acquired; and you will usually find some evidences of syphilis in the family in these cases.

REPORT OF A CASE OF STRANGULATED DIAPHRAGMATIC HERNIA, WITH OPERATION AND RECOVERY

Charles E. Hawkes, M.D., Providence, R. I.

In an article on stab wounds of the diaphragm, with diaphragmatic hernia or evisceration, Dr. Charles C. Green[1] has reported a total of 123 cases, collected from the literature, together with six cases of his own.

To this list I wish to add a case of my own, in which the patient was operated on at the Rhode Island Hospital, this summer, during my term of service. This case was especially interesting from the fact that the hernia became suddenly strangulated, and the patient's convalescence was complicated by a prompt attack of delirium tremens.

The patient, A. Le C., man, aged 49, single, white, laborer, well developed and well nourished, was brought to the Rhode Island Hospital in one of its ambulances, Nov. 17, 1915. He had been stabbed by his roommate, during an argument as to who should do the cooking. The wound was in the left eighth intercostal space, nipple line, about 3 cm. in length and 1 cm. in depth, which bled readily. No fracture of the ribs could be detected, nor perforation of any cavity, nor evidence of internal injury. The patient complained of extreme tenderness about the cut. The incised wound was treated in the accident room with iodin, and sutured with three silk sutures. Three days later, the wound was clean, the patient's condition was satisfactory, and he was discharged from the house, and referred to the outpatient department for any further necessary dressing and attention.

July 21, 1916, the patient was readmitted to the hospital in the ambulance. His history was as follows: Since his previous discharge from the house, he had felt well except for occasional belching of gas, to which he paid no attention. He complained of no other gastric symptoms. He had been a heavy drinker.

Two hours before his second admission to the hospital, while at work, he was seized with a sudden, severe attack of pain, in the epigastrium. He vomited once, soon after the onset of the attack. The pain continued with great severity. He managed to get to a drug store, where he collapsed.

The man was in extreme agony. His face was markedly cyanotic, the pulse almost imperceptible, the skin cold and clammy. A general examination was not made, because of his extremely poor condition.

The abdomen was exceedingly tender in the epigastrium, and the rectus muscles were rigid to a level with the umbilicus, below which point they were much less tense. It was tympanitic all over. Distention was limited to the epigastrium. The liver dulness was not obliterated. Below the umbilicus the abdomen appeared somewhat sunken, fairly soft on palpation and not tender. On the left side, the tympany extended to the fourth intercostal space. Owing to the patient's critical condition and to the imperative need for rapid therapeutic action, all further examinations, including that of the chest, were postponed.

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[1] Green, C. C.: Stab Wounds of the Chest Involving the Diaphragm, with Diaphragmatic Hernia or Evisceration, The Journal A. M. A., July 15, 1916, p. 178.

He was given a quarter of a grain of morphin subcutaneously, and 600 c.c. of saline solution intravenously. Heaters were applied externally. He responded quickly to this stimulation, the cyanosis diminished, and the pulse became stronger and regular. One hour after his admission to the hospital, he was sent to the operating room. As the patient had been free from all symptoms referable to his previous stab wound for eight months, and since his present attack came on suddenly and with severity in the epigastric region, and followed an alcoholic history, a diagnosis of perforated duodenal ulcer was made. The white blood count was 17,000.

Under ether anesthesia, a high right rectus incision was made through the abdominal wall. No gas or fluid was encountered when the peritoneal cavity was opened. The duodenum, except for a few veil-like, red adhesions, was normal, as was also the gallbladder. The right lobe of the liver was somewhat enlarged. The appendix was short, small and atrophied. The ileum was collapsed. The right kidney was normal. The omentum was not discernible. On examination of the stomach, no adhesions or thickening of its walls could be detected. When an attempt was made to pull it down into the wound for a more thorough inspection, for some reason it seemed to be firmly anchored behind and could not be drawn down. Further examination behind the stomach disclosed intestines passing through a vertical rent in the left leaf of the diaphragm. To facilitate the operation, an incision was made transversely across the left part of the abdomen, to the extent of 5 to 6 inches from the upper end of the original incision, and the triangular flap laid back, making a large square opening to work through. The intestines were found so firmly wedged in the wound of the diaphragm that this also had to be enlarged 1 or 1¼ inches, making the entire opening about 2 or 2½ inches. Fairly firm adhesions between the intestines and the hole in the diaphragm had to be broken up before the hernia could be reduced. The transverse and part of the descending colon, the omentum, and about half of the small intestines were finally withdrawn from the left chest, through this rent in the diaphragm. The omentum was black from extravasation of blood, and was bleeding from many small points. It was somewhat adherent about the opening in the diaphragm, and had to be forcibly freed and tied in places. The mesentery of the intestines also contained large areas of extravasated blood and abrasions. The jejunum was distended, and dark in color. The condition of the omentum, mesentery and jejunum was undoubtedly due to the sudden strangulation of the parts, through the traumatic opening in the diaphragm.

An interesting point was the ease with which the apex of the heart could be palpated and the pulsations counted through the diaphragmatic rent.

The edges of the diaphragmatic wound were seized with Kocher's clamps, and approximated with through-and-through sutures of No. 2 chromic catgut, doubled. To facilitate haste, a number of through-and-through silkworm-gut sutures were taken in the triangular abdominal wound, supplemented by chromic catgut sutures through the fascia, muscle and peritoneum, and silk in the skin. No drain was used.

The nurse in the laparotomy room reported that the patient came from the operating room at 7 p. m. in poor condition. He was given a shock enema, which was retained. Camphor in oil, 30 drops, was given subcutaneously at 7:30, and every two hours thereafter. Caffein sodium benzoate, 2 grains, was given subcutaneously at 8:30 and every two hours. Morphin, ¼ grain, was given at 8:45 subcutaneously, and repeated in four hours. One pint of Murphy drip saline was given by rectum at 11:30 and retained. The patient voided at 1 a. m. He had a good deal of pain all night. The following day, the stimulation was continued, and in addition two high enemas of Epsom salt, glycerin and water were given with good gas results. The patient talked irrationally at times during the night.

The next day, July 23, he became restless and delirious, got out of bed and walked around the room, insisting that he was all right and desired to go home. He was transferred to the quiet ward, where his delirium tremens required large doses of sedatives, and some whisky to control. Here he remained under close observation for seven or eight days before it was considered safe to return him to the laparotomy room. Part of the time he had to be restrained to be kept in bed.

August 1, the stitches were removed and two small plain rubber tissue drains were inserted down to the muscle, to drain small collections of seropus from the incision wounds. He slept well from now on.

August 14, the rubber tissue drains were left out. The patient was given a back rest, in bed.

August 16, the patient was out of bed, in a chair.

August 19, he was discharged from the hospital practically cured. He returned several times, at intervals of three or four days, for dressings. The two sinuses, where the drains had been inserted, eventually closed.

The temperature chart showed the following: Temperature rose to 103 the third night after operation, pulse 115 and respiration 34, during his mental excitability. Normal was soon reached, and the temperature touched 100 on only three or four occasions afterward, falling to normal or 99 the next day.

The urine, July 22, showed a rusty color, and strong acidity, specific gravity 1.020, albumin a trace, and sugar absent. In the sediment were numerous granular casts, a few squamous epithelial cells, and an occasional white blood cell.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 287)

CALCULI IN CHILDREN

That urinary calculi occur in children is, of course, recognized; but a summary of the subject by Collins[62] shows that one investigator found "that 45 per cent. of 5,900 cases of calculus occurred in children, and that children under five years are especially prone to the condition." Collins finds that children resemble adults in that renal calculi occur in boys twice as frequently as in girls, the majority of cases being found in children under 2 years of age. Holt says that small renal calculi are very common in infants, and though these calculi may be voided without symptoms, other observers are of the opinion that renal colic in infants is not rare.

The causes of these deposits in children are probably too much nitrogenous food, too much calcium in the food, perhaps too much phosphate in the food or medication, and often an insufficient amount of water. Perhaps frequently there are the added factors of bacterial infection and delayed passage of urine to the bladder. Gout in the parents can scarcely be called a predisposing cause. Bacterial infection, general and later focal, is doubtless a frequent cause. With bladder calculi, renal calculi may be presupposed. When blood or pus is found in the urine, a careful examination should be made.

Sudden pain, apparently abdominal (in a child too young to describe its symptoms), vomiting, and suppression of urine, or bloody urine, suggest a kidney stone; sudden high fever added to these symptoms indicates a kidney infection. A history of gravel, or of passage of urine showing a quantity of sediment, may aid in the diagnosis. Roentgenograms should be made before operative interference is undertaken.

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[62] Collins, A. N.: Urinary Lithiasis in Infancy, Am. Jour. Dis. Child., October, 1913, p. 245.

It is very difficult to decide whether in young children morphin or codein would mask a necessary symptom in making a diagnosis — as in appendicitis or intestinal obstruction, for instance. At the same time, we are not justified in allowing a child to suffer agony when an adult would insist on the alleviation of his pain. Therefore when the renal colic has been diagnosed, the pain must be diminished. Hot baths may cause relaxation, with a dose of codein proportionate to the age of the child; a few whiffs of chloroform may also be needed. Long continued use of chloroform, however, is not justifiable.

A calculus which has not been passed should be sought by the Roentgen ray and surgically removed, as the lodging of such an obstruction in any part of the urinary tract is a greater menace to a child than to an adult.

The prognosis is unfavorable as many cases necessarily remain undiagnosed until necropsy. Surgical treatment of diagnosed cases, however, should give more satisfactory results.

The child who has passed a stone should be given the following prophylactic treatment: a properly balanced diet, regulation of the bowels, and plenty of water.

BILATERAL KIDNEY STONES

In children, as well as in adults, we frequently find that if stones are located in one kidney, the same condition will be discovered in the other. Speaking conservatively, this is true of 20 per cent. of the cases. This is necessarily true as any urinary or digestive disturbance has a tendency to affect both kidneys unless one kidney is made more susceptible by some localized predisposing cause. Hence, before operation both kidneys must be examined by the Roentgen ray. When stones are found in both kidneys, operation on either kidney is accompanied by greater hazard. Of course the more weakened either or both kidneys are from pus, hydronephrosis or nephritis, the graver is the prognosis. Whether or not the two kidneys in these bilateral cases should be operated on at once is a nice medical and surgical question; careful consultation, tests of function and of the blood for retention nitrogen must make the decision.

HEMATURIA

Hematuria, or blood in the urine in tangible amounts, should always be investigated, as it may be of serious import. Traces of blood, which are frequently found, may lead to the discovery of various disease conditions. Real hematuria may appear as clear blood or blood mixed with urine; or the urine may appear smoky, as occurs when the kidney substance is the source of bleeding, the blood being thoroughly mixed with urine, albumin and débris. Small amounts of blood may also be found in the urine in chronic nephritis of all types. Other conditions that cause or allow hemorrhage into the urinary canals are traumatism; calculi; cystic degeneration of the kidneys; carcinoma or tuberculosis of any part of the urinary tract; some blood diseases, especially hemophilia; acute infections of the malignant type; acute nephritis; septic infarcts of the kidney substance; and more rarely echinococcus infection. Blood may of course also appear in the urine owing to bleeding from the ureters, bladder, prostate or urethra. Rarely exposure to severe cold may cause blood to appear in the urine in certain individuals. Cardiac insufficiency, with passive congestion of the kidneys, congestion of one kidney due to displacement or to pressure on its blood vessel, a serious lordosis, or serious disturbances of the liver may cause kidney hemorrhage. Cases of hemorrhage have been reported in which there was localized dilatation of the blood vessels. This condition, which is rare, has been termed renal angioma or renal varix. Hematuria as well as hemoglobinuria may sometimes be caused by certain forms of pernicious malarial fever.

Elsner[63] found hemorrhage of the kidneys in 100 per cent. of acute tubal nephritis, in 100 per cent. of secondary congested kidney (passive hyperemia), in 33 per cent. of chronic tubal nephritis, and in 14 per cent. of chronic interstitial nephritis. These surprisingly high percentages give evidence of the frequency of hematuria, and should warn against operative interference except as a last resort. A floating kidney which is bleeding should be anchored, since a kidney so displaced as to cause interference with the outflow of blood from the renal vein must be passively congested.

It has been suggested that a kidney passively congested for some time becomes enlarged through dilatation of its blood vessels and is subjected to pressure from its capsule. Decapsulation would relieve this passive congestion and the resulting hemorrhage.

Blood issuing from the urethra will generally precede the passage of the urine or appear in the first jet. If it comes from the posterior urethra or from the prostate gland region, it is apt to follow urination. Blood coming from the bladder may be well mixed with urine, it may appear with strings of mucus, or it may follow urination. Blood from the ureter or from the pelvis of a kidney may follow urination, or the urine may be more or less mixed with it. As stated, blood thus occurring with nephritis generally causes a smoky urine, although clear blood may come from some lesion of the kidney substance.

Urethroscopic and cystoscopic examinations may disclose the origin of the blood. If its source is found to be in the kidneys, the passage of ureteral catheters will show the kidney from which it comes. Roentgenograms may reveal a calculus in the pelvis of a kidney or in the ureter as the cause of the hemorrhage. If the bleeding is due to a stone, absolute rest will usually cause a cessation. If it is due to tuberculosis — a common cause — or to some kidney growth, rest will probably not be efficacious; but, if the hemorrhage is localized in one kidney, surgical intervention may be required. Before resorting to this measure, however, one should take into consideration the health of the other kidney, the seriousness of the bleeding, and the gravity of the symptoms. If the bleeding is due to a displaced kidney, rest and abdominal support will usually remedy it. If it is due to circulatory insufficiency, cardiac tonics and rest will generally cure the condition, as whatever improves the system will of course diminish the hematuria.

Gallic acid has at times seemed to check renal hemorrhages due to disturbances of the blood or to a growth in the kidney. The use of gelatin and calcium chlorid has sometimes been beneficial, as has also been dry cupping over the offending kidney. Cotarnin hydrochlorid (stypticin) and cotarnin phthalate (styptol) have been used with apparent success in some cases of bleeding from the kidney substance. Injections of epinephrin solutions into the pelvis of the kidney through the ureteral catheter has suppressed bleeding for varying periods. Blood serum, the administration of suprarenal gland, or the administration of thyroid gland sometimes will prove effective when the hemorrhage is due to a hemophilic condition.

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[63] Elsner: New York State Jour. Med., 1913, **13**, 144.

It should be emphasized that the most frequent causes of kidney hemorrhage are renal stone, tuberculosis and circulatory insufficiency. It is associated with acute nephritis. When accompanied by chills and fever, even though other evident sepsis is lacking, a septic infarct is probable. It should also be remembered that hexamethylenamin, which is now so frequently given, may cause hematuria. Occasionally blood vessel pressure from an abdominal tumor, or in pregnancy, may produce kidney hemorrhage.

ESSENTIAL HEMATURIA

Before applying this designation to a kidney hemorrhage, one must be certain that this particular condition may not come under some other heading. Many unexplained hematurias are thus termed, and Braasch[64] states that essential or unexplained hematuria is not a rarity. He found that 75 per cent. of seventy-seven cases were in males, the majority of whom were between 40 and 50 years of age. The duration of this intermittent hematuric condition varied, sometimes continuing for many years. Braasch found that high blood pressure was not a usual factor. These attacks, in some instances, were accompanied by pain. If the bleeding is preceded by a chill, if there is any pus or much albumin, a localized kidney inflammation is the probable cause of the hemorrhage. The presence of bacteria signifies perhaps a focal infection. Braasch found that in some cases injections of epinephrin solution, 1 : 2,000, into the pelvis of the kidney, while not curative, would stop the hematuria for a long time. He advises nephrectomy in persistently recurrent essential hematuria, when one kidney is healthy, having found nephrotomy of no value in this type of bleeding. It should be emphasized that before nephrectomy is employed in these cases, all less severe measures must be thoroughly tried. If bleeding then does not cease, the patient becoming exhausted and anemic, removal of the kidney is justifiable. Syphilis in some instances causes hematuria, and proper treatment of this disease may be the remedy required.

The pathology of these bleeding kidneys generally discloses the fact that the blood flows from the glomeruli, and that there is some kidney degeneration — a fibrosis not unlike that due to prolonged passive congestion or to heart insufficiency, as pointed out by Spitzer.[65]

It should be noted that, in many cases called "essential hematuria," plausible causes for the bleeding have later been discovered. It should also be noted that chronic nephritis may be present for a long time, causing hemorrhage even though the urine shows, on repeated examinations, no albumin and no casts. Such a condition may occur when there is arterial degeneration.

HEMOGLOBINURIA

In this condition the coloring matter of the blood appears in the urine without the corpuscles, the urine being dark and containing blood pigment and broken down red corpuscles. It may occur in diseases of the blood, such as pernicious anemia and purpura; in conditions causing the destruction of the red corpuscles, such as pernicious or malignant infections; in pernicious malaria, or in hemoglobinuric fever, and it may occur when nontested blood is transfused into an anemic patient or into a patient who has suffered hemorrhage. The latter incident rarely occurs at the present time, as it is now recognized that the donor's blood must be tested before transfusion can with safety be performed. Besides the causes just enumerated, a hemoglobinuria may be produced by poisons of the phenol type, such as coal tar products and potassium chlorate, and also by some snake poisons. Carbon monoxid (illuminating gas) poisoning is a frequent cause. Chloroform anesthesia may occasionally bring about this condition, as may also large doses of quinin. It is not necessary to discuss, in this connection, whether it is more hazardous to allow a pernicious malarial fever with kidney hemorrhage to run its course, or to decrease the fever by administering large doses of quinin, which will tend to increase the flow of blood.

Some time ago it was shown by Pearce, Austin and Eisenbrey[66] that there must be a concentration of hemoglobin in the blood of 0.06 gm. per kilogram of body weight before hemoglobin appears in the urine. If there are very large amounts of hemoglobin in the blood stream, bile pigments will also appear in the urine. A limited amount of the hemoglobin débris is cared for by the liver, but when this amount is exceeded the excess débris is secreted by the kidneys. Hemoglobinuria is frequently accompanied by hematogenous jaundice.

Paroxysmal hemoglobinuria is rare, but periodic attacks, with oxyhemoglobin and methhemoglobin in large amounts in the urine, may occur. Men seem to be more frequently afflicted with this form of hemoglobinuria than women. These attacks may be induced by cold, and in some cases by syphilis. They may be preceded by a chill and followed by a fever, with oft recurring myalgic pains. The urine will probably not continue hemoglobinuric longer than twenty-four hours. Malarial fever may be eliminated as producing such an attack; however, there usually is some hidden but definite cause.

PYURIA

Pus may appear in the urine in amounts varying from very small to large. A vaginal cause of pus in the urine in females can readily be excluded by catheterizing. In urethritis and cystitis the pelvis of the kidney is more frequently involved in the female than in the male, gonorrhea rarely ascending to the kidney in the male.[67]

The bacteria most frequently found in urine are the streptococci, staphylococci, gonococci, colon bacilli, pneumococci and tubercle bacilli.

C. Beeler and H. F. Helmholz[68] find, after examining 118 specimens of the catheterized urine of sixty-one female children, that colon bacilli are not normal inhabitants of the female urethra, but in extra-urinary infections occurring during the first two years of life the colon bacillus is frequently found in the female urethra; in girls over two years of age the urine is usually free from colon bacilli.

(To be continued)

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[64] Braasch, W. F.: Clinical Observations on Essential Hematuria, The Journal A. M. A., Sept. 20, 1913, p. 936.

[65] Spitzer, W. M.: Continuous Painless Renal Hemorrhage and Its Treatment, The Journal A. M. A., Dec. 12, 1914, p. 2110.

[66] Pearce, Austin and Eisenbrey: Jour. Exper. Med., 1912, **16**, 575.

[67] Sanders: New York Med. Jour., June 24, 1916, p. 1226.

[68] Beeler, Carol, and Helmholz, H. F.: The Bacteriology of the Urine in Health Children and Those Suffering from Extra-Urinary Infections, Am. Jour. Dis. Child. October, 1916, p. 345.

THE TREATMENT OF BURNS BY PARAFFIN

The Journal has previously commented on the secret proprietary preparation "Ambrine," exploited in this country some years ago as "Hyperthermine" and "Thermozine," and more recently given prominence in this country by extensive newspaper comment. In the *British Medical Journal,* Jan. 13, 1917, Lieut.-Col. A. J. Hull of the Royal Army Medical Corps, who has investigated the treatment, reports that he believes that under this treatment slight burns heal with singular rapidity, and persons severely burned recover who would not have recovered so completely under ordinary methods of treatment. He believes that the results obtained depend almost wholly on mechanical factors: the protection of the burn from the air, the protection of the newly formed granulations from damage, the splintlike effect of the wax in holding the damaged tissue immobile and at rest, and the heat of the applications, which may encourage the lymph flow and the blood supply to the new capillaries. The paraffin cast likewise provides a suitable nidus in which epithelium will proliferate. Dr. Hull, believing in the efficacy of the treatment, experimented to find a preparation which would be equally efficacious. Laboratory experiments were made with a view to impregnating paraffin with various substances and to produce a paraffin possessing the requisite melting point, plasticity and adhesiveness. He found that paraffin of a suitable melting point, if heated to 130 C. by superheated steam, became mobile and workable and was lowered 2 degrees in melting point. It is this superheated steam which is the essential process in the manufacture. The results of the application of hard paraffin — treated with superheated steam — to burns seemed indistinguishable from those of "Ambrine."

Dr. Hull claims that better results are obtained by the addition of certain antiseptic and stimulating substances. The wounds become clean more rapidly, pain is decreased, and the offensive smell associated with the "Ambrine" dressings is avoided. It was found necessary to change the treatment of sluggishly healing burns treated by "Ambrine" to a paraffin containing an antiseptic. The change was always beneficial.

Dr. Hull finally succeeded in preparing a formula which in numerous cases gave excellent results. Severe burns healed without cicatrices and without extensive scarring. The treatment was practically painless. He found that burns became clean more rapidly under this formula than under the "Ambrine treatment." The mixture, which he calls No. 7 paraffin, and the method of treatment are thus described:

> The paraffin treatment is begun at the first dressing; very exceptionally, in very septic burns, the paraffin is replaced by hot boric fomentations for two days after two days of paraffin treatment.
>
> The burn is washed with sterile water and dried. The drying is accomplished by placing a dry piece of gauze over the burn. An electric drying apparatus, such as is used by a hairdresser for drying hair, if available, is a convenient method of drying the burn.
>
> The burn is next covered with a layer of paraffin at a temperature of 50 C. The No. 7 paraffin has a melting point of 48 C. The temperature may be estimated by waiting until the wax shows a solidifying film upon the surface. A broad camel-hair brush, sterilized in wax, has been found to be a rapid and painless method of applying the paraffin. A spray may be used, but sprays readily get out of order, are troublesome to use, and the dressing takes longer. In theory a spray should be used in order to prevent any danger to the epithelium. In practice, we have found a brush, skilfully used, sufficiently satisfactory. Sprays are indicated in very painful cases. A metal spray of rather large bore should be employed. The spray must be immersed in hot water during use.
>
> A thin layer of cotton wool, cut the same size as the area of the burn, is placed over the wound after the first layer of paraffin has been applied. This layer of wool is covered with a second layer of paraffin. The wool is cut in thin sheets and pressed between layers of paper in order to obtain thin layers of wool. The dressing is completed by applying wool and bandage. The burns are usually dressed daily. In the later stages, when the burn is clean and only a small amount of pus is formed, the dressing is changed every forty-eight hours.
>
> Blisters are not interfered with in any way at the first dressing; the paraffin is applied after washing the burn. At the second dressing the dead layers of skin are cut away. Sloughs usually separate after a few dressings. The separation of sloughs is accelerated by applying a layer of jaconet over the wool and paraffin beneath the wool and bandage dressing.
>
> FORMULA FOR NO. 7 PARAFFIN

Resorcin	1 per cent.
Eucalyptus oil	2 per cent.
Olive oil	5 per cent.
Paraffin molle [soft]	25 per cent.
Paraffin durum [hard]	67 per cent.

> Melt the paraffin durum, and add paraffin molle and olive oil. Dissolve the resorcin in absolute alcohol (soluble 2 in 1), add the alcoholic resorcin, and lastly add the eucalyptus oil when the wax has cooled to about 55 C.
>
> A smaller amount of resorcin may be used. The whole of the resorcin does not remain in suspension, and we have used a paraffin containing 0.25 per cent. resorcin with good results.
>
> Difficulty having been experienced in obtaining resorcin in large quantity, beta-naphthol, which has the additional advantage of being a cheaper antiseptic, has been substituted for resorcin in more recent preparations, as follows:

Beta-naphthol	0.25 per cent.
Eucalyptus	2.0 per cent.
Olive oil	5.0 per cent.
Paraffin molle [soft]	25.0 per cent.
Paraffin durum [hard]	67.75 per cent.

> We have employed No. 7 paraffin in certain stages of the treatment of trench feet. The mode of application of paraffin to the ulceration following frostbite is in every respect similar to the application of paraffin in the treatment of burns, and the results have been equally satisfactory.

Experimentation on Man.—The limits of justifiable experimentation on our fellow creatures are well and clearly defined. The final test of every new procedure, medical or surgical, must be made on man, but never before it has been tried on animals. There are those who look on this as unlawful, but in no other way is progress possible, nor could we have had many of our most useful but very powerful drugs if animal experimentation had been forbidden. For man absolute safety and full consent are the conditions which make such tests allowable. We have no right to use patients entrusted to our care for the purpose of experimentation unless direct benefit to the individual is likely to follow. Once this limit is transgressed, the sacred cord which binds physician and patient snaps instantly. Risk to the individual may be taken with his consent and full knowledge of the circumstances, as has been done in scores of cases, and we cannot honor too highly the bravery of such men as the soldiers who voluntarily submitted to the experiments on yellow fever in Cuba under the direction of Reed and Carroll. The history of our profession is starred with the heroism of its members who have sacrificed health and sometimes life itself in endeavors to benefit their fellow creatures. Enthusiasm for science has, in a few instances, led to regrettable transgressions of the rule I have mentioned, but these are mere specks which in no wise blur the brightness of the picture—one of the brightest in the history of human effort—which portrays the incalculable benefits to man from the introduction of experimentation into the art of medicine.—Osler: *Transactions of the Congress of American Physicians and Surgeons,* 1917, **7,** 7.

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SATURDAY, FEBRUARY 3, 1917

IPECAC AND DYSENTERY

Ipecac is the root of a Brazilian herb. It is said to have been in common use in its native country long before it was brought to Europe by Piso at about 1650. Shortly afterward a charlatan by the name of Adriaan Helvetius placarded Paris with the announcement that he had a cure for dysentery. Hearing of this, Louis XIV summoned him to treat the dauphin, who was suffering from this disease. The patient recovered, and the formula, which Helvetius is said to have obtained from a physician in the Netherlands, was purchased by the government for 1,000 louis and made public. Ipecac was one of the ingredients of the formula, and from that day to our time ipecac has been used as a remedy in dysentery, but with varying fortune, it being vaunted by some as a specific and condemned by others as useless. Under any circumstances the vomiting was a heavy drawback.

Until not so very long ago dysentery included all diseases in which blood and mucus appeared in the stools; now we know at least two etiologic varieties, and there is no doubt that the success or failure of the ipecac treatment of the old days in large measure depended on what kind of dysentery was being treated. In India the use of ipecac in dysentery began early and was kept up, as we learn that in 1881 massive doses were used not only in uncomplicated cases but also in cases with abscess of the liver.[1]

In 1817 Pelletier isolated from ipecac the so-called active principle, the alkaloid emetin, which also was used in dysentery with success, at least by some, and in 1910 Vedder in Manila demonstrated that emetin, even in highly dilute solutions, kills *Amœba histolytica*, the cause of amebic dysentery. Shortly afterward Rogers[2] in India was able to cure acute amebic dysentery in a few days by means of a few hypodermic doses of emetin hydrochlorid. This striking therapeutic triumph has been repeated innumerable times, and is being repeated daily in all parts and corners of the world where amebic dysentery prevails, and emetin is today accepted as an almost ideal specific, being harmless to the body in doses which kill the amebas. In a solution of 1 : 10,000 it is amebicidal at once, at 1 : 100,000 in two minutes. Experience indicates that by its use amebic abscess of the liver can be prevented and even cured. Sometimes it is difficult to distinguish between amebic and bacillary dysentery, especially, of course, in the absence of good laboratory facilities; under such circumstances emetin may be of diagnostic value because improvement follows its use in two or three days if the case is amebic. According to Ross, the slightest suspicion of dysentery in Mediterranean troops now calls for the immediate injection of emetin on the chance that it will destroy an enemy whose presence there is ground only to suspect. Like the few, very few, other specifics we have, emetin has its limitations. The promptness and completeness of its specific curative action stand in direct proportion to the acuteness of the attack; in neglected cases in which the destructive trenching and mining of the intestinal wall are very extensive and associated with mixed secondary infections, and in so-called compound cases of dysentery, the emetin treatment may fail of complete success. Emetin also seems powerless against the encysted ameba and hence of but comparatively little influence in ameba carriers. As a direct cure for pyorrhea it seems to have failed, not because it does not act on the amebas which are found in the pyorrheal pockets, but because pyorrhea is not caused by amebas, as asserted by some prematurely. But take it all in all there are few drugs, if any, that have such an interesting, eventful and withal successful history as ipecac.

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[1] Ross, Ronald: The Treatment of Dysentery, Lancet, London, 1916, 1, 1.

[2] Rogers, Leonard: Dysenteries: Their Differentiation and Treatment, New York, Oxford University Press, 1913.

SOME FACTORS IN MILK PRODUCTION

Recently the view that the mammary gland tends to manufacture a specific product, milk, which is in no sense a mixture of unaltered food components absorbed in part unchanged and reexcreted in the same form, was discussed in The Journal. This must not be interpreted as meaning that milk production is in ultimate analysis entirely independent of the diet. If constructive units of a suitable sort are entirely lacking in the ration, they will either be derived from the body tissues themselves or milk production must ultimately fail. In this sense the quality of the proteins furnished to a lactating individual is of decided moment; but whatever the protein may be, the milk proteins produced are representative and characteristic so long as they are produced at all.[1]

Again, in the case of the fats, it is doubtless true that abnormal butter has been produced by feeding a cow large quantities of vegetable oils, such as cottonseed oil, linseed oil and sesame oil; but such feeding conditions cannot be regarded as normal. It has been pointed out that the food fat does not go over into the milk so readily in any considerable quantity without "metabolic supervision," as many are inclined to believe.[2] The mammary gland attempts at least to secure a characteristic output despite the occasional "escape" of unusual components. Some of these, like butter color, doubtless owe their presence in the milk to the accident of their unusual solubility in fats rather than to any other special selective circumstance.

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[1] The Relation of Proteins to Milk Production, editorial, The Journal A. M. A., Nov. 4, 1916, p. 1374.

If further evidence of the persistence of the mammary gland to produce the normal milk constituents under unusual conditions were demanded, it might be found in recent investigations at the University of Missouri.[3] The data derived from a study of the influence of the plane of nutrition on the mammary functions seem clearly to warrant the general conclusion that normal milk and butter are to be expected when the cow is on a supernormal plane of nutrition as well as when the plane of nutrition is normal, provided there are no other influencing factors, such as specific feeds.

It has been remarked that underfeeding, for a time at least, need not alter the character of the milk so long as the body stores can be drawn on for needed constructive units. Eckles and Palmer have now shown, on the other hand, that overfeeding, that is, an increase in the plane of nutrition above normal, fails to raise the flow of milk above the normal except in certain limited cases, and in these to a small degree at most. These facts bring to mind the contention that the secretion of milk may be essentially under control of hormone stimulation, with nervous factors participating in a minor degree. The Missouri investigators believe that their newest results admit of interpretation on the basis of this current hypothesis. They summarize them as follows: The chemical stimulus for milk secretion is the predominating stimulus immediately following parturition, and continues to be so for a period of time, the limit of which is not yet brought out. The chemical stimulus for milk secretion is the stimulus which fixes the maximum milk flow for each individual animal. It is more or less fixed for each individual. Just what controls the extent of the stimulus for individual animals is not as yet known. Our present knowledge indicates that it is a problem of heredity as well as one of physiology. The chemical stimulus for milk secretion received at parturition is more or less independent of the plane of nutrition of the cow. Stated in another way, this stimulus neither requires a constant food supply from without the organism, nor is it increased by an excess food supply from outside the organism. Experimental evidence indicates that the chemical stimulus is so strong immediately following parturition that the milk flow will continue at a normal level for an astonishingly long period of time, at the expense of the body, with a food supply entirely inadequate for this purpose. It is not possible to increase the chemical stimulus for milk production immediately following parturition by means of an excess food supply.

As the lactation period advances, the chemical stimulus for milk secretion is gradually replaced by a stimulus with entirely different characteristics. Eckles and Palmer have designated this as the nervous stimulus. The nervous stimulus for milk secretion is entirely dependent on the plane of nutrition of the cow. Stated in other terms, this means that as soon as the nervous stimulus for the secretion of milk predominates, the milk flow is readily affected by a subnormal plane of nutrition, and can, moreover, be partially restored to its former figure by increasing the plane of nutrition. These researches presented by investigators in the field of agricultural sciences are not merely of interest because they bear on the production of food for man in the adult and particularly in the infant period. Lactation in the human species is not so readily subjected to accurate experimental observation; hence the knowledge of the possible factors which play a dominant part in the physiology of human milk secretion must be derived from other sources than observations on man. The conditions under which human lactating individuals ordinarily exist are, of course, widely different from those pertaining to the domestic animals; yet physiologic principles are often so fundamental in character that the environmental factors are incidental rather than essential, and broad principles are not necessarily vitiated by differences in species, locality, or habits of living.

THE VENEREAL DISEASE PROBLEM — I

The sanitary problem of the venereal diseases is at present receiving wide consideration. In the countries which are at war, the importance of the subject is emphasized by the ravages which these diseases always produce among troops in war time, and by the anxiety concerning the great increase in prevalence of the venereal diseases which experience has shown follows the return of troops at the end of war. But another reason for the present interest in the subject is the opinion, which is evidently becoming widespread among those who are most conversant with the venereal diseases, that in early diagnosis and treatment lie effective measures for the control of these diseases, whenever governments may be persuaded to undertake a thoroughgoing attack against them. Among organized efforts which have recently been made against venereal diseases, those of England, Germany and Australia are outstanding. The efforts in England are, perhaps, of the greatest practical interest to us because England's social and political conditions approach most closely to ours.

The modern English attempts to attack the problems of prostitution and venereal disease may be briefly reviewed, for particularly in their failures they offer instruction to us. These attempts may be said to go back to 1864. In that year the contagious disease act was passed, which provided for the regulation of prostitution and medical examination of prostitutes. Amendments to this act were passed in 1866 and 1869. The acts never had the support of the British public. They were abhorrent to the public sense of social decency, and were opposed on moral grounds by an influential part of the community. They were thus necessarily ineffective for the purposes for which they were passed. Opposition to them resulted in a royal commission in 1870 which recommended the abolition of the examination of prostitutes. In 1879 the House of Commons appointed a committee to consider the subject. This committee presented a divided report, a majority being against the repeal of the acts. In 1883 the agitation resulted in the abolition of the examination of prostitutes, and in 1886 the contagious disease acts were repealed. From 1886 to 1916 the English government has made no national effort to attack the situation.

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[2] Food Fat and Milk Fat, editorial, The Journal A. M. A., Jan. 27, 1917, p. 289.

[3] Eckles, C. H., and Palmer, L. S.: The Influence of the Plane of Nutrition of the Cow upon the Composition and Properties of Milk and Butter Fat, Research Bull. 24, Univ. of Missouri Agr. Expt. Sta., 1916.

In Great Britain, however, as elsewhere, there has been growing up a strong feeling that society must make an organized effort against the venereal diseases. In 1898 an insistent demand was made for the appointment of a royal commission to inquire into the prevalence and effects of the venereal diseases. In 1899 resolutions, proposed by the British Medical Association, calling for a full inquiry into this subject were passed by the Brussels International Medical Congress. Since that time there has been considerable agitation in England, but government authorities have showed reluctance to take up the problem, apparently feeling that the object which was desired was the reenactment of acts for the regulation and examination of prostitutes. All of these efforts were fruitless until 1913. In that year, shortly before the meeting of the international congress, public agitation on this subject was started in London by a small group of leaders, and a vigorous resolution on the subject was passed by the International Medical Congress at its meeting in London in 1913. These efforts succeeded in obtaining finally the appointment by the British Parliament, Nov. 1, 1913, of a royal commission[1] for the investigation of venereal diseases. This commission did not publish its report until March 2, 1916. It devoted more than two years to the investigation of the subject. It examined eighty-five expert witnesses, whom it asked 22,296 questions. It had as witnesses men who could speak authoritatively on the various topics under discussion, including well known continental authorities on venereal diseases. When it is added that the personnel of the commission represented the best British intelligence in its field, it may be seen that the findings of the committee are of great importance, and its report entitled to our most respectful consideration.

The commission apparently hesitated about making its report in war time, for fear that with more pressing business it might be overlooked. The importance of the subject; however, constrained the commission to make its report in the midst of the nation's preoccupation. As a matter of fact, the issuance of the report at this time proved to be particularly opportune. The importance of the venereal diseases was brought home to the country by the war in a way in which it could not have been done at any other time. This is shown by the fact that the essential, and most of the detailed, recommendations of the commission were carried into legal effect by action of the English Local Government Board, July 13, 1916—four months after the report was presented.

The report of the commission is restrained and temperate, and marked by sound appreciation of the practical difficulties of the problem. It shows not a suspicion of hysteria, but, on the contrary, is distinguished by the practical common sense which it has brought to bear on all of the aspects of the subject. The commission made no effort to consider prostitution alone, and it makes no suggestions as to the remedying of that social defect. It did, however, consider the question of registration and examination of prostitutes, and it sought the advice of continental medical authorities among others on this point.

The report can be briefly summarized. It holds that registration and medical examination of prostitutes are ineffective as a sanitary measure. It recommends against compulsory notification of venereal diseases at present. It urges the importance of education as to the seriousness of venereal diseases and the dangers of their transmission. It recommends the encouragement of well considered efforts for inculcating sexual restraint. It puts its great emphasis, however, on the therapeutic attack on syphilis, and by its recommendations indicates its opinion that in this lies the hope of the sanitary control of the plague. It is here that the report is definite and positive in its recommendations. In early and continuous treatment it finds the effective weapon against the venereal diseases, and in widespread state provisions for the diagnosis and treatment of the venereal diseases a practical way leading to a solution of the difficult problem which these diseases present.

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[1] The purpose of the commission was said to be: "To inquire into the prevalence of venereal diseases in the United Kingdom, their effects upon the health of the community, and the means by which those effects can be alleviated or prevented, it being understood that no return to the policy or provisions of the Contagious Diseases Acts of 1864, 1866, or 1869 is to be regarded as falling within the scope of the inquiry." The commission was formed as follows: Lord Sydenham of Combe, F.R.S. (chairman), noted for his public service; the Right Hon. Sir David Brynmor Jones, K.C., M.P., Sir Kenelm E. Digby and Sir Almeric FitzRoy, representing the legal and official side of the commission; Sir Malcolm Morris, F.R.C.S. Edin.; Mr. James Ernest Lane, F.R.C.S. Eng.; Sir John Collie, M.D.; Dr. Arthur Newsholme; Dr. F. W. Mott, F.R.S., and Mrs. Scharlieb, M.D., noted as medical workers in this field; Canon J. W. Horsley, the Rev. J. Scott Lidgett, D.D., Mr. Philip Snowden, M.P., and Mrs. Creighton, religious and service workers, and Mrs. Burgwin, experienced in the care of the feebleminded. The secretary of the commission is Mr. E. R. Forber, an official of the Local Government Board. The London Lancet notes that the only omission from the committee which calls for notice is the absence of any member able to give first hand advice on the conditions in the military and naval services.

The report thus offers no startling findings. It presents no new remedy. It has, however, considered with great thoroughness all of the practical aspects of the problem, weighed them with unprejudiced judgment, and with quiet courage made the radical recommendation that the English government shall provide universal opportunities for the diagnosis and treatment of the venereal diseases. It submits a detailed plan for carrying out its recommendations as regards providing opportunities for diagnosis and treatment. The various recommendations of the report cannot be considered in the brief space of one notice. They are so important and so interesting that we shall revert to them later.

THE BOAS-OPPLER BACILLUS

About twenty years ago, Boas and Oppler[1] described the frequent occurrence of a long bacillus in the gastric contents of persons with carcinoma of the stomach. This appearance of what has since been known as the Boas-Oppler bacillus was repeatedly verified. It was found that the micro-organism cannot thrive in the presence of a normal gastric reaction due to hydrochloric acid, and it seemed to require a marked stagnation of the stomach for suitable development. As decreased gastric secretion of hydrochloric acid and diminished motility of the stomach commonly exist in cases of cancer of this organ, suitable opportunities are afforded for the growth of the Boas-Oppler bacillus.

In the minds of many practitioners, the finding of this micro-organism in stomach contents has come to have an almost specific diagnostic significance. Without knowing anything of its real origin and its bacteriologic relationships, they have endowed it with a special pathognomonic importance which has never been entirely warranted and has lost much of its earlier significance in the light of present knowledge. Long ago it was pointed out not only that the Boas-Oppler bacillus may be found at times in normal stomachs, but, further, that it seemed to be related to the lactobacilli in general. Heinemann of Chicago, in particular, demonstrated that bacilli belonging to what is now familiar as the *B. bulgaricus* group of organisms may be found in samples of gastric juice from healthy as well as carcinomatous stomachs. The close relationship of the Boas-Oppler bacillus with the lactobacilli, to which so much prominence has been given of late in relation to sour milk therapy, if not its actual identity with them, must be accepted.

Bacilli of the *B. bulgaricus* group are widely distributed in nature. They have been found in fodders and foods serving for animal and human consumption, in soil, in feces, in saliva — to enumerate only a few of the sources. In a recent study of the lactobacilli, Heinemann and Ecker[2] remind us that since these micro-organisms have been found in saliva and feces under normal conditions, it would be surprising if they did not exist normally in the stomach. Their presence in the digestive tract is a natural result of their frequency in foods, especially milk and milk products. Furthermore, this group of bacilli is able to resist a relatively high degree of acidity, and to survive where other bacteria are largely destroyed. Consequently the hydrochloric acid of the stomach is not absolutely destructive to them, although it undoubtedly restrains their growth.

It seems logical to assume further, with Heinemann, that reduction in the amount of gastric acid or its absence will permit growth of bacilli of the bulgaricus type — an assumption which may readily explain the finding of any lactobacilli in large numbers in cases of gastric carcinoma. If this is true, they may be expected to be present in any pathologic condition which reduces the normal acidity of the gastric juice. Such is, in fact, the case. The presence of large numbers of the Boas-Oppler bacilli which gain access to the alimentary tract with the food is merely an indication of a reduction of the normal hydrochloric acid content, whether this is due to gastric ulcer, gastritis, pernicious anemia, or gastric carcinoma and possibly other pathologic conditions. Any specific diagnostic import beyond this is no longer tenable.

Recent investigations of the Boas-Oppler bacilli[2] make it probable that they are familiar lactic acid-producing organisms which occur in saliva and in the contents of the digestive tube. They are said to be common in the feces of bottle-fed infants, but relatively scarce in the alimentary contents of those which are breast fed. The typical lactobacilli have also been found in the decayed contents of teeth from which desiccated mucus has been removed, suggesting that the *Streptothrix buccalis,* long believed to be associated with dental caries, also may be closely related to the organisms here under discussion. All of these facts warn against attaching too much specific significance to the occasional finding of lactobacilli in the gastric contents.

Disease and the Chinese.—It is commonly said that diabetes is unknown in China, yet a recent incomplete investigation brought to light over 200 cases. Nervous diseases are accounted rare among the Chinese, yet even a short experience has shown their incidence, at least in Changsha, to be as great or greater than in this country. The idea of easy childbirth and freedom from puerperal and postpartum infection is contrary to much experience and certainly is not supported by the Chinese aphorism that a woman in labor has one foot in the grave. The group of neuroses, functional digestive disorders, gastric and duodenal ulcer, malignant, nutritional and constitutional diseases are without doubt vastly more prevalent in China than accredited to be. So we might go through the list. We must challenge every statement of a superior racial vitality in the Chinese on the ground of superior resistance to disease, until such time as demonstrable scientific proof and controlled statistics are presented in its favor. — Dr. Alfred C. Reed, *Scientific Monthly,* January, 1917.

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[1] Boas and Oppler: Zur Kenntniss des Mageninhalt beim Carcinoma ventriculi, Deutsch. med. Wchnschr., 1895, **21,** 73.

[2] Heinemann, P. G., and Ecker, E. E.: A Study of the Boas-Oppler Bacillus, Jour. Bacteriol., 1916, **1,** 435.

Current Comment

EGGS AND THE HEN

Next to milk and cereals, eggs probably play the most prominent part in the special dietaries of the sick, because of the advantageous composition of eggs from the standpoint of their nutritive value. Not only do they contain representatives of a variety of types of foodstuffs, but they also are palatable and lend themselves to culinary manipulation so as to meet a great diversity of tastes. Even most vegetarians are willing to include eggs in their list of acceptable food products. These facts help to account for the cry which has arisen at the advancing price of eggs, the much debated cause of which we may discreetly pass over in silence. In view of the situation, it is not without interest, however, to learn what hens can do to meet the emergency. The fourth annual international egg laying contest conducted by the Storrs Agricultural Experiment Station of Connecticut included 1,000 birds which laid an average of 152 eggs per hen during the year. One enterprising hen laid sixty-four eggs in sixty-four days. Other good individual records, which are not intended to represent the acme of laying possibilities, showed a production of more than 250 eggs per year. As every one knows, the egg production is not uniform at all seasons of the year, the maximum occurring in the spring and summer months. Dietotherapy and institutional dietetics need to bear these facts in mind — or suffer the economic consequences.

PROVING "INTENT"

A brief item appears in this week's Propaganda department on the failure of the federal authorities successfully to maintain the criminal charge against Brinkler, the self-styled food expert, of using the mails to defraud. Few realize the tremendous difficulties that confront the prosecution in cases of this kind. The Office of the Solicitor of the Post-Office Department, under both past and present administrations, has done notable public service in putting out of business some of the most pernicious swindles perpetrated on the American people. Samuels, with his "eye drops" cure-all and Moses, the "Oxypathor" faker come to mind as cases in which the government successfully maintained criminal action against the individuals. Moses and Samuels are now in the federal penitentiary. The great stumbling block in the way of the federal officers is that requirement in the law which makes it necessary for the prosecution in such instances to prove not only that a fraud has been perpetrated, but also that the man engaged in the business knew that he was defrauding. In other words, the government has to prove "intent." To keep out of the penitentiary it is only necessary for quacks of the Brinkler type to show with some plausibility that they humbugged the public in good faith in a mistaken belief in their own panacea. When such an attitude can be maintained, a verdict of "not guilty" is a foregone conclusion. Under these conditions, the greater the ignorance of the individual prosecuted, the easier it is to convince the jury that the man really believes in his own magic, and the more difficult the problem of putting him where he will cease to be a menace to the public health. Of Brinkler's ignorance, his "literature" and other material are the most palpable evidence. This fact, rather than any failure on the part of the federal officials to prove the inherent falsity of Brinkler's claims, is probably responsible for his acquittal. It is a pity that there is not a more general recognition of the principle enounced by Goethe that "nothing is more dangerous than active ignorance."

NATIONAL LEPROSARIUM BILL PASSES SENATE

As noted in our news columns in this issue, the passage of the bill providing for a national hospital for lepers marks the successful completion of efforts that have been made for a number of years[1] to secure the establishment by Congress of a national institution in which may be gathered, for care and treatment, those unfortunate persons who may be infected with leprosy. The number in any one state is too small to justify the establishment of state institutions. The popular horror of leprosy and the absence of adequate provisions for the care of lepers have led in the past to extremely cruel and inhuman incidents which, it is hoped, will in the future be impossible. The removal of infected persons forming possible centers of infection will doubtless tend to check the spread of the disease, while rigid quarantine inspection will halt all immigrant lepers at our ports of entry. The passage of this bill is a distinct achievement for public health, and marks not only a growing disposition on the part of Congress to legislate constructively on public health questions, but also the constantly expanding importance and scope of the United States Public Health Service. To Senator Ransdell of Louisiana, chairman of the Senate Committee on Public Health and National Quarantine, and to Mr. Adamson of Georgia, chairman of the House Committee on Interstate and Foreign Commerce, is due a large share of the credit for the success of this measure.

"MUCKRAKING" IN MEDICINE

> "One of the things that has made today a bolder, better time than what Mr. Ade calls the 'yappy seventies' is muckraking. Call it muckraking if you like, call it honest journalism if you choose—the power to call men and things by their real names has shot our fair and colder nation several inches closer to the far-famed millennium."

This from F. P. A.'s "Conning Tower" in the New York *Tribune!* As is usual when he philosophizes, Mr. Adams scores a bull's eye. While the paragraph quoted applies to lay rather than medical journalism, the thought expressed is applicable to both. The "muckraking" with which The Journal has been charged has, to paraphrase Mr. Adams' statement, made medicine today a bolder, better profession than it was in the "yappy seventies." And, extending the comparison still further, the power of organized medicine to call men and things by their real names has brought our profession appreciably closer to the scientific millenium.

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[1] A National Leprosarium, Current Comment, The Journal A. M. A., March 4, 1916, p. 746; Dec. 16, 1916, p. 1855, General News, Jan. 22, 1916, p. 287; May 13, 1916, p. 1560; June 10, 1916, p. 1685; Dec. 16, 1916, p. 1858.

THE FATE OF PHENOLSULPHONEPHTHALEIN

The employment of the phenolsulphonephthalein test as an index of renal functional capacity is rapidly becoming generalized. No doubt one of the reasons for this is, as was recently pointed out in The Journal,[1] that it is the method which most readily lends itself to use in general medical practice. The interpretation of this test has hitherto been based on the supposition that the retention of more than from 20 to 40 per cent., that is, the appearance of less than from 60 to 80 per cent. in the urine within two hours after injection, is an indication of deficient functional activity. According to Kendall,[2] phenolsulphonephthalein may in certain experimental conditions be destroyed in the body, and therefore not appear in the urine, although the kidneys may be functioning normally. He is inclined to attribute this destruction to the reducing action of an enzyme (reducase). Whatever the mechanism involved, these observations are of importance. Should they be confirmed, it will be necessary to ascertain whether or not this phenomenon occurs clinically in the human being and, if so, in what class of cases and to what extent. We may ultimately be obliged to limit our interpretation of the results of this test to this: that an excretion of from 60 to 80 per cent.—that is, a positive result—within two hours after the injection of the phenolsulphonephthalein is evidence of satisfactory renal activity.

NOSTRUM ADVERTISING AND THE AGENCY LEVERAGE

The ramifications of the fraudulent "patent medicine" business are many. The acceptance of advertising from such concerns by small country newspapers is not always an indication of a low ethical standard of advertising, at least not wholly so. One of the developments of modern business is the advertising agency, to which many concerns, instead of attempting to handle their own contracts, turn over their advertising business. These agencies place the advertisements in such publications as their special knowledge and judgment suggest will bring the best returns to their clients. Large agencies, having the power of dispensing advertising largess, naturally possess no little influence with publishers. Supposing, then, that the manager of a large agency is financially interested in a fraudulent "patent medicine" business whose advertising he handles — and there are some such cases. Suppose, further, that he submits an advertisement of the nostrum in which he is interested to a country newspaper publisher who tries to keep his advertising pages clean. If this country publisher rejects the "patent medicine" copy, he puts himself in the position of offending a man who has the power to send to him, or withhold from him, much reputable advertising business during the course of the year. As one of the big advertisers of the country has said: "Naturally publishers — particularly the little fellows — hesitate to offend a concern which sends them so much business even though they hate to accept this particular kind of advertising." When next you feel like "jumping on" the publisher of your local paper because of some particularly flagrant nostrum advertisement, find out before you do so just how much economic pressure is being exerted, directly or indirectly, to make him accept such advertising.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Typhus at Clovis.—Two persons with typhus fever have been discovered in a Mexican camp at Clovis and have been removed to the County Hospital for treatment. They recently came from Mexico to the camp in Clovis. The camp has been quarantined.

Medical Lectures.—The lectures of the thirty-fifth popular course given in Lane Hall, under the auspices of Stanford University Medical School, will be as follows:

February 9, "Poliomyelitis." Dr. William C. Hassler, Health Officer of San Francisco.

February 23, "The Importance of Proper Habits of Carriage as a Basis of Health." Illustrated. Dr. Harry L. Langnecker, Clinical Instructor in Orthopedic Surgery, Stanford Medical School.

DISTRICT OF COLUMBIA

Podiatry to Be Regulated in the District.—A bill for the regulation of the practice of "podiatry" in the District passed the Senate, January 25, and now goes to the House. In the bill "podiatry" or "chiropody" is defined as the surgical or medical treatment of all ailments of the human foot, except the correction of deformities requiring the use of the knife, amputation of foot or toes, or the use of an anesthetic other than local. The bill does not interfere with physicians in the discharge of their professional duties. The board of medical supervisors is charged with the duty of carrying the act into effect. A schedule of preliminary and technical education is laid down for new applicants, progressing gradually in requirement until 1920, when the applicant must have a four-year high school course or its equivalent and must be a graduate of a podiatry school acceptable to the board of medical supervisors.

ILLINOIS

Change Meeting Date.—The Illinois State Medical Society has changed the date of the annual meeting from May 15 to 17, to May 8 to 10.

Communicable Disease.—Three cases of spinal meningitis have developed at the Great Lakes Naval Training Station, with one death. The liberty privilege for recruits has been temporarily suspended and all the apprentice seamen are under observation.

Infirmary Given to State University.—Dr. Edmund J. James, president of the University of Illinois, announced, on January 25, that Hon. William B. McKinley, Champaign, congressman from the Nineteenth District, has given bonds and stocks valued at $120,000 to the university for the establishment of an infirmary for the use of the students and faculties of the institution.

Chicago

New Research Laboratory.—The Chicago Medical Society has asked the president of the county board for a pathologic and research laboratory building and a new morgue at Cook County Hospital, at a cost of $750,000.

Ambulance Corps to Be Formed.—An ambulance corps of the medical students of the University of Chicago is in process of formation under the direction of Dr. H. Wernicke Gentles, in local charge of the work of the American Red Cross.

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[1] Disturbances of the Kidney, Therapeutics, The Journal A. M. A., Dec. 2, 1916, p. 1673.

[2] Kendall, E. C.: The Fate of Phenolsulphonephthalein When Injected into the Animal Organism, The Journal A. M. A., this issue, p. 343.

Bloodgood in Chicago.—Dr. Joseph C. Bloodgood, Baltimore, visited Chicago, January 26, as the guest of the Chicago Dental Society, and gave an address on "The Preexisting Lesions of Oral Cavity and Their Relation to Malignant Disease."

Farewell to Healy.—A farewell dinner was tendered by the Chicago Ethical Society to Dr. and Mrs. William Healy, January 30. Addresses were made by Dr. Healy, Prof. W. I. Thomas of the University of Chicago and Dean W. H. Wigmore of Northwestern University. Mr. Horace J. Bridges presided.——The Chicago Neurological Society has adopted resolutions expressing appreciation of Dr. Healy's work and regrets at his departure, and good wishes for him in his new field of labor.

MARYLAND

Hospitals Need Room.—At the annual meeting of the board of trustees, the board of managers and the staff of the Union Protestant Infirmary, January 26, plans for obtaining $325,000 for a new building were launched. A site has already been purchased.

Mental Hygienists Hold Meeting.—The Mental Hygiene Society of Maryland met in Baltimore, January 24. Dr. Adolf Meyer, Baltimore, director of the Phipps Psychiatric Clinic; Mr. Leaon Faulkner, superintendent of the Maryland School for Boys, and Mr. G. H. Reeves, assistant superintendent of schools, were on the program.

Hebrew Hospital Plans Annex.—At the annual meeting of the Hebrew Hospital, the Jewish Home for Consumptives, and the Hebrew Educational Alliance, Baltimore, plans were considered for a new structure to cost about $200,000. Dr. Harry Adler, Baltimore, was reelected president of the Hebrew Hospital and Dr. Jose L. Hirsh, Baltimore, president of the Educational Alliance.

MASSACHUSETTS

Cup Presented to Forsyth.—January 20, the Forsyth Dental Infirmary for Children, Boston, was opened for public inspection. Special cases were shown, clinics were held, lectures were given and a loving cup was presented to Mr. Thomas A. Forsyth.

Personal.—The summer home at Braggville of Dr. Alonzo J. Shadman, West Roxbury, Boston, was destroyed by fire, January 17, with a loss of $15,000.——Dr. Stanley H. Osborn, district health officer for Berkshire District, has been appointed state epidemiologist, to fill the vacancy caused by the resignation of Dr. Walter H. Brown.——Dr. Howard A. Streeter, Marblehead, has been appointed district health officer of Berkshire District.——Dr. Edward H. Trowbridge has been appointed chairman of the board of health of Worcester.

Harvard Medical Lectures.—The free public lectures to be given on Sunday afternoons at 4 o'clock during February, under the auspices of the Faculty of Medicine of Harvard University at the Medical School, Longwood Avenue, will be as follows:

February 4—Dr. J. L. Morse, "Feeding and Its Relation to the Infant's Development."

February 11—Dr. F. J. Cotton, "The Development of Employer's Liability Insurance in Accident and Sickness."

February 18—Dr. E. H. Place, "Does It Pay to Have the Contagious Diseases During Childhood?"

February 25—Dr. Percy G. Stiles, "Sleep."

MINNESOTA

Free Antitoxin.—The state board of health has made Hastings a free distributing station for diphtheria antitoxin, with a health officer in charge.

Poliomyelitis Deaths.—Dr. Henry M. Bracken, secretary and executive officer of the state board of health, reports that during 1916 there were 906 cases of infantile paralysis with 104 deaths. Of these patients, seventy-five were adults.

Free Lectures at University.—February 14, the lecture in the free course announced by the University of Minnesota to be given by the faculty will be on "Cancer in the Light of Modern Research," by Dr. Harold E. Robertson.——February 28, Prof. R. W. Thatcher will deliver a lecture on "Plant Life and the Chemist."

Hospital for Worthington.—Articles of incorporation have been filed by the Worthington Hospital with a capital stock of $60,000. The incorporators are Drs. Frank M. Manson, president; C. P. Donal, vice president, and Justin T. Smallwood, secretary-treasurer, and J. N. Gould. The building will be of steel and concrete and fireproof throughout.

MISSOURI

Dinner to Ambulance Company.—Jackson County Medical Society gave a dinner in honor of the members of Ambulance Company, No. 1, N. G. Mo., commanded by Capt. William Gist, which recently returned from the Mexican border.

Home for Jackson County Medical Society.—The Jackson County Medical Society has paid off all indebtedness on its property, Robert Gilham Road and Thirty-First Street, Kansas City, and expects to put up a permanent building on the site.

School of Hygiene Opened.—The Kansas City Board of Health has opened a school of hygiene and sanitation for employees. Attendance is obligatory at the weekly meetings to be held on Saturdays. The employees of other departments having duties auxiliary to the health department will be invited to attend.

Protection of Children.—The Children's Code Commission has introduced about thirty-five bills in the legislature covering the protection and care of destitute and neglected children, delinquent children, defective children, child workers, statewide medical inspection of schoolchildren, protection of the eyes of new-born children, and the establishment of county boards of welfare.

Personal.—Dr. Oliver C. Gebhart, St. Joseph, major commanding Field Hospital, No. 1, N. G. Mo., after six months' service on the Mexican border, was the guest of honor at a dinner given by the citizens of St. Joseph, January 8, to welcome the return of the organization.——Dr. George E. Muns, Montgomery City, has been appointed a member of the board of curators of the state university, succeeding Dr. John C. Parrish, Vandalia, term expired.

Irregulars Punished.—G. W. Sollars, a chiropractor of Joplin, is said to have been fined in the circuit court for practicing medicine without a license.——Dr. James Clement, a cancer "specialist" of Kansas City, who left Kansas City pending an appeal after having been sentenced to imprisonment for a year in the penitentiary and a fine of $500 for falsely advertising a cancer "cure," was apprehended in Idaho by the federal authorities and has been returned to Kansas City.

Division of Health Department.—Kansas City has divided its health department into a hospital and a relief division and a health and sanitation division. Each division will be directed by a superintendent, and both divisions will be under the charge of a health director who has not yet been named. Each superintendent will receive a salary of $2,400 and the health director $3,000. Under the hospital relief division will be bureaus for the General Hospital, the Negro Hospital, the Emergency Hospital, the Isolation Hospital, Sanatorium for Tuberculosis, the hospital at the municipal farm and the Girl's Detention Home. Under the division of health and sanitation will be the bureaus for sanitary food and dairys, school inspection, dental inspection, garbage and vital statistics. Dr. Thomas F. Miller will be superintendent of the first division and Dr. George P. Pipkin, superintendent of the second division.

St. Louis

Personal.—Dr. Jerome F. Potts sailed from New York, January 20, to join one of the Harvard units for six months' service in France.

Medical Unit Organized.—The St. Louis Unit of the American Physicians Expedition Committee has been organized for service in Germany and Austria. Dr. Walter C. G. Kirchner will be in charge and will have associated with him Drs. Benjamin W. N. Klippel, L. H. Bock and Allan A. Gilbert. Four nurses will accompany the party. They will sail from New York, February 7, on the *Frederik VIII* and will report to Ambassador Gerard at Berlin.

NEW YORK

Typhoid at Gowanda.—There is an outbreak of typhoid fever at the Gowanda State Hospital, where sixteen cases of the disease had been reported up to January 25.

Tissue Examinations for Diagnosis.—The department of health offers to examine tissue and make a microscopic diagnosis on specimens sent in by physicians. Reports are made by letter or telephone in from twenty-four to thirty-six hours.

Appropriation for State Hospitals.—The finance committee of the senate and assembly have agreed on a plan for state institutions covering a period of ten years and involving the expenditure of $20,000,000. This money will be used to build new hospitals for the insane and institutions for the feebleminded, as well as repairs for existing institutions.

Sargol Exploiters Found Guilty.—The case of the United States against Wylie B. Jones and H. E. Woodward, proprietors of "Sargol," came to an end, Jan. 30, 1917, after a trial lasting thirteen weeks. Sargol is a fraudulent nostrum sold as an alleged flesh builder and exploited from Binghamton. The trial took place in Auburn and was one of the most bitterly contested "patent medicine" cases in the annals of the federal court. The government's case was ably conducted by Assistant United States Attorney F. J. Cregg and the case was heard before the Hon. Judge George W. Ray. Jones and Woodward were found guilty as charged in the indictment.

After-Care of Poliomyelitis.—Acting Commissioner Linsly R. Williams of the state department of health issued a statement, January 27, showing that out of 2,887 poliomyelitis patients reported prior to Oct. 1, 1916, 1,891 had been examined by department surgeons up to January 20, and of the 996 patients otherwise not accounted for the great percentage are either entirely recovered or are under competent orthopedic care. Since October 17, seventy-two clinics have been held in the state, with an average attendance of twenty-seven. Instructions for after-care have been left with local physicians and parents, and trained nurses have been assigned to centers of infection to supervise this after-care. Braces or appliances have been supplied free if the parents were unable to meet the expense. The department is now undertaking a follow-up system of examinations.

New York City

State Civil Service Examinations.—Examinations for the state, county and village service will be held in various cities throughout the state, February 24, for women for infantile paralysis after-care. Applications must be filed in the office of the Civil Service Commission on or before Feb. 15, 1917.

Correction.—Regarding the item in The Journal, January 13, entitled "Bronx Doctors Raise Fees," information has been received that the Bronx County Medical Society has not taken up the consideration of a schedule of fees and that the reports which appeared in the daily papers as well as in the medical journals were erroneous.

Lectures on Feeblemindedness.—New York University announces a course of fifteen lectures on feeblemindedness, its causes, consequences to society and method of treatment. The course has been organized by Dr. Thomas W. Salmon. The first lecture was delivered, January 26, by Dr. Henry H. Goddard.

First Case of Smallpox in City this Winter.—The first case of smallpox in Greater New York this winter was reported, January 22. The victim is a colored man who came from Wilmington, N. C., January 4. In 1874 there were 1,462 cases of smallpox in the old city; in 1875 there were 3,397 cases; in 1885, 98 cases; in 1915 in the greater city there were 2 cases; in 1916, 7 cases.

NORTH CAROLINA

Antiproprietary Medicine Bill Passed.—A bill prohibiting the sale or advertising in the state of "patent" proprietary medicines, purporting to cure so-called incurable diseases, was passed, January 27, by the upper house of the general assembly.

New Hospitals.—At the recent session of the Western North Carolina Conference of the Methodist Episcopal Church, South, held in Gastonia, it was decided to erect in some city of western North Carolina a large general hospital, capitalized for $150,000.

OHIO

Health Survey of Piqua.—Surg. Carroll Fox, U. S. P. H. S., is making a health survey of Piqua.

Trachoma in Ohio.—The state department of health has sent a questionnaire to all ophthalmologists practicing in Ohio with a view to determining the foci of infection of trachoma.

New Officers.—Toledo Academy of Medicine: president, Harold J. Morgan; vice president, Dr. Charles Lukens; secretary, Dr. Chester W. Waggoner, and treasurer, Dr. William W. Alderdyce.

Pasteurization of Milk.—Pasteurization of milk in Elyria is being opposed by women on the ground that it increases the cost without any advantage. The local health board is standing firmly by the regulation.

Tablet to Dr. Conklin.—The Montgomery County Medical Society of Dayton has voted to erect a bronze tablet in the public library, in recognition of the faithful services rendered to the society by Dr. William J. Conklin.

Personal.—Dr. McKendrie C. Smith, Marblecliff, has been appointed a member of the state board of health, succeeding Dr. Angus MacIver, Marysville.——Dr. Charles S. Ames, Ada, was seriously injured by the overturning of his automobile, January 8.

Physical Supervision of Schoolchildren.—The Logan County Medical Society has appointed a committee of three to cooperate with the county superintendent of schools to provide physical supervision for rural schoolchildren. This work is already being carried on in Bellefontaine, the county seat, by physicians who have donated their services.

Public Health Exhibit at Bellefontaine.—The public health exhibit of the state board of health was last shown in Bellefontaine under the auspices of the local board of health. Evening lectures, school addresses and motion picture exhibits were features. A conference of Logan County health officials was addressed by Acting Secretary J. E. Bauman and Dr. John R. McDowell, Springfield, of the state board of health.

Conference of State and Municipal Health Officers.—January 18 and 19, the forty-third conference of municipal health officials with the state board of health was held in Columbus. The chairman, Dr. Henry T. Sutton, Zanesville, directed attention to the need for improvement in morbidity reports, the benefits to be derived from placing the Bureau of Vital Statistics in the state department of health, and the need of more public health nurses to prevent blindness in infants. Dr. Clarence D. Selby, health commissioner of Toledo, read a paper on "The Relation of Industry to the Health Department," emphasizing the need for legislation to prevent undue exploitation of labor at the expense of health, and the value of health insurance. Dr. Frank G. Boudreau, Columbus, of the state board of health dealt with the present status of milk supervision in the cities of Ohio, showing that in only thirty-six of the eighty cities are all dairies regularly inspected. The sanitary aspects of bathing beaches and swimming pools were discussed by W. H. Dittoe and L. H. Van Buskirk of the state board of health. Dr. Roscoe P. Albaugh, Columbus, read a paper on "Three Deaths and a Number of Prostrations Due to Industrial Housing Conditions." A round table on terminal fumigation was led by Dr. John H. Landis, health officer of Cincinnati. The sentiment appeared to be that fumigation should be replaced by concurrent disinfection. Nearly all cities of Ohio were represented.

Cincinnati

Personal.—Dr. John P. Beneke, who has been critically ill with pneumonia, is reported convalescent.——Dr. Louis Valerio is serving with the Italian Red Cross.——Dr. Wade W. Oliver, who recently returned from the Rockefeller Foundation trip to South America, was operated on for appendicitis, January 2, and is doing well.

PENNSYLVANIA

Health Conference.—A conference of physicians will be held, February 16, at the state capitol, Harrisburg, under the auspices of the Division of Industrial Hygiene and Engineering of the Department of Labor and Industry.

Charity Budget Increased.—The increased cost of living and the growing population have caused a material increase in the sum recommended by the State Board of Public Charities for appropriations for state, semistate and private institutions. Two years ago the total recommended was $12,142,673.48, while this year's board recommends $15,041,884.

Medical Society Against Free Practice.—A pledge from all new members against free treatment in or out of hospital dispensaries for patients able to pay will be exacted hereafter by the Philadelphia County Medical Society. Resolutions endorsed by the society are as follows:

> That physicians who are now working without remuneration in hospital dispensaries, request the management of such to institute an

efficient system of investigation of the social and financial status of each patient admitted, and that each such patient be supplied with evidence of this investigation before presentation to the physician for second treatment.

Philadelphia

New Ambulances.—Two new ambulances are soon to be in service with the American Field Ambulance Corps at the French front as a result of donations received by the American Ambulance Hospital Committee of the Emergency Aid.

New Officers.—At the annual meeting of the Philadelphia County Medical Society, January 17, the following officers were elected: president, Dr. Henry D. Jump; vice president, Dr. Moses Behrend; associate vice presidents, Drs. Mitchell P. Warmuth, Andrew Callahan, Louis E. Barlow, Samuel McClary III, George E. Levis, Robert N. Downs, Jr., and Aaron Bray; secretary, Dr. William S. Ray, and treasurer, Dr. Edward A. Shumway.

Public Lecture Course for Women.—The lectures during February in the public lecture course given by the faculty of the Women's Medical College of Pennsylvania will be as follows:

February 7: "Principles of Nutrition," Dr. Martha Tracy.
February 14: "Food and Efficiency," Dr. Martha Tracy.
February 21: "Health Problems of Girls and Women," Dr. Ella B. Everitt.
February 28: "Social Diseases," Dr. Frances C. Van Gasken.

Personal.—William Curtis Farabee, curator of the American Section of the University of Pennsylvania Museum, who recently returned after three years of exploration in the Amazon Valley, was awarded the Elisha Kent Kane Medal by the Geographical Society of Philadelphia, January 19.——Dr. Frank C. Abbott, who recently returned after fourteen months on the western war front, delivered an address before the Ethical Culture Society, January 14, on "War Experiences in Europe." Dr. Abbott expects to return shortly.——Dr. Francis V. Gowen has returned after several months as head surgeon in a hospital at Bretigny-sur-Orge, France.

WASHINGTON

Hospital Fire.—Fire in St. Luke's Hospital, Spokane, January 21, caused damage estimated at $50,000.

Personal.—Dr. Edward A. Rich has been appointed health officer of Tacoma, and Dr. Jonathan E. Henry has been continued as city chemist and bacteriologist.

New Officers.—At the annual meeting of the Spokane County Medical Society, January 11, the following officers were elected: president, Dr. Herman P. Marshall; vice presidents, Drs. Peter Reid, Rufus I. Newell and Arthur E. Johnson; secretary, Dr. William Sullivan, and treasurer, Dr. Alexander R. Lundgren.

WEST VIRGINIA

Paralysis Epidemic Checked.—The epidemic of infantile paralysis at Elkins has apparently been checked. There have been seventeen cases reported, with two deaths.

Society Activities.—On February 2, the Ohio County Medical Society, Wheeling, held a joint meeting with the board of education of Wheeling, at which Dr. Edwin A. Peterson, in charge of the medical department inspection and physical education in Cleveland, delivered an address.

Epidemic of Disease.—Dr. Samuel L. Jepson, commissioner of health, has issued an order suspending the quarantine against the city of Elkins, where infantile paralysis has been prevalent.——On account of the presence of infantile paralysis in Fairmont, the Marion County Medical Association has recommended that all schools, except the State Normal School, be closed, and that children under 16 years of age be not allowed to attend public gatherings.

WISCONSIN

Personal.—Dr. Arthur S. Loevenhart of the University of Wisconsin has been under treatment in a hospital for an attack of nephritic colic.

Smallpox.—The Mammoth Paint Creek Construction Camp, where 500 men were employed, was suspended, January 19, owing to the outbreak of smallpox at Camp Wisota.

Milwaukee Physicians Elect New Officers.—At the annual meeting of the Milwaukee Medical Society, January 9, the following officers were elected: president, Dr. Daniel Hopkinson; vice presidents, Drs. George A. Carhart and Alfred L. Kastner; secretary, Dr. Oscar Lotz, and treasurer, Dr. Joseph P. McMahon.

Hospital Notes.—The state board of control has endorsed the Onalaska site for the proposed $50,000 La Crosse County Tuberculosis Sanatorium.——The Waukesha County Board has purchased, for $16,500, a site near Pewaukee for a tuberculosis sanatorium.——St. Francis' Hospital, La Crosse, at a cost of $90,000, has added to its building two new wings, three stories in height. The entire hospital has been remodeled.

CANADA

Provincial Supply of Antitoxin.—The Provincial Board of Health for Ontario will supply diphtheria and tetanus antitoxin, antimeningitis serum, smallpox vaccine and Pasteur preventive treatment for rabies, and mixed typhoid and paratyphoid vaccine free to the public all over the province. The aggregate cost for the year will be $40,000, or about one fourth of the cost under commercial conditions. All these products except typhoid vaccine are obtained from the University of Toronto.

Personal.—Surg.-Gen. Carleton Jones will shortly relinquish his position as director of the medical services for Canada and become inspector-general between Canada, Great Britain and France. He will be succeeded by Col. Gilbert Lafayette Foster, formerly assistant director of medical services in the Toronto Military District.——Dr. Walter W. White, ex-president of the New Brunswick Medical Society, was given a dinner by members of the profession in St. John, N. B., on his fifty-fourth birthday.——Dr. J. T. Boyd, superintendent of the Kingston (Ont.) General Hospital, has resigned owing to ill health.——In the new cabinet of the British Columbia government two doctors are included: Dr. James H. King, minister of public work, and Dr. John D. MacLean, Provincial Secretary and Minister of Education.

GENERAL

Warren Prize Awarded.—The Warren triennial prize for 1916, amounting to $500, has been awarded to D. Noel Paton, Glasgow, Scotland, for his essay entitled "The Parathyroids."

Sale of Anhalonium to be Regulated.—The Senate passed a bill, January 25, to amend the Harrison Narcotic Law to cover anhalonium, mescale or muscale buttons, and pellote. The bill now goes to the House for action.

Tri-State Association to Meet.—The nineteenth annual session of the Tri-State Medical Association of the Carolinas and Virginia will be held in Durham, N. C., February 21 and 22, under the presidency of Dr. J. Allison Hodges, Richmond, Va.

Industrial Hygiene Standards.—Surg. Joseph W. Schereschewsky, U. S. P. H. S., in charge of the field work for occupational diseases, has been making an investigation of the health conditions of steel workers in Pittsburgh to provide the government with information for minimum standards of industrial hygiene.

Reinstatement Sought.—The reinstatement of Dr. Bert R. Huntington as first lieutenant, M. C., U. S. Army, is sought through special legislation, the United States Senate having passed a bill for that purpose, January 25. Dr. Huntington was examined for promotion to a captaincy in 1914, but the board made an adverse report and he was therefore discharged from the army, March 24, 1914.

Prize Offered by Industrial Medical Association.—The American Association of Industrial Physicians and Surgeons offers a prize of $100 for the best thesis on any subject relating to industrial medicine and surgery by any undergraduate medical student of the United States. The thesis must not contain more than 5,000 words and must be in the hands of Dr. Harry E. Mock, 122 South Michigan Avenue, Chicago, secretary of the association, on or before May 1, 1917.

The American Journal of Syphilis.—A new quarterly publication, the *American Journal of Syphilis,* has just issued its first number. It is a pretentious journal of 260 pages, with an elaborate staff of editors and editorial collaborators, about 100 of them. The cover page bears an appropriate statement by Sir William Osler:

> Know syphilis in all its manifestations and relations and all other things clinical will be added unto you.

Several of the articles are excellently illustrated, and a symposium of three papers is devoted to syphilis of the stomach. The social side of the subject is not neglected, as evidenced by an article by Dr. William Allen Pusey on the "Sanitary Attack Upon Syphilis," and one by Dr. Henry H. Hazen on "Teaching of Syphilis."

Bequests and Donations.—The following bequests and donations have recently been announced:

For the establishment of a home for convalescents at Brewster, N. Y., $75,000, by the will of Mrs. Arietta Crane Reed.

St. Peter's Hospital, Brooklyn, $5,000, by the will of Ellen McAree.

Columbia University, New York, for the endowment fund of the Sloane Hospital for Women, $75,000, from Mrs. William Douglas Sloane.

Associated Charities of Newburyport, Mass., the income from $50,000, and the Anna Jaques Hospital, Newburyport, the income from $100,000 for the support and maintenance of the antituberculosis department, by the will of Julia M. Mosly, Newburyport.

Misericordia Hospital, Philadelphia, a contingent bequest of more than $4,000 from the estate of Mary E. Grandle.

Personal.—Passed Assistant Surgeon John B. Kaufman, U. S. N., lately in charge of the hospital school of instruction at Newport News, Va., has been placed in charge of the hospital school to be established at Great Lakes, Ill.——Senior Surgeon Henry R. Carter, assistant surgeon general, U. S. P. H. S., and head of the Malaria Investigation Bureau, has gone to Colleton County, S. C., to study the malaria conditions in Broxton Township.——Sanitary Engineer William D. Wrightson, U. S. P. H. S., head of the mosquito campaign in Baltimore, has accepted a position as superintendent of the construction of the Capitol Filterage Plant, to be built in Lima, Peru, by the Peruvian government, and has sailed for his new post of duty.

Typhoid Death Claims Settled.—The Illinois Industrial Board has completed the settlement of fourteen of the eighteen death claims against the Elgin National Watch Company as a result of the recent typhoid epidemic among its employees. This epidemic, amounting to over 100 cases of typhoid, was due to the contamination of the drinking water furnished employees. The settlements made so far aggregate over $30,000, or an average of a little more than $2,000 each. The four remaining claims will probably be settled during the next month. In addition to the settlement of these death claims, the Elgin National Watch Company has voluntarily paid over $55,000 for medical and hospital attendance in an effort to control the typhoid epidemic. The case is an important one as tending to establish the principle that typhoid fever is, under some conditions, a disease consequent on occupation.

National Leprosarium Bill Passes Senate.—The bill providing for a national hospital for lepers has been discussed in The Journal repeatedly during the past year. This bill, simultaneously introduced in the House and Senate, passed the House, May 15, 1916. It appropriated $250,000 for a national home for lepers, either on a site acquired by purchase or on any abandoned government reservation suitable for the purpose, the hospital to be under the regulation of the surgeon-general of the U. S. Public Health Service and to be for the care and treatment of any person afflicted with leprosy who presents himself voluntarily, or for any who may be apprehended under the U. S. Quarantine Acts, or for any one consigned to the home by the proper health authorities of any state. January 25, the bill was called up on the calendar in the Senate. As passed by the House, the bill provided an addition to the pay of any medical officers detailed for service in the leper hospital of one half of their regular pay; in the Senate bill the additional pay was one quarter. Senator Ransdell of Louisiana, chairman of the Senate Committee on Public Health and National Quarantine, in order to expedite the passage of the bill, moved to substitute the House bill for the Senate bill and secured its passage by unanimous consent.

WAR NOTES

Praise for American Ambulance Men.—In an official comendation of the Second American Automobile Ambulance Section on duty in France, Robert MacCreary, East Aurora, N. Y., and Marcellus Wild, Rochester, N. Y., have been named "for their really exceptional devotion to duty." H. C. Hoskier and Marcel du Casse, New York, and L. H. Northrop, Winnipeg, Man., received individual mention, entitling them to the *Croix de Guerre*.

Contributions to Expeditions Committee Fund.—Hon. Herman A. Metz, Cleveland, has contributed $20,000 to the American Physicians Expeditions Committee.

Unit Sails for England.—The following physicians sailed, January 20, on the *New York* for service at hospitals in England and base hospitals in France: Drs. James V. Ricci, Providence, R. I.; Jerome F. Potts, Washington, D. C.; William M. Findley, New York; Frederick A. Simonds, Wakefield, Mass.; J. Franklin Harvey, Boston; Charles Curtis Allen, Topeka, Kan.; Leo Thomas Kewer, Waverley, Mass.; Carl Edwin Allison, Wakefield, Mass.; Charles F. Gormly, Providence, R. I.; William H. Mackay, Worcester, Mass., and Audley C. Sanders, Boston.

FOREIGN

Cholera and Typhus in Palestine.—The Women's Zionist Organization of New York announces that cholera and typhus have claimed so many victims among physicians in Palestine that few medical men remain on duty. The organization asks $75,000 for the equipment and maintenance of a medical unit for one year.

New Medical Era for China.—President Harry Pratt Judson of the University of Chicago, in an address before the World Problem Institute of the University of Chicago, January 8, stated that it is proposed that a medical training school be erected in Peking. Around this school a chain of hospitals will be established. A second school will be organized at Shanghai. Both of these institutions are to be financed by the Rockefeller Foundation.

Meetings of Internists in Europe.—The ninth quadrennial Scandinavian congress for internal medicine was to have been held in Finland this spring, but the war prevents. Arrangements have now been made for the meeting to be held at Copenhagen in August, 1917. The subjects appointed for discussion are "Importance of Dieting in Treatment of Insufficiency of the Heart and Kidneys," and "Neurasthenia in Relation to Psychopathic Conditions." V. Scheel, Bispebjaerg Hospital, Copenhagen, is the secretary.——The twenty-third annual meeting of the German internists is planned to convene at Wiesbaden in the coming April. The main addresses announced are on "Nutrition in War," "The Constitution as a Cause of Disease," and "The Rarer Infectious Diseases Encountered During the War." W. Weintraud, Rosselstrasse 20, Wiesbaden, is the secretary. The announcement of this meeting specifies that communications for it will not be accepted if their essential content has already been published.

Epidemic of Malignant Malaria in Mexico.—The *Bulletin* of the Mexican National Board of Health states that two health officers were sent to Tehuantepec, as yellow fever was said to be prevailing there, many dying from a sickness with much vomiting of blood and hemorrhagic stools. They found the trouble to be malignant malaria, the parasites of the tertian phase numerous in the blood. Isolation was practically impossible as about two thirds of the 10,752 inhabitants of the town were either sick or carriers, and practically all the special mosquitoes were infected. Brigades were formed to aid in fighting the malaria, pools were oiled and twenty-eight houses fumigated. The report covers the first sixteen days of the work; 426 sick were found and there were 180 deaths from the disease. The scarcity of quinin made it impossible to treat all the sick and there was none for preventive use. Efforts were promptly made to enlighten the public as to the epidemic and the necessity for proper treatment. In some of the cases the measures that had been previously applied were evidently responsible for some of the peculiar manifestations of the disease, no one thinking of giving quinin, as malaria had not been suspected.

The "Epidemics" Gold Medal for Landouzy of Paris.—The *médaille d'or des épidémies* has been awarded by the French government to Professor Landouzy for his long and ceaseless study of tuberculosis and means to combat it. He it was who first established the existence of tuberculosis in very young infants, which had been previously denied. His conception of "typhobacillosis" threw light on a hitherto unsuspected domain of the disease and enlarged the field of acute forms of the disease. It was he, also, who revealed the tuberculous nature of pleurisy *à frigore* which upset the traditions as to the necessity of the tubercle for the assumption of tuberculosis. He also inaugurated, in 1885, the new movement for social prophylaxis which developed from the old limited conception of "public health." In October, 1915, he took the lead in demanding and organizing measures for the detection and care of tuberculous soldiers. The state in awarding this medal to Landouzy aimed to emphasize in the eyes of the general public the epidemic character of tuberculosis, which, French writers say, inaugurates a new era. The 1913 statistics for France show a total of 18.552 deaths from all other epidemic diseases, outside of tuberculosis, and of 84,443 deaths from tuberculosis alone. During the cholera epidemics, as late as 1884, the death rate from this disease was 4.4 per ten thousand inhabitants; from typhoid in 1913 it was 0.9; from diphtheria, 0.63; while from tuberculosis, the death rate was 21.3: 10,000.

PARIS LETTER

Paris, Jan. 4, 1917.

The War

SYPHILIS AFTER TWO YEARS OF WAR

At the session preceding the last one, held by the Académie de médecine, Dr. Gaucher, clinical professor of cutaneous diseases and syphilis of the Faculté de médecine de Paris, and Dr. Bizard made an interesting report on this subject. Whereas, before the war, there were, in round numbers, 300 cases of recently contracted syphilis among 3,000 patients treated at the St. Louis Hospital clinic (one in ten), during the first sixteen months of the war, 800 cases of syphilis were found among 5,000 patients (one in six); in the eight months following there were 600 syphilitics among 2,300 patients (one in four). Therefore, while during the first sixteen months of the war syphilis increased over 33 per cent. (almost 50 per cent), during the following eight months it increased over 50 per cent. (almost 67 per cent.). Commenting on this remarkable increase, Drs. Gaucher and Bizard insist that there were originally many unknown cases of syphilis. This fact, they believe, demonstrates the necessity of giving students more thorough instruction on syphilis. In fact, students should receive several months of special training in the study of this disease. Dr. Vaillard, general medical inspector of the military health service, has proposed that the authorities be invited to take the necessary measures to prevent the development of syphilis. Following this proposal, the Académie de médecine appointed a commission composed of Drs. Gaucher, Achard, Vaillard, Pinard and Kirmisson to draft a petition asking the government to enforce this resolution.

SMALLPOX VACCINATION BY ARMY PHYSICIANS

M. Justin Godart, undersecretary of state of the military health service, has recommended to the regional directors in the service that: (1) all soldiers be examined with the view of vaccinating or revaccinating all those who had escaped vaccination, (2) all employees in public or private manufactories operating for national defense be revaccinated with the least possible delay, and (3) the medical corps of the army be placed at the disposition of the civil authorities and charged to proceed with the legal revaccination of schoolchildren who have attained the age of 11 years.

FOR WAR CRIPPLES

At the suggestion of the Belgian government, cooperating with the French government, a conference of the allies is to be held at Paris, March 6, 1917, to consider the needs of those crippled in the war: their reeducation, employment, economic interests, protection, etc. The organizers of this movement appeal to all specialists, soliciting cooperation. The general secretary may be addressed at "rue de Bocage de Bleville, No. 1, Havre." The national office for the wounded at "quai d'Orsay, 97, Paris," will furnish all necessary information to those interested.

Are there Carriers of Tetanus Bacilli?

In a report to the Société de chirurgie de Paris, Dr. Colombino of Turin answers this question in the affirmative. In making a casual bacteriologic examination of infected wounds in patients who had been given an antitetanic serum injection and who had never even shown any symptoms of tetanus, he discovered not only the tetanus spores, as Berard and Lumière had already observed, but even the bacilli. Therefore, Colombino concludes that in the centers in which the wounded are treated, every patient, from the point of view of a tetanus infection, was a menace to his neighbor, and that, consequently, it was unsafe to operate in any manner on a patient whether infected with tetanus or not, without giving him a preventive, antitetanic serum injection. This opinion gave rise to an interesting discussion. Professor Legueu found Colombino's conclusion somewhat overdrawn. He believes that the antitetanic serum injection should be given only under certain conditions and in certain centers where tetanus occurs more frequently or where its occurrence is more to be feared. According to Dr. Pierre Delbet, clinical professor of surgery at the Faculté de médecine de Paris, the danger to which the carriers of tetanus bacilli subject the other patients is evidently not comparable with that of scarlet fever or diphtheria; but, nevertheless, this danger is real and similar to that which is caused by those who actually have tetanus. Dr. Broca, assistant professor at the Faculté de médecine de Paris, who, for two years, has operated daily on patients who had not been given preventive injections, has never had a single case of tetanus. Dr. Routier, on the other hand, for almost one year never performed even a minor operation without giving the patient on the eve, or at least on the morning of the day of operation, an antitetanic serum injection. He claims never to have had a case of operative tetanus. Dr. Tuffier, assistant professor at the Faculté de médecine de Paris, does not accept this practice, which he believes applies only when there is a case of tetanus in the service. Dr. Rochard is of the same opinion. Dr. Quénu believes that this is a question which needs to be studied further, because at present there are not enough facts to solve it.

Oculocardiac Reflex and Subjective Symptoms of Trephined Patients

Dr. Paul Sainton, physician at the hospitals of Paris, has drawn the attention of the Académie de médecine to the fact that in trephined patients there is a disturbance of the functional equilibrium which exists normally between the antagonistic, pneumogastric and sympathetic systems. Proof of this is the frequency of modifications of the oculocardiac reflexes which denote at times a hyperexcitability of the autonomous system and at others a hyperexcitability of the grand sympathetic system. They are comparable to those which have been described as existing in exophthalmic goiter. Testing the oculocardiac reflexes should therefore take its place among other procedures which make for the control of the subjective symptoms of the trephined.

Formation of a Franco-Russian Medical Committee

This committee has just been formed with a view of attracting to the schools of medicine and pharmacy of France the greatest possible number of Russian students and physicians; to send French students and physicians into Russia on scientific missions; to invite similar Russian missions to France, and to create Russian medical centers in the university cities of France to serve as medicocommercial centers. The honorary president of this medicochirurgical committee is Dr. Charles Richet, professor at the Faculté de médecine de Paris. The acting president is Professor Blanchard, and the general secretary is Dr. Roubinovitch, physician at the Hospice de Bicêtre.

Personal

At a recent meeting of the Académie de médecine, Prof. George Hayem was elected president for 1918.

Death of Dr. Edward Hirtz

Dr. Hirtz, physician at the hospitals of Paris and vice president of the Société de thérapeutique, recently succumbed to a cardiac affection. He had distinguished himself by his work on the circulatory system and its therapy.

BERLIN LETTER

Berlin, Nov. 20, 1916.

Tuberculosis and the War

By resorting to proper hygienic and prophylactic measures in the fight against tuberculosis, the authorities have succeeded in reducing the number of cases of tuberculosis occurring in the army in times of peace. The most effective measure in this campaign has been the prompt isolation of every suspicious case. The incidence of tuberculosis in 1882 was 2.2 per thousand, whereas in 1910 it was only 1.3 per thousand. The same condition existed in the Austro-Hungarian army. Tuberculosis incidence was also greater in the Russian and English armies than in the armies of the central powers. Since the beginninng of the war it has manifestly been impossible to carry out the measures which resulted in this splendid showing in the German army. Persons with a predisposition to tuberculosis naturally could not be excluded from service. Furthermore, many of the volunteers withheld the information that they had had pulmonary disease, nor could these cases be detected by the medical examiners, who were compelled to make hurried examinations. The need for men made it necessary to accept for enlistment persons with healed or inactive tuberculosis, but many of these have made excellent soldiers, not only withstanding successfully the exacting demands of military service on their constitutional resistance, but even gaining in health and strength. The number of new cases of tuberculosis developing in the army is much smaller than was at first expected, notwithstanding the unusually severe conditions under which the soldiers live. The clinical picture of these cases does not differ from that of tuberculosis occurring during times of peace. As to the prognosis of these cases of war or campaign tuberculosis, as they have been designated, there is some difference of opinion. Some observers report having seen severe, rapidly progressing cases, while others claim that many of these patients make a speedy recovery under appropriate hospital treatment.

TRAUMA AND TUBERCULOSIS

Much valuable information on the relationship of trauma to tuberculosis may be expected, although, according to present indications, few cases of tuberculosis have developed as the result of trauma in general and lung injuries in particular. The lighting up of old or latent cases and the progression of mild cases is not uncommon, however. In many instances old cases remained wholly unaffected. Moritz investigated cases of gunshot wounds of the chest at various special hospitals, and found a direct etiologic relationship between injury and tuberculosis in nine cases. In thirty-six cases the disease was undoubtedly made worse. These figures surely are not alarming when one remembers that the cases of lung injury in this war are numerous. During the Franco-Prussian war very few cases of pulmonary tuberculosis developed as the result of chest wounds. The typhoid prophylactic vaccination, it is believed, also activates pulmonary tuberculosis, although such cases are merely isolated instances. Observations made on this subject are very instructive. It is agreed that in a large percentage of cases the original diagnosis of tuberculosis was wrong. Fraenkel excluded an active tuberculosis in 60 per cent. of the cases, de la Camp in 30 per cent., Blümel of Halle in 80 per cent., and this in the face of the fact that the original diagnosis was made, not after a single examination, but after observations extending sometimes over months and carried on in an institution. The reason for these errors in diagnosis, Fraenkel believes, lies in the fact that too great value is placed on relatively insignificant findings. A laudable desire to recognize tuberculosis as early as possible has led many physicians to regard indefinite physical findings or an incomplete clinical history as a sufficient basis for a diagnosis of pulmonary tuberculosis. Fraenkel says that the diagnosis of pulmonary tuberculosis should be made only when the tubercle bacillus is unquestionably found in the sputum, or when a typical roentgenogram is obtained. He is convinced that the roentgenogram is never negative in a frank, open case of tuberculosis, or in any case of closed tuberculosis manifesting clinical symptoms. All other evidence Fraenkel regards as unsafe, stating that only an overwhelmingly large number of such signs and symptoms should serve as a basis for a positive diagnosis of tuberculosis. Goldscheider, de la Camp, Rieder, Scholz and others emphasize the absolute necessity of a Roentgen examination of the chest in arriving at a diagnosis of pulmonary tuberculosis. Of course, it is needless to state that a correct interpretation of the roentgenogram must be made. Goldscheider says that a shadow in the roentgenogram is not indicative of an active tuberculosis, nor does it justify exemption from military service or referring the individual to a hospital for treatment.

It is well to mention here something that occurred in Switzerland. The Swiss military insurance organization was confronted by the problem whether a case of tuberculosis making its appearance during military service was to be regarded as a disease incurred while in service, or as a disease having existed prior to enlistment. The majority of physicians today agree with the teaching of Behring and Römer that infection with the tubercle bacillus usually occurs during childhood, and that clinical manifestations do not appear until many years afterward in the form of metastasis, and that an exogenous infection of an adult is, in general, without significance. A commission of Swiss physicians came to the conclusion that pulmonary tuberculosis in these cases was not to be regarded as a disease of military service, but that it had existed previously. Not a single case could be found in which it was probable that the infection occurred after the age of 20. Therefore, the military insurance commission felt itself justified in refusing to give an indemnity to these tuberculosis soldiers although, for humanitarian reasons, it was willing to treat these men until recovery ensued. Stähelin was strongly opposed to these views. He referred to the frequent changes of opinion among physicians as to the exact nature of these cases, and believed that the commission had confused the terms "infection" and "illness." If it is true, he said, that over 90 per cent. of all persons become infected with the tubercle bacillus in their youth, whereas only relatively few manifest any symptoms of pulmonary disease, it is evident that while infection with the tubercle bacillus may have occurred, it was by no means the main etiologic factor of the subsequent illness. Grau agreed with Stähelin, and suggested that too firm a belief in the correctness of the teaching of Behring and Römer might prove to be a stumbling block in the effective campaign against tuberculosis.

DIAGNOSIS

Little has been added to means of diagnosis. Tachau and Mickel have investigated the matter of temperature elevation following exercises, and found that the variation in the well and the sick did not consist so much in the absolute increase of the temperature as in the rapidity of its fall. In the normal person the temperature falls to normal within half an hour, but not in the sick. The diagnostic value of this finding is strongly influenced by the fact that other diseases than tuberculosis show such pathologic reactions. The opinions as to the diagnostic value of the tuberculin tests are still varied. De la Camp's observation is of interest. He found that as the result of vaccinations the susceptibility to the tuberculin was altered so that the usual reaction failed to appear. Hochhaus found that Pirquet's reaction was negative in the case of many soldiers when one really would have expected a positive reaction.

The manysidedness of the clinical picture of pulmonary tuberculosis is laid to the various groupings made of these cases. The division made by Turban and Gerhardt is based on the progress of the tuberculous process. So far, however, as the course of the disease is concerned, the nature of the anatomic process is of greater importance than its spread. The Fraenkel-Albrecht classification is made on this basis. They recognize the cirrhotic, tubercular and pneumonic processes with combinations of cirrhotic-tubercular and tubercular-pneumonic cases. The cirrhotic and tubercular-cirrhotic cases are regarded as benignant because they result in scar formation; the other cases are looked on as being malignant because they are progressive. The clinical classification of individual types should be made only after every means of diagnosis has been resorted to, a careful review made of the clinical history, a thorough physical examination, a Roentgen examination, and after noting the course of the temperature and the fluctuations in body weight.

MILITARY FITNESS

It is impossible to lay down any rules that can be made to apply to military fitness. The individual case must be judged on its own merits, and in the end all such persons affected with tuberculosis must be regarded as fit for military service if they have sufficient physical endurance. Open cases of tuberculosis, or such as give evidence of an active process, must be exempt from military service. On the other hand, old, inactive cirrhotic forms can, under certain conditions, be regarded as fit for all kinds of military service. This decision will be justified when the individual concerned has withstood all sorts of service successfully, and when he is sent to the hospital, not because of his tuberculosis, but because of some other illness or as the result of wounds.

LONDON LETTER

LONDON, Jan. 6, 1917.

The War

MEDICAL SPECIMENS FROM THE WAR

In March, 1915, the war office constituted a committee to compile a medical history of the war, and the director-general of Army Medical Services became its president, and the secretary of the Medical Research Committee its secretary. The two scientific forces were united in one body. One of the objects of the committee was to collect from all the military hospitals specimens of interest and permanent value. These specimens are of great interest, and it was felt that at all costs they must be preserved. The collection was begun and the number of specimens received soon mounted up. As it was found impossible to carry out the original idea and store the specimens at the Royal Army Medical College, the council of the Royal College of Surgeons decided to place the workrooms and storerooms of the museum at the disposal of the Army Medical Service and to preserve, classify and register all specimens forwarded from military hospitals. The war office issued a memorandum telling army surgeons to forward specimens of an interesting and instructive type. In 1916 Major T. R. Elliott was placed in charge of the collection and transmission of these specimens from the pathologic laboratories attached to the base hospitals in France. The specimens at the end of 1916 numbered 1,100. They have been carefully stored under the direction of Prof. Arthur

Keith, curator of the College of Surgeons Museum. In this way a national collection has been built up. In order that it may be made of immediate use, it has been decided to place the specimens on exhibition, and the work of selection has been entrusted to Professor Shattock, pathologic curator of the Royal College of Surgeons. When the work of arrangement and correlation is completed, the medical profession, and thereby the people of this country, whether in the army or in civil life, will begin to enjoy the benefits of a singularly clearsighted policy.

The Campaign Against Venereal Diseases

The action of the government in providing centers for the free diagnosis and treatment of venereal diseases has been described in previous letters to The Journal. The subject continues to receive great attention in the press, and the grave consequences of these diseases are discussed with a freedom which would have seemed impossible a few years ago. The National Council for Combating Venereal Diseases has issued a report on its recent activities. It points out that on the publication of the Report of the Royal Commission on Venereal Diseases (described in a previous letter), the Council presented a memorial to the Local Government Board urging that financial support should immediately be given by the government to enable treatment centers to be established throughout the country. This request being granted, steps were then taken to focus public attention on the urgency of the problem by means of a series of conferences in several large towns. The most important one was that convened by the lord mayor of London, and at it certain fresh legislation was foreshadowed in the home secretary's speech. At his suggestion, recommendations were prepared by the national council and submitted to him for consideration. These recommendations included (1) the suppression of advertisements by quacks, and (2) making the transmission of venereal disease by a person who was aware that he was in an infectious condition a criminal offense. One of the earliest activities of the council consisted in undertaking, with the consent and approval of the war office, the provision of lectures to troops on the subject of venereal diseases. A syllabus was drawn up, and a panel of medical men formed who were willing and able to lecture. The lecture comprises a description of the diseases and their effects, the urgent need for thorough and early treatment, a statement of the dangers of quackery and concealment, and an explanation of the modes of infection and of the advantages of continence. During the last two years nearly a million men have been addressed on these lines. The lectures have been invariably well received, and many letters testifying to their utility have reached the council from officers in high command. This work is still in progress, and it has recently been extended, at the desire of the director-general of the army medical service, to include a lecture to each new class of cadets at all the officer cadet schools, so that every new officer may receive the information necessary to enable him to instruct the men under his command. The council has also assisted in furthering arrangements for providing facilities for early treatment for soldiers on leave in London, so that there should be no delay in commencing treatment owing to their temporary absence from their depots. The rules of all societies approved under the national insurance act include one depriving members of sickness benefit if their incapacity is the result of "misconduct." The result is that members suffering from venereal diseases are in many cases unable to obtain this benefit. The council came to the conclusion that this rule was likely to exert influence adverse to the campaign against these diseases, by discouraging such members from seeking early and efficient treatment. Representations to this effect were accordingly made to the principal societies, pointing out, in addition, that the abolition of the "misconduct rule" as regards venereal diseases would probably be of financial benefit to them in the long run, by relieving their funds from the strain of paying sickness and disablement benefit for the many cases of sickness and disablement arising from neglected venereal disease. As a result, resolutions giving effect to the principle have been passed by conferences representing the great majority of insured persons.

The national council is preparing to undertake a widespread propaganda. Arrangements have been made to hold special training classes for speakers. A certain number of men and women will be engaged for whole time services for the national council, and will work under the auspices of the county and town health officers in cordial cooperation with existing social agencies in various parts of the country. Arrangements have also been made to train local speakers and secure a panel of physicians who are willing to speak on the medical aspect of the question, and so supplement the teaching of social prevention given by the lay speakers. A number of conferences have already been arranged between municipal, medical and hospital authorities in many centers.

The most extreme development of the campaign is a proposal submitted to the home secretary by the Hammersmith borough council, which is nothing less than a by-law to enforce chastity. It may be necessary to explain that a by-law is a regulation made by a local authority for its own district, with the sanction of the government. The council suggests that a man who, knowing the injury he is likely to inflict on himself, his wife and children, and the community generally, consorts with prostitutes, deserves to be regarded as no less criminal than the keeper of a disorderly house; and if found in such company or on disorderly premises, he should be made liable to prosecution.

The Medical Service in the Somme Battle

The battle of the Somme, which lasted five months, is the greatest battle on record. The report on it by the commander of the British expeditionary force in France, Sir Douglas Haig, has just been published. Referring to the medical arrangements, he states that the losses entailed by the constant fighting throw a specially heavy strain on the medical services. This was met with the greatest zeal and efficiency. The gallantry and devotion with which officers and men of the regimental medical service and field ambulance discharged their duties is shown by the large number of the Royal Army Medical Corps and Medical Corps of the Dominions who have fallen in the field. The work of the medical services behind the front has been no less arduous. The untiring professional zeal and marked ability of the surgical specialists and consulting surgeons, combined with the skill and devotion of the medical and nursing staffs, both at the casualty clearing stations in the field and the stationary and general hospitals at the base, have been beyond praise. Immense help was rendered by the British Red Cross and the Army Medical Corps in their work. The health of the troops has been most satisfactory, and there was almost a complete absence of wastage due to disease of a preventable nature.

On the use of gas the dispatch contains the following paragraph:

> The employment by the enemy of gas and of liquid flame as weapons of offense compelled us not only to discover ways to protect our troops from their effects, but also to devise means to make use of the same instruments of destruction. Great fertility of invention has been shown, and very great credit is due to the special personnel employed for the rapidity and success with which these new arms have been developed and perfected, and for the very great devotion to duty they have displayed in a difficult and dangerous service. The army owes its thanks to the chemists, physiologists and physicians of the highest rank who devoted their energies to enabling us to surpass the enemy in the use of a means of warfare which took the civilized world by surprise.

Physicians to Charge Higher Fees

Since the war began, the price of everything has greatly increased, and therefore the cost of living is augmented. So far most physicians have not increased their charges. The Newcastle division of the British Medical Association, however, has decided to increase medical fees from 15 to 20 per cent., owing to the increased cost of living, drugs, etc.

Marriages

Isaac Newton Ratchford, M.D., Stockton, Calif., to Miss Clarissa Merganten of San Francisco, December 30.

Arthur Francis Grove, M.D., to Miss Diana Augusta Uline, both of Dell Rapids, S. D., December 27.

Francis Dowling, M.D., Cincinnati, to Miss Margaret Phillips of Fort Thomas, Ky., January 19.

Del Mar Akin, M.D., Stratton Park, Colo., to Miss Helen Foster of Colorado Springs, December 7.

Walter Maurice Lacey, M.D., to Miss Marguerite Stall, both of Cheyenne, Wyo., December 27.

Louis Monroe Tomlinson, M.D., Harveyville, Kan., to Miss Vinnie S. Grissinger, September 28.

Julius Napoleon Hill, M.D., to Miss Kathryn Bayliss, both of Murphy, N. C., January 4.

Julius E. Lackner, M.D., Chicago, to Miss Florence Simon of Minneapolis, January 25.

Deaths

Leopold Frederick William Haas, M.D., New York; College of Physicians and Surgeons in the City of New York, 1898; aged 42; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; chief diagnostician of the Bronx Borough Board of Health; attending obstetrician to the Union Hospital, and attending physician to the Home of the Friendless; died in the Presbyterian Hospital, New York, January 18.

William Russell Allison, M.D., Peoria, Ill.; Rush Medical College, 1886; aged 53; a Fellow of the American Medical Association; for several years secretary and once president of the Peoria City Medical Society; for ten years health commissioner of Peoria and once alderman; for five years secretary of the Proctor Hospital Medical Staff, and at the time of his death president; died in his office, January 12, from angina pectoris.

Frederick Miller Corwin, M.D., Bayonne, N. J.; New York University, New York, 1881; aged 60; a Fellow of the American Medical Association; local surgeon of the Central Railroad of New Jersey; president of the medical board of the Bayonne Hospital and a member of the staff of the East Long Island Hospital; chief medical inspector of the board of education of Bayonne; died at his home, January 16, from heart disease.

Frederick W. Kienzle, M.D., Lynn, Ind.; Medical College of Indiana, Indianapolis, 1902; aged 39; formerly a member of the Indiana State Medical Association; died at the home of his mother in Greensfork, Ind., January 15, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Robert Henry Herkimer, M.D., Brooklyn; Long Island College Hospital, Brooklyn, 1892; aged 46; for twelve years chief medical inspector of the health department of Brooklyn; formerly a member of the Medical Society of the State of New York; died at his home, January 16, from pneumonia.

Charles L. Kissling, M.D., Milwaukee, Wis.; University of Munich, Bavaria, 1886; aged 57; a Fellow of the American Medical Association; a well known practitioner of Milwaukee, and for sixteen years a member of the board of education; died at his home, January 18, from heart disease.

Thomas R. Cave, M.D., Manhattan, Kan.; Medical College of Ohio, Cincinnati, 1874; aged 64; a Fellow of the American Medical Association; a member of the Golden Belt Medical Society; one of the most prominent practitioners of northeastern Kansas; died at his home, January 22.

John Wesley Chambers, M.D., Baltimore; College of Physicians and Surgeons, Baltimore, 1878; aged 64; a Fellow of the American Medical Association; professor of principles and practice of surgery and clinical surgery in his alma mater; died at DuBois, Pa., January 21.

William J. W. Kerr, M.D., Corsicana, Texas; University of Nashville, Tenn., 1870; aged 82; formerly a member of the State Medical Association of Texas; surgeon in the Confederate service throughout the Civil War; died at his home, November 12, from arteriosclerosis.

Ward Slosson Gregory, M.D., Colorado Springs, Colo.; College of Physicians and Surgeons in the City of New York, 1903; aged 37; a Fellow of the American Medical Association; formerly of Norwalk, Conn.; died at his home, January 14, from tuberculosis.

John C. Cullen, M.D., Anderson, Ind.; Medical College of Ohio, Cincinnati, 1868; aged 79; assistant surgeon of the Sixteenth Indiana Volunteer Infantry during the Civil War; a member of the city council of Anderson in 1884; died at his home, January 17.

Andrew Benjamin Knisley, M.D., Buffalo; University of the Victoria College, Coburg, Ont., 1885; aged 58; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; died at his home, January 10.

James Francis Ferry, M.D., Cambridge, Mass.; Harvard Medical School, 1887; was instantly killed, January 21, when the automobile in which he was riding was struck by a Boston and Maine freight train at a grade crossing at Still River station.

Irving Drury Chaney, M.D., Mount Airy, Md.; University of Maryland, Baltimore, 1906; aged 35; formerly a Fellow of the American Medical Association; a member of the Medical and Chirurgical Faculty of Maryland; died at Portland Manor, Md., January 18.

Clarence Henry Leland, M.D., Lowell, Mass.; Hahnemann Medical College, Philadelphia, 1873; aged 68; for many years a member of the staff of the Lowell General Hospital; died at his home, January 15, from pneumonia.

John Jay Crawford, M.D., Coraopolis, Pa.; Jefferson Medical College, 1882; Hahnemann Medical College, Chicago, 1884; aged 56; was almost instantly killed by the overturning of his automobile at McClarrens Mills, January 11.

Karl Rogers, M.D., Cleveland, Tenn.; University of Nashville, Tenn., 1907; aged 34; formerly a member of the Tennessee State Medical Association; died in a sanitarium in Cleveland, January 3, from acute nephritis.

George Sanson, M.D., Ashcroft, B. C.; University of the Victoria College, Coburg, Ont., 1886; aged 54; died at the Royal Victoria Hospital, Victoria, B. C., September 4, after an operation for carcinoma.

Anthony Keller, M.D., Falls City, Neb.; Jefferson Medical College, 1883; aged 65; formerly a Fellow of the American Medical Association; died at his home, January 10, from cerebral hemorrhage.

Roland Sumner Gove, M.D., Sanford, Me.; Bowdoin Medical School, Brunswick, Me., 1892; aged 46; a member of the Maine Medical Association; died at his home, December 18, from pneumonia.

Stephen Augustus Pedrick, M.D., Rowley, Mass.; Tufts College Medical School, Boston, 1895; aged 45; a member of the Massachusetts Medical Society; died at his home, December 28.

Charles Wesley Brown, M.D., Orland, Me.; Medical School of Maine, Brunswick, 1877; New York University, New York, 1888; aged 67; died at his home, January 8, from acute gastritis.

Eugene McIntyre Walker, M.D., Sylvester, Ga.; Medical College of Georgia, Augusta, 1914; aged 28; died at the home of his parents in Tifton, Ga., December 30, from typhoid fever.

John W. Snider, M.D., New Castle, Ohio; University of Wooster, Cleveland, 1878; aged 61; a member of the Ohio State Medical Association; died at his home, about January 6.

Townsend M. Luce, St. Louis (license, Missouri, 1887); aged 78; for more than half a century a practitioner of Missouri; a Confederate veteran; died at his home, January 12.

Allen A. Barnett, M.D., Jerseyville, Ill.; University of Louisville, Ky., 1853; aged 86; formerly a member of the Illinois State Medical Society; died at his home, January 12.

William Benjamin Yancey, M.D., Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1895; aged 49; died at his home, January 3, from pneumonia.

William Blackburn York, Chestnut Bluff, Tenn. (license, Tennessee, 1889); a practitioner since 1861; aged 76; a Confederate veteran; died at his home, January 3.

William A. Jones, M.D., Colfax, La.; Memphis (Tenn.) Hospital Medical College, 1888; aged 61; was found dead in his office, January 4, from heart disease.

Leonard W. Estabrook, M.D., Springport, Ind.; Rush Medical College, 1867; aged 82; a pioneer practitioner of Henry County; died at his home, January 8.

James N. Crabb, M.D., Chico, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; aged 65; died at his home, January 4, from heart disease.

James H. Kimball, M.D., Los Angeles; Hahnemann Medical College, Chicago, 1880; aged 72; a veteran of the Civil War; died at his home, January 3.

Thomas Morrison Burney, M.D., Los Angeles; University of Pennsylvania, Philadelphia, 1913; aged 26; died at his home, January 6, from tuberculosis.

Virgil Andrew Dial, M.D., Senath, Mo.; Vanderbilt University, Nashville, Tenn., 1915; aged 35; died at his home, January 7, from chronic nephritis.

James Thomas Rushin, M.D., Montgomery, Ala.; University of Tennessee, Nashville, 1883; aged 52; died in Montgomery, January 6.

William Ralph Fogarty, M.D., Brooklyn; Long Island College Hospital, 1912; aged 38; died at his home, January 5, from pneumonia.

William Skiddy Taylor, M.D., Pomona, N. Y.; Bellevue Hospital Medical College, 1881; died at his home, January 8.

Albert T. Webster, M.D., Carrollton, Ky.; Pulte Medical College, Cincinnati, 1899; aged 58; died at his home, recently.

Association News

THE NEW YORK SESSION

The Local Committee on Arrangements, Headquarters and Meeting Places

The local Committee on Arrangements for the 1917 session to be held in New York City, June 4-8, has been constituted with Dr. Wendell C. Phillips, chairman, Dr. Floyd M. Crandall, secretary, and Dr. Alexander Lambert, treasurer. The following chairmen of subcommittees have been named:

CHAIRMEN OF SUBCOMMITTEES

Finance	Dr. Alexander Lambert
Registration	Dr. Ramon Guiteras
Entertainment	Dr. John S. Thacher
Hotels	Dr. Reginald H. Sayre
Sections	Dr. Willy Meyer
Scientific Exhibit	Dr. Harlow Brooke
Commercial Exhibit	Dr. Henry S. Stearne
Press and Publicity	Dr. George D. Stewart
Golf	Dr. Charlton Wallace

LOCAL COMMITTEE HEADQUARTERS

This committee has established headquarters at the Academy of Medicine Building, 17 West Forty-Third Street. All communications to the local committee or any of its subcommittees should be mailed to that address.

GENERAL HEADQUARTERS

The Registration Bureau, the Scientific Exhibit and the Commercial Exhibit, together with the information bureau and the American Medical Association postoffice, will be housed in the Hotel Astor, which will be General Headquarters.

SECTION HEADQUARTERS

The section headquarters and meeting places are announced as follows:

Practice of Medicine	Biltmore, Supper Room
Surgery, General and Abdominal	Waldorf-Astoria, Grand Ball Room
Obstetrics, Gynecology and Abdominal Surgery	Waldorf-Astoria, Astor Gallery
Ophthalmology	Astor, North Ball Room
Laryngology, Otology and Rhinology	Astor, East Ball Room
Diseases of Children	McAlpin, Winter Garden
Pharmacology and Therapeutics	Manhattan
Pathology and Physiology	McAlpin, Blue Room
Stomatology	Astor, Yacht Room
Nervous and Mental Diseases	McAlpin, Roof Garden
Dermatology	Academy of Medicine, Du Bois Hall
Preventive Medicine and Public Health	Biltmore, Music Room
Genito-Urinary Diseases	Waldorf-Astoria, Green Room
Orthopedic Surgery	Waldorf-Astoria, Assembly Hall
Gastro-Enterology and Proctology	McAlpin, Green Room

HOUSE OF DELEGATES

The House of Delegates will meet in the Academy of Medicine Building, convening at 10 o'clock, Monday morning, June 5.

SCIENTIFIC ASSEMBLY

General Meeting.—The opening meeting of the Scientific Assembly will be held in the Grand Ball Room of the Waldorf-Astoria, convening at 8 o'clock, Tuesday evening, June 5, instead of at 10 a. m., as at previous sessions.

Section Meetings.—The section work will begin at 9 a. m. Wednesday, June 6, instead of at 2 o'clock Tuesday afternoon, as heretofore. The sections will hold two meetings, opening at 9 a. m. and at 2 p. m., Wednesday, Thursday and Friday, June 6, 7 and 8, respectively, or until the programs of the several sections are completed.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

GLYCEROPHOSPHATE COMP. AMPULS, 1 Cc., SQUIBB

Report of the Council on Pharmacy and Chemistry

"Glycerophosphate Comp. Ampuls, 1 Cc., Squibb" are claimed to contain, in each, sodium glycerophosphate 0.1 gm., strychnin cacodylate 0.0005 gm., and iron cacodylate 0.01 gm. The Council refused recognition to "Glycerophosphate Comp. Ampuls, 1 Cc., Squibb" because the name did not indicate the potent ingredients and because the administration of a mixture of sodium glycerophosphate, strychnin cacodylate and iron cacodylate is irrational.

The preceding statement was submitted to E. R. Squibb and Sons for consideration. The firm replied:

> ". . . we wish to explain that there has been a small demand for this product, no doubt created by other manufacturers. We have filled hitherto this demand as far as it came to us, using the formula regularly supplied for years by other firms.
>
> "The name Glycerophosphate Comp. to cover a product containing sodium glycerophosphate, strychnine cacodylate and iron cacodylate. seemed to us to be the best that could be devised, under the circumstances. It is absolutely impossible to mention all the ingredients in the name, as it would give an unwieldy title. In passing, we might mention that the U. S. P. and N. F. cover also by the word 'Compound' the potent ingredients in many titles.
>
> "However, the finding of the Council, that the formula here in question is irrational, must determine our action, and we have, in consequence, decided to eliminate Glycerophosphate Comp. Ampuls from our list, dropping the article altogether."

This cooperation in the work of the Council on Pharmacy and Chemistry is gratifying. In passing the Council notes that the foregoing criticism of many Pharmacopeial and National Formulary titles is justified. Many Pharmacopeial preparations have names which are not only nondescriptive but actually misleading. Such are compound powder of glycyrrhiza and compound syrup of figs, both of which owe their activity to senna, and acid camphor mixture and compound mixture of glycyrrhiza, which are essentially opium preparations. If any of these preparations possess therapeutic value their names should be descriptive, as otherwise they violate a fundamental principle in the nomenclature of medicinal substances, a principle for which the Council has contended and which is supported by both the medical and pharmaceutical professions as well as by manufacturers.

BRINKLER, "FOOD EXPERT," ACQUITTED

After a trial lasting three weeks, and after twenty hours' deliberation by a jury, George H. Brinkler, the self-styled "food expert," was acquitted on January 16, at Washington, D. C., of the criminal charge of using the mails to defraud. Brinkler was indicted on Aug. 7, 1914, and a fraud-order was issued against him by the postoffice department, Aug. 19, 1914. A full account of his methods was published in The Journal, Oct. 3, 1914, in this department and the matter has been reprinted in the pamphlet "Medical Mail-Order Frauds."

Witnesses for Brinkler included an exponent of the treatment of disease by the vacuum process, an advocate of mechanotherapeutics, and a "neuropath," and according to the Washington *Post* the attorney for the defense called "the leading dietetic experts of New York and Philadelphia to prove that the Brinkler theory is sound."

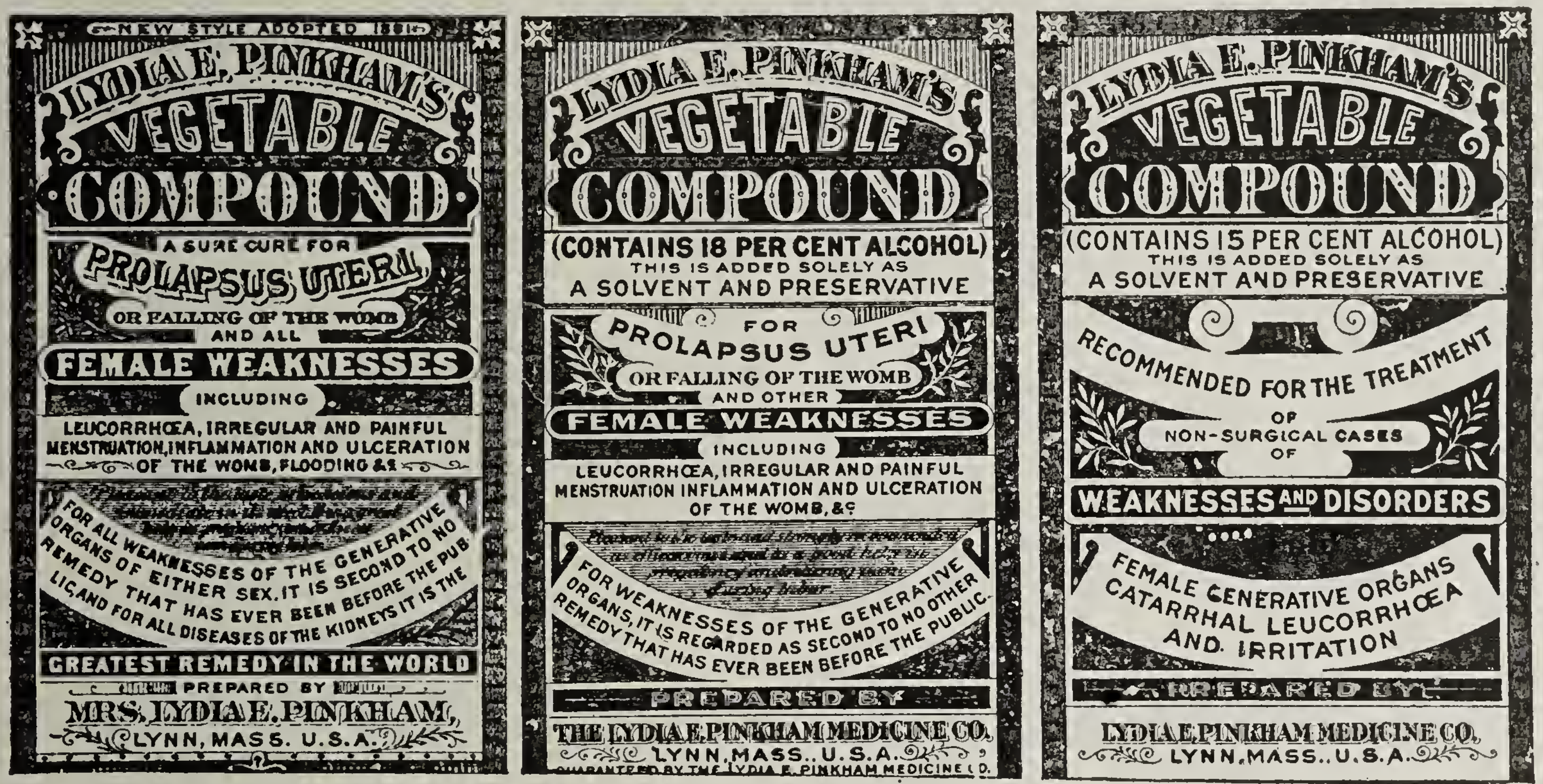
The unfortunate influence of this case on the public may be inferred from the impression sought to be conveyed by the Washington (D. C.) *Post*, which said:

> "War to the last ditch is going on at the present time between doctors licensed by state boards to practice according to old conservative rules of materia medica, and the new practitioners who are more and more discarding drugs for what they contend is the natural methods of treating ailments, such as dieting, fasting, mental suggestion and the like.

There are many practitioners in every city, but it is stated, this was the first big case against any of them. . . .

"Court officials agreed that no more difficult proposition ever confronted a jury, and its finding is regarded as a big victory for the advocates of all natural methods of treating diseases."

The "victory," however, can hardly be called a decisive one, since it took the jury twenty hours to return the verdict "not guilty," even after the defendant's best efforts to prove his innocence. As a matter of fact the verdict is no evidence of the failure of the prosecution to prove the falsity of the defendant's therapeutic claims, for in order to sustain a conviction in such cases it is necessary for the prosecution to prove to the unanimous satisfaction of the jury not merely that the defendant's claims are false, but to prove also, beyond a reasonable doubt, that the defendant knew of their falsity at the time he made them. The verdict is to be accepted, therefore, as proving only that the prosecution did not succeed in convincing each one of the twelve jurors, beyond a reasonable doubt, that Brinkler's claims were false *and that Brinkler knew it,* and that with such knowledge he used the mails for the exploitation of such false claims for the purpose of obtaining money thereby.


NEW STYLE ADOPTED 1881
LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
A SURE CURE FOR
PROLAPSUS UTERI,
OR FALLING OF THE WOMB
AND ALL
FEMALE WEAKNESSES
INCLUDING
LEUCORRHŒA, IRREGULAR AND PAINFUL MENSTRUATION, INFLAMMATION AND ULCERATION OF THE WOMB, FLOODING &c
FOR ALL WEAKNESSES OF THE GENERATIVE ORGANS OF EITHER SEX, IT IS SECOND TO NO REMEDY THAT HAS EVER BEEN BEFORE THE PUBLIC, AND FOR ALL DISEASES OF THE KIDNEYS IT IS THE
GREATEST REMEDY IN THE WORLD
PREPARED BY
MRS. LYDIA E. PINKHAM,
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LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
(CONTAINS 18 PER CENT ALCOHOL)
THIS IS ADDED SOLELY AS
A SOLVENT AND PRESERVATIVE
FOR
PROLAPSUS UTERI
OR FALLING OF THE WOMB
AND OTHER
FEMALE WEAKNESSES
INCLUDING
LEUCORRHŒA, IRREGULAR AND PAINFUL MENSTRUATION INFLAMMATION AND ULCERATION OF THE WOMB, &c
FOR WEAKNESSES OF THE GENERATIVE ORGANS, IT IS REGARDED AS SECOND TO NO OTHER REMEDY THAT HAS EVER BEEN BEFORE THE PUBLIC.
PREPARED BY
THE LYDIA E. PINKHAM MEDICINE CO.
LYNN, MASS., U.S.A.
GUARANTEED BY THE LYDIA E. PINKHAM MEDICINE CO.
LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
(CONTAINS 15 PER CENT ALCOHOL)
THIS IS ADDED SOLELY AS
A SOLVENT AND PRESERVATIVE
RECOMMENDED FOR THE TREATMENT
OF
NON-SURGICAL CASES
OF
WEAKNESSES AND DISORDERS
FEMALE GENERATIVE ORGANS
CATARRHAL LEUCORRHŒA
AND IRRITATION
PREPARED BY
LYDIA E. PINKHAM MEDICINE CO.
LYNN, MASS., U.S.A.

Study these labels; they're worth it. They typify the changes that have taken place in the past ten years in the labeling of "patent medicines." The label on the left was one used before the Food and Drugs Act went into effect, the happy days—for the "patent medicine" exploiter—when anything went. The center label was the one used after the Food and Drugs Act became effective, but before The Journal had devoted any large amount of attention to the "female weakness" cures humbug. The label on the right is the one now being used.

QUACKS ARE FINED

The State Medical Institute of Omaha Gets a Setback

On Jan. 24, 1917, W. T. Upton, E. F. Andrews and L. H. Staples pleaded guilty in the federal court at Omaha to conspiracy to use the United States mails for a scheme to defraud. Each was sentenced to pay a fine of $350; the fines were paid.

This trio was indicted, March 15, 1913, and the men were arrested in November, 1913, when the Chicago *Tribune* was turning the light on the "men's specialists" quacks of Chicago. One of the firms of medical charlatans to which the *Tribune* devoted a good deal of attention was "Dr. Howe & Co." W. T. Upton was, according to the *Tribune's* report, manager of the Howe concern and also of a string of similar institutions operated under aliases in different parts of the country. Here in part is the *Tribune's* report[1] of the arrest of Upton, Andrews and Staples as it appeared in that paper, Nov. 9, 1913:

"Upton is charged with conspiracy with E. F. Andrews and L. H. Staples, both of whom reside in Omaha, to violate the postal laws by advertising the 'State Medical Institute,' which is the particular name given by the swindlers to their Omaha establishment.

"The indictment charges Upton and his two alleged fellow conspirators with representing the institute to be one conducted by skilled specialists in men's diseases, when, 'whereas, in truth and in fact, the institute was not a reliable concern, but was conducted solely for the unlawful, fraudulent, and felonious purpose of inducing persons to part with their money and property to said conspirators, without giving anything of value in return therefor.'

"Upton was arrested in his office by Deputy Marshal Charles Schrimple on a warrant issued by United States Commissioner Lewis F. Mason. He was taken to the federal building and gave bond before the commissioner. The bond was fixed at $2,000, signed by Alphonse Russell and Charles H. Touzalin, president of the Touzalin Advertising Agency. Assistant District Attorney Peter P. Mindak represented the government in the proceedings. . . .

"The request for Upton's arrest came from District Attorney F. S. Howell of Omaha, who forwarded a certified copy of the indictment. The document recites the method of the alleged conspiracy and contains copies of numerous letters sent out to intended victims by the 'State Medical Institute.'

"The means of accomplishing the fraud, according to the indictment, was to send through the mails letters, circulars, and pamphlets and to advertise in the newspapers that the 'State Medical Institute' 'was an old established and reliable medical institute, conducted by a large staff of skilled specialists of recognized ability in the treatment of diseases of men, and whose experience, reputation and standing was such as to merit confidence.'

"The indictment continues that it was claimed: 'That it could and would cure men in all stages of nervous debility, vital weakness and loss of power. That the said letters, circulars, pamphlets and advertisements were so framed as particularly to attract the attention of and excite the fears and prey upon the minds of boys and young men and cause them to believe themselves to be afflicted with diseases of a private, insidious, and dangerous character, which if not at once arrested would result in permanent disability and loss of power, both physical and mental, when in fact they were in a normal and healthy condition and in need of no medical treatment whatever.' "

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[1] The matter appears in full, with a large amount of additional information, in a pamphlet issued by the American Medical Association, "Men's Specialists," price 10 cents.

It thus appears that Upton, Andrews and Staples admit that the "State Medical Institute," which they operated in Omaha, was conducted solely for the unlawful, fraudulent and felonious purpose of separating the credulous sick from their money "without giving anything of value in return therefor."

Correspondence

The Differentiation of Spurious from True Anginal Pains by Two Tests

To the Editor:—In some cases of functional heart weakness associated with mild but perturbing chest and arm pain, the functional or neurotic character of the epiphenomena may be differentiated from that more grave in character by the following tests, both of which I have used and found to be of use: The pains in the chest and arms in neurotic angina disappear if the person suffering from them will thrust the little finger firmly into the external auditory meatus, particularly to the left. This no doubt stimulates the aural branch of the pneumogastric nerve, and, by increasing the heart's efficiency, thus dissipates the cause of the pain. This is true of pains coming on during exercise.

Again, if the patient will strongly retract the abdomen while suffering from his pain, if the cause is functional heart weakness associated with some hyperesthesia of his nervous system, he will be entirely relieved so long as the abdomen is firmly retracted. This is true more particularly in those who have rather protuberant and relaxed abdomens. Both of these tests will be of service not only in diagnosis but also in calming the fears of those afflicted.

The retracted abdomen method has some therapeutic features as well, since in the compression of the viscera, and secondarily, of the portal system of veins, the right auricle is better filled by the increased venous pressure in the cava, and the heart has a little less load to lift. This relief no doubt accounts for the annulling of the pain.

These two methods, it is hoped, will receive further confirmation as to their value by their application, and for this reason I mention them.

Robert L. Pitfield, M.D., Philadelphia.

Sodium Cacodylate in the Treatment of Syphilis

To the Editor:—I was much interested in the study of this subject by Dr. H. N. Cole (The Journal, Dec. 30, 1916, p. 2012).

In 1913 I treated a series of cases of syphilis with sodium cacodylate; but, not getting the desired results, I discontinued its use. In 1915, I became interested again because of the writings of Dr. J. B. Murphy, and applied it in three cases in which the patients had initial lesions:

Case 1.—J. M., man, aged 21, single, shoeworker, came to me with an initial lesion of the penis to the right of the frenum. I began intramuscular injections of sodium cacodylate, 5 grains, in ampuls made by Parke, Davis & Co., every day for ten days. Then I halted for ten days and repeated ten more injections. The sore on the penis entirely disappeared about the ninth day. There was a slight faintly macular eruption of the forearms and abdomen, which soon disappeared. There was no alopecia. When he returned, after the last series of ten injections, there were mucous patches in the throat and some involvement of the left tonsil. I put the patient on mixed treatment, which cleared his throat. He had at end of twenty doses of 5 grains of sodium cacodylate each a positive Wassermann reaction. After mercury and potassium iodid for two months there was a positive Wassermann reaction. To date after three salvarsan treatments intravenously there have been two negatives.

Case 2.—F. S., man, aged 28, married, machinist, had an initial lesion on the penis. Treatment with sixty injections of 5 grains of sodium cacodylate gave results as follows: The initial sore on the penis disappeared in ten injections; there were severe mucous patches of the mouth; the tonsils were badly infected. There was a positive Wassermann reaction. There were syphilids of both arms and shins; marked papular eruption; malaise, and a slight trace of albumin in the urine. I placed the patient on mercurials and at last gave him three salvarsan injections three weeks apart. The result was a negative Wassermann reaction, the skin was clear and the patient felt fine.

Case 3.—D. C., woman, aged 21, single, seamstress, had an initial lesion on the left side of the cervix, and a macular eruption on the face, neck and shoulders, and also, though faint, on the forearms. Thirty injections of sodium cacodylate of 5 grains each were given. The initial lesion disappeared in one week. Mucous patches of the mouth appeared and persisted. The Wassermann reaction was positive. I gave mercurials and potassium iodid for seven months, and salvarsan once. The Wassermann reaction is now negative.

My conclusion after two trials of the use of sodium cacodylate in small or large doses is that it has no effect toward curing the condition; in fact, the throat symptoms were seemingly increased in severity by its use. It has no effect on syphilids of the forearms and shins, and if anything makes them worse.

It improves the appetite, as one would expect. It has some effect on the kidneys, as noted in Case 2; it has some effect in healing the initial lesion, as noted in all three of this series; why, I do not know.

I am entirely satisfied that it has no beneficial effect on syphilitics and have discontinued its use entirely in my practice.

I am glad to have read Cole's excellent article, as it shows me that I was correct in my decision not to use it again, as it was worthless.

William G. Ward, M.D., Lynn, Mass.

Compulsory Health Insurance

To the Editor:—In an editorial in The Journal, Jan. 27, 1917, p. 292, appears the statement, "The American Association for Labor Legislation prepared a preliminary draft of a model bill on social insurance in which it has properly left blank the section providing for medical services, while asking the assistance of the medical profession to work out this phase of the problem." This statement is not strictly correct. The first two drafts of the model bill for health insurance prepared by the American Association for Labor Legislation left the medical sections in general form. In the supplement to the third and latest draft of the bill appear the sections providing for medical services drafted in accordance with the principles laid down in Dr. Lambert's article, which appeared in The Journal last week. Any readers of The Journal desiring copies of the complete bill can secure them from the American Association for Labor Legislation, 131 East Twenty-Third Street, New York City.

John B. Andrews, New York.
Secretary, American Association for Labor Legislation.

The Response of the Pyloric Mechanism

To the Editor:—In an editorial on W. E. Morse's experiments on the emptying of the stomach (The Journal, Jan. 13, 1917, p. 124), it is stated that the rapidity of discharge diminishes with the increase of acidity, and that this is "so contrary to the accepted version of what occurs" (here stands a reference to my "Mechanical Factors of Digestion"), that the problem is again presented for solution. In the volume referred to I have given evidence that various factors aside from acidity of the gastric contents affect the rate of gastric discharge. But I have pointed out that when these factors are made uniform and the acidity is varied, the rate progressively diminishes with increase of acidity (see p. 120). The fact was established by Hedblom and myself over seven years ago. Quite naturally a variation of consistency from that of the food we employed, such as the use of water, for instance, in Morse's experiments, results in the effect of acidity being seen at different concentrations from those we observed—a condition which Morse clearly perceived and explained in his paper. That the rapidity of discharge of water diminishes with increase of acidity and that the rapidity of discharge of potato diminishes with increase of acidity are not such contradictory statements as your editorial implies.

W. B. Cannon, M.D.,
Harvard Medical School, Boston.

Blastomycosis of the Tongue

To the Editor:—The article on this subject by Dr. Gordon B. New (The Journal, Jan. 20, 1917, p. 186) to me is unconvincing.

Both Figure 3 and Figure 4 are not characteristic of the microscopic features of any known form of blastomycosis. They have more resemblance to lymphosarcoma or the Hodgkin group of tumors than to blastomycosis. Furthermore, I am not convinced that the mere presence of blastomycetes (if these are blastomycetes) can excite a lymphoid hyperplasia.

Figure 5, pure culture: blastomycetes, to my mind is a picture of a culture of common yeast fungi. In cultures of blastomycetes, one always finds mycelium.

The fact that the lesion healed under potassium iodid and radium is by no means proof that it is blastomycosis.

Perhaps Dr. New has better proof than he has published in this article. If so, it should be published, as those who are familiar with blastomycosis, in my opinion, will refuse to accept his conclusions.

Richard S. Weiss, M.D., St. Louis.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SIMPLIFIED TECHNIC FOR LEUKOCYTE COUNT

To the Editor:—In The Journal, Feb. 9, 1910, p. 662, is a brief extract from *Hospitalstidende*, Dec. 1, 1909, p. 1553, under the title "Improved Technic for the Blood Count." It states that "the blood is transferred to a vial containing a bead and a fluid to dilute the blood, dissolve the red corpuscles and fix the whites." Nothing is mentioned about the amount of the blood and amount of fluid in the vial or test tube. Kindly give me an exact extract of the original article covering the points in question.

V. W. Pletil, M.D., Sonora, Calif.

Answer.—One large drop of blood (25 c.mm.) is drawn into a pipet and deposited in a vial or test tube already containing a small glass ball or bead and 19 drops of a fluid which dissolves the reds, fixes the whites and prevents shriveling as they dry. The test tube, plugged with a rubber stopper, can then be set aside until it is convenient to make the leukocyte count. As many test tubes can be used as desired, and the count can be made several times from each test tube, the average from a number of counts insuring greater accuracy. A capillary pipet marked for 25 c.mm. and for 10 c.mm. is used for the blood, and a larger pipet for the mixing fluid, marked off for the exact amount required, namely, nineteen times 25 c.mm. : $19 \times 25 = 475$ c.mm. A stand to hold a portable set of the test tubes is also convenient, as a number can be accumulated from the same or different cases and kept for a few days until a convenient moment arrives for the microscopic work, or the set can be sent to a laboratory. The mixing fluid found best adapted for the purpose consists of 45 c.c. of decinormal hydrochloric acid; 45 c.c. of a 0.9 per cent. solution of sodium chlorid, and 10 c.c. liquor formaldehydi. The count is made by taking up 10 c.mm. of the fluid in the test tube and spreading it over a circle, exactly 2 cm. in diameter, marked on an object glass. The specimen is then stained with a mixture of equal parts of a 1 per cent. aqueous solution of methylene blue and of a 0.2 per cent. solution of sodium hydroxid. The stain is left in contact for one minute and then rinsed off, leaving the object glass in water for from two to five minutes, then embedding in cedar oil. The number of leukocytes in 100 microscopic fields, multiplied by 50, gives the number of leukocytes per cubic millimeter. This formula is based on the ratio between the diameter of the microscopic field (0.4 mm.) and the area of the circle (100 sq.mm.). The article is illustrated, and directions are given for facilitating the count by means of dividing off the circle on the object glass into quarters, etc. The blood specimens can be used later for the differential count. Ellermann and Erlandsen worked with 100 microscopic fields for each specimen, and state that with a little practice the whole procedure takes amazingly little time. With 200 microscopic fields, they found that the error averaged only 3.4 per cent.

TREATMENT OF PSORIASIS

To the Editor:—Has there been anything new and effective developed in the treatment of psoriasis? Can you advise me if the vaccine treatment is producing any favorable results?

F. H. Moore, M.D., Herkimer, N. Y.

Answer.—Various new methods have been proposed and tried more or less in the last few years, but none of them has proved of great value. In general, chrysarobin ointment still remains the most effective remedy for cleaning up psoriasis. The custom today is to use it in rather dilute strengths—from 2 to 5 per cent. chrysarobin in some ointment base. The lesions can often be cleaned up with Roentgen rays, but the method is not to be recommended unless used with great caution. As a rule, the eruption recurs after Roentgen-ray treatment, as after all other methods of treatment. Another recent method of treatment is exposure to highly actinic rays of light. Sometimes ordinary sunburning will clear up psoriasis, and exposure to ultraviolet light may do the same thing; but as a rule this method of treatment is disappointing. Autoserotherapy is the latest method suggested, but it has not yet been proved of value. The same can be said of the treatment of psoriasis with vaccines.

VIBERT'S SOLUTION FOR STAINING BLOOD CELLS

To the Editor:—Please give me the composition of Vibert's solution for the preservation of blood cells in their removal from blood stains. Mention is made of it in the *India Journal of Medical Research* (**3**, 214), in an article by W. D. Sutherland on "Examination of Blood Stains in Medico-Legal Cases."

Heber C. Jamieson, M.D., Edmonton South, Canada.

Answer.—Francis S. Smith ("Forensic Examination of Blood Stains in the Tropics," *Bristol Med.-Chir. Jour.*, July, 1916, p. 84) gives the composition of Vibert's solution as a 0.5 per cent. mercuric chlorid solution in 2 per cent. sodium chlorid. He says:

> Microscopic Examination.—A small quantity of scrapings from the stained area in the case of earth, knives and bamboos, or a portion of the fabric in the case of clothes, is taken and allowed to soak in a drop of Vibert's solution (0.5 per cent. $HgCl_2$ solution in 2 per cent. NaCl), or in a drop of glycerin solution (one part in seven of water). It is then covered with a cover glass, and after standing for half an hour is tested and examined under low power, high power and oil immersion lenses. Mammalian blood cells, and the oval, granular nuclei of nonmammalian corpuscles can be detected.

Typhoid Immunization.—The October number of the *Bulletin of the New York State Department of Health* is the "Typhoid Number." It is said that in view of the excellent results obtained from prophylactic immunization, it would be wise to immunize all the remaining members of a family in which a case of typhoid fever has occurred. A study of typhoid fever in certain sections of the state reveals that about one third of the patients received the infection by contact with an acute case, either in the same family or in the home of a neighbor. In view of this it would seem wise, except in well regulated hospitals or homes where there is an adequate water carriage system for the removal of excreta, to isolate the patient as rigidly as for a case of scarlet fever.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Connecticut: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Illinois: Chicago, Feb. 21-23. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

Iowa: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Kansas: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Vermont: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

TEACHING INTERNAL MEDICINE

Each Student a Teacher

STEWART R. ROBERTS, S.M. M.D.
Professor of Medicine and Clinical Medicine, Emory University, (Atlanta Medical College)
Atlanta, Ga.

Much is written of curriculums and hours allotted for different courses, and but little on methods of teaching. Even medical teachers and whole faculties seem to lack for words when it comes to didactic methods. In the selection of teachers and faculties much consideration is given to the training and research ability of a man, and but little to his real teaching ability, or his personal power to impart his training and knowledge. The old lecture is largely a thing of the past, yet certainly students need in their senior year some didactic touch in internal medicine apart from the bedside. The following twofold round table idea has been gradually developed in the Atlanta Medical College, and I have used it for two years with increasing evidence of its value. With small classes and in other departments the plan will probably be equally practical.

First, in the examination of patients in the hospital, a student is assigned to a patient to take the history, make the examination, do the laboratory work, and hand in a detailed report of his findings. Questions arise in the examination or in the laboratory work, and the student in charge of the case is assigned work on which he reports at the next meeting of the class. For example, one patient with pellagra has a dicrotic pulse, and the student who is studying the case is assigned, in addition to the ordinary study of the case, the dicrotic pulse—to explain its origin, its meaning, in what diseases it occurs, and to see if he can determine by palpation the difference between the dicrotic pulse, the pulsus alternans, and the bigeminal pulse. At the next meeting of the class or of the section, he summarizes his studies, or writes out the distinctions, and makes diagrammatic tracings of each pulse form.

Another student in examining a patient found a marked pyorrhea, stained a pus smear, and found the *Amoeba buccalis*. He was assigned the subject of "amebas in man," and he is now preparing a paper on that subject, and will summarize his findings on the board. This summary takes from two to five minutes to notice or read, but the student has looked up the literature, and has a fair idea of it when he reports.

Another student studying a case of lobar pneumonia was requested to give his section the next day in the ward a differential diagnosis between lobar and bronchopneumonia, and the following day he gave a differential diagnosis between acute bronchitis and bronchopneumonia. One student may call another in consultation on his case. The idea is to let the student studying pneumonia in the ward know not only his patient and the disease, but also teach, as far as he can, what he has learned to his fellows in the section. His teacher simply outlines, guides and corrects. The student is human, he realizes his powers, and his ability awakens his interest and energy.

Secondly, this teaching plan includes a systematic method of study of the literature, the preparation of papers, and an individual talk by the students to the class as a whole. In addition to the bedside work at the Grady Hospital, the seniors receive thirty hours from Professor Strickler on infectious diseases, and thirty hours from the writer on diseases of the heart, arteries, blood and kidneys, or one hour per week throughout the year. The present class numbers sixty-six men, and at the beginning of the year a subject is given to each man. A list of the men and subjects is posted in the library. The subjects follow, and it will be found that these cover the headings usually included in teaching diseases of the heart, arteries, blood and kidneys. Assignments are so made that at the close of the year, taken together, they form a systematic course, and subjects are presented to the class in the following order:

Conduction system
Position of the heart
Endocarditis
Myocarditis
Pericarditis
Senile heart
Heart poisons
Signs of heart failure
Passive congestion
Hypertrophy and dilatation
Congenital heart disease
Arteriosclerosis
Tachycardia and bradycardia
Blood pressure technic
High pressure
Aortitis
Embolism and thrombosis
Angina pectoris
Pulse character
Pathology of aneurysm
Symptoms and treatment of aneurysm
Sinus arrhythmia
Premature contractions
Auricular fibrillation
Auricular flutter
Paroxysmal tachycardia
Pulsus alternans
Heart block and Adams-Stokes disease
Heart in pneumonia
Heart in fevers
Cardiac asthma
Circulation in cirrhosis of the liver
Heart strain
Edema
Treatment of edema
Digitalis
Opium
Strophanthus
Nitrites
Nauheim baths
Nervous symptoms in heart disease
Secondary anemia
Pernicious anemia
Banti's disease
Leukemia
Movable kidney
Congestion of the kidney
Renal calculi
Casts
Albumin
Sugar
Nonprotein nitrogen
Ammonia
Urea
Uric acid
Diabetes: pathology
Acidosis
Treatment of diabetes
Pyelitis
Pyonephrosis
Functional tests
Acute nephritis
Tubular nephritis
Chronic vascular nephritis
Uremia
Influence of focal infection on heart and kidneys

The student is directed to write a paper on the subject assigned him, and references in books and current literature are given him outside the class and occasionally suggestions for subheads and outlines of theme. He is required to add a bibliography at the close, giving references and sources of information. When the time has come to discuss, for example, premature contractions, the student assigned that subject hands in his paper, walks to the front and addresses the class, summarizing his studies and paper. He has been told that he is the authority in the class for the year on that subject; in other words, he has a personal teaching responsibility to the class for his subject, and frequently he is so full of it that the difficulty consists in holding him down to the ten, twenty or thirty minutes which the importance of his subject justifies. There is not time enough to exhaust any subject, and the attempt is made to hold him strictly to the mountain peaks of importance in his talk. Frequently I throw out a question, or lead him back when he wanders afield or into too much detail. At other times and with less important subjects, he is permitted to summarize in the form of "conclusions" on the blackboard. In his paper, however, he must go thoroughly into the subject, discuss details and pathology, and fully cover the disease. At the close of his talk or summary, his fellow students may ask him questions and remind him, always courteously, of omissions. Often a student requests his paper back, that he may rewrite it because the discussion has brought out points omitted in the first draft. Each paper is corrected, and often handed back for revision or because the bibliography has been omitted, but rarely for failure to cover the subject thoroughly.

Questions arise which demand ready assistance from the authority in the class on that particular subject. For example, the student discussing the senile heart edges too far into the subject of myocarditis, and the student authority on myocarditis comes to his aid. A misstatement on the part of the student-lecturer brings an instant shaking of heads. The attention is perfect. The hour is never long enough for students, subjects or teacher. After the papers are corrected, they are filed in the library and form the textbook for the class for the year. One student takes notes in shorthand, typewrites them, and sells the lot to each member of the class. The examination is based on these papers. If time and opportunity allow, the student is referred to hospital cases illustrating his subject, so that he gains material for his paper from books, current literature and the bedside. After a student has finished a subject, frequently a second subject is assigned to him.

It is true that but little time can be given to each subject, and the objection can rightfully be made that while each one is covered thoroughly on paper, it is covered only superficially before the class; but the paper is open in the library to the study and criticism of each man. The added individual interest and pride on the part of the student transforms what is called teaching into personal association. Students and teacher are together teachers and student, and their teacher is simply an older student, or in the beautiful word of the Japanese for teacher, *sensi,* one born before, or one who has experience.

ADVANTAGES OF THE METHOD

1. It teaches the student to consult many books and current literature, and to find illustrations at the bedside.
2. It teaches him to write a paper, and prepares him for activity in the hospital and the medical society.
3. It teaches him to talk before his fellows, and to think on his feet.
4. It teaches him the use of the library and the importance of current literature.
5. It teaches him to summarize, to give authority for his statements, and to base his conclusions on facts and not on opinions.
6. It arouses his interest, compels his attention, impresses his memory, and stimulates his reason.

Oklahoma July Report

Dr. Ralph V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, July 11-12, 1916. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 32, of whom 29 passed, including 1 osteopath, 2 failed, and 1 was refused registration on account of immoral character. Fifteen candidates were licensed through reciprocity, including 2 osteopaths. Five candidates were granted reregistration licenses, including one nongraduate and one whose graduation could not be verified. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	83
Chicago College of Medicine and Surgery	(1916)	84
Loyola University	(1916)	82
University of Louisville	(1916)	81
Johns Hopkins University	(1915)	87
Washington University	(1916)	77
St. Louis University	(1916)	85
University of Oklahoma (1915) 82; (1916) 76, 78, 79, 82, 82, 83, 84, 86, 86, 87.		
Meharry Medical College	(1914) 70; (1915)	71
University of Tennessee (1915) 82; (1916) 78, 79, 80, 72.		
Baylor University	(1916)	79
Dallas School of Physicians and Surgeons*	(1911)	70
University of Virginia	(1916)	87
FAILED		
University of Oklahoma	(1916)	78 †
University of West Tennessee	(1909)	‡

* Information obtained indicates that no institution by this name was in existence in 1911.

†Fell below 50 per cent. in one branch.

‡ No grade given.

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas (1912,2)	(1915)	Arkansas
Chicago College of Medicine and Surgery	(1912)	Arkansas
Rush Medical College	(1906)	Kansas
Eclectic Medical University	(1912)	Arkansas
Medical College of Ohio	(1901)	Nebraska
University of Pennsylvania	(1907)	Texas
Meharry Medical College	(1914)	Tennessee
University of the South	(1901)	Texas
Baylor University	(1905)	Texas
Fort Worth School of Medicine	(1914)	Texas
University of Vermont	(1904)	Vermont

Book Notices

Bacteriology, General, Pathological and Intestinal. By Arthur Isaac Kendall, B.S., Ph.D., Dr.P.H., Professor of Bacteriology in the Northwestern University Medical School, Chicago. Cloth. Price, $4.50 net. Pp. 651, with 107 Illustrations. Philadelphia: Lea & Febiger, 1916.

This book covers ground that is dealt with in other texts on bacteriology, but as it reflects the experience and personal views of the author, it will prove a valuable addition to the library of the student of medicine. Dr. Kendall designates his book as covering general, pathologic and intestinal bacteriology, and while it is not clear why intestinal bacteriology should be so sharply differentiated from general and pathologic bacteriology as the title seems to imply, the summary of Dr. Kendall's own work on the intestinal flora will be generally welcomed; a little overemphasis is not likely to do harm. The text as a whole is clear and accurate and brought well up to date. The statement on page 488, with regard to botulism, that "hams, similar meats and meat products alone cause the disease," is not correct in itself, and is in some degree contradicted by a statement on page 486. In this section no mention is made of the important work done on botulism in California. A few misprints are noticed here and there, as on pages 35, 130, 358 and 607, but they are not for the most part very important. The use of "pleiomorphic" for "pleomorphic" seems to be more than a mere misprint, since it occurs throughout the book. The style is fairly clear and straightforward, although involved sentences like the following are somewhat too frequent: "Papasotirin and Prescott have isolated bacteria indistinguishable from *Bacillus coli* by cultural methods from hay and dried grains and the organism is very frequently present in flour, consequently the identification of it in milk does not furnish conclusive evidence of contamination either from human or bovine sources."

The New Method in Diabetes. The Practical Treatment of Diabetes as Conducted at the Battle Creek Sanitarium, Adapted to Home Use, Based Upon the Treatment of More than Eleven Hundred Cases. By J. H. Kellogg, M.D., LL.D., Chief Medical Director of the Battle Creek Sanitarium. Leather. Price, $2.50 net. Pp. 177. Battle Creek: Good Health Publishing Company, 1917.

In this book, Dr. Kellogg discusses the Allen treatment of diabetes with particular reference to the needs of the trained nurse and the intelligent patient, as well as of the physician. There is, of course, no question that the diabetic patient needs safe instruction. This is especially true when he is undergoing at home such a treatment as that outlined by Allen. The author considers first the fundamental questions of body physiology and pathologic chemistry in this disease. Under "New Method in Diabetes," he briefly points out the restrictions to which the diabetic must be prepared to limit himself. Under "Modern Methods of Examination," the author then takes up the diagnostic procedures involved in the determination of the severity of the patient's condition. He introduces here a chart known as the "Metabolism Graphic," a specimen of which is included with the book. The use of this chart permits the physician to have before him in graphic outline an analysis of the patient's condition. This analysis includes an estimation of such factors as the urinary sugar, the percentage of increase of blood sugar, the carbohydrate balance, the degree of acidosis, the energy balance, the water balance, the respiratory quotient, the food intake, the patient's weight, etc., and each of these points is discussed separately in the chapter, mentioned. The discussion of feeding of diabetics includes a description of the inauguration of the fast, the method of feeding with estimation of calories and food values, and also a series of standard bills of fare. The author then takes up general health rules for the diabetic. These rules would—by the way—also be beneficial to those members of the family not afflicted with the disease. Other chapters concern complications of the disease, the care of a case in the home, directions for testing the urine, etc. The remainder of the book, about fifty pages, is devoted to recipes for the preparation of the special foods required by the diabetic.

Social Medicine, Medical Economics and Miscellany

A Rural School Survey

Public Health Service Bulletin 77 describes a survey of the rural schools of Porter County, Ind., conducted by three officers of the United States Public Health Service. The survey covered not only the physical and mental condition of the children, but also the schoolhouses, grounds, water supplies, toilet accommodations, etc. Porter County has an area of 415 square miles and a population of 21,250, 85.5 per cent. being native born. The school population is 3,933 and the total school enrolment 3,103. The average number of children in a family was 4.8, or 2.44 boys and 2.36 girls. Seventy-five rural schoolbuildings were surveyed, and medical examinations made of all the children. Of the buildings, thirty-three were frame, two cement and forty were brick, and sixty-seven were one story. In the seventy-five schoolbuildings there were 114 class rooms. Four rural schools obtain their water supply from town water systems, two are supplied by wells of from 125 to 130 feet deep, and thirteen or 17.3 per cent., are without wells. The remainder, nearly 75 per cent., are supplied from shallow driven wells. Sanitary drinking fountains were found in seven schools, but of these two were out of order and one was not in use. In all other cases, the children drink at the well. For toilet accommodations, there were four inside closets and seventy-one outside privies, none of which ranked higher than 50 in a possible 100. Sinks for washing were provided in three schools, while in fifty-six schools common wash basins were found. Paper towels were provided in eight schools, and individual towels provided by the parents were in use in three schools. Common towels were used in forty-one. The report contains summaries of findings on floor material, school desks, window shades, blackboards, illumination, ventilation and heating, temperature regulation, etc., all most interesting and of ultimate bearing on health conditions, but too lengthy for recital.

Part II of the report covers the physical condition of rural schoolchildren. As stated above, there is a total of 3,103 rural schoolchildren in Porter County. The average daily attendance in the rural school for the school years of 1914-1915 was 2,512. The physical survey included 2,488 schoolchildren, 1,253 boys and 1,235 girls. The age limit was from 6 to 16. Interesting data regarding height, weight, racial differences, vital capacity, chest expansion, cephalic index, pulse, respiration and nutrition were collected, but they are not capable of being generalized. Regarding defects and diseases, however, 2,228 disease conditions were found among the boys and 1,985 among the girls. Among 1,253 boys, there were 392 defects of hearing and 592 defects of vision, 749 boys had defective teeth, 166 had adenoids, 89 had enlarged tonsils and 25 had spinal curvature. Of the 1,235 girls, 348 had defects of hearing, 550 defective vision, 637 defective teeth, 122 had adenoids and 106 had enlarged tonsils. Defects of the heart were rare, only seven boys and three girls having any serious circulatory disturbance. Only two cases of tuberculosis were found, both of them being in girls. The large number of dental defects is easily accounted for by the fact that 18.3 per cent. of the boys and 10.5 per cent. of the girls had never used a toothbrush; 67.8 per cent. of the boys and 48.6 per cent. of the girls had used a toothbrush only occasionally, while with only 13.9 per cent. of the boys and 40.9 per cent. of the girls was the use of the toothbrush a daily habit. A study of the mental conditions of 1,087 girls and 1,098 boys made by the Binet-Simon tests show 193 children who were retarded and 21 who were especially retarded, making 214, or 9.3 per cent., of the children whose mental condition needed special attention and instruction. Mental defectiveness was found almost equally in the two sexes. A larger proportion of physical defects was found among the retarded children than among children whose mentality was normal. Twenty-one children, seven girls and fourteen boys, were feebleminded to a degree which rendered it improbable that they would ever develop beyond the mental status of a child. Three epileptics and two morally irresponsible children were found.

From the facts collected, the surgeons in charge of the survey concluded that there is an undue number of one room rural schools in the county, and an undue number of old buildings which have passed the limit of usefulness. The large number of children presenting physical defects is an evidence of the need of medical supervision, both for the sake of the child and for the protection of the community, while the number of mentally defective children found emphasizes the necessity of a mental classification of the children in order to separate those in need of institutional or individual treatment. A number of recommendations are made, among them being the consolidation of rural schools wherever possible, the remodeling of many others along sanitary lines, greater attention to daylight illumination, better provisions for sanitary toilet accommodations and for the protection of school water supplies, better heating and ventilating provisions, the combining of the duties of medical inspection of schools with those of the local health officer, and the securing of a full time health officer for the county.

Women in the Munition Factories

An investigation of working conditions and the home surroundings of women workers in one of the munition factories in New England was made by the Russell Sage Foundation under the supervision of Prof. Amy Hewes, of the Department of Economics, Mount Holyoke College, and former secretary of the Massachusetts Minimum Wage Commission. In the *Survey* (Jan. 6, 1917), Professor Hewes gives some of the findings of the investigation. Among 164 women, 146 of whom lived at home with their families, and eighteen in boarding houses or furnished rooms, the majority were born in the United States. Ten were from foreign countries. All were regarded as alert, ambitious and representative American working women. The majority were under the age of 24, and 80 per cent. were unmarried. In this munition town, which is at the center of the munitions business, Professor Hewes says three serious issues have arisen with reference to the women along with the high rate of wages. Women have been induced to work long hours at night; they work with or near explosives which sometimes mean accident, industrial poisoning or other illness; the high price of labor has been paralleled by the exceptionally high cost of living, which includes high rents, with almost inevitable overcrowding or other unfavorable living conditions. Night work is unpopular with most of the women, on account of the difficulty of getting sufficient sleep in the daytime, unsuitable time for recreation, and, in the case of married women, neglect of their houses and children, with consequent physical deterioration of the latter. On account of the tension, high speed and conditions surrounding the work, much the same conditions are developing here as among the munition workers in England. In September, 1915, an English committee, appointed under the ministry of munitions "to consider and advise on questions of industrial fatigue, hours of labor and other matters affecting the physical health and physical efficiency of workers in munition factories and workshops, went on record as opposing night work as being uneconomical because of higher wages and lower output; on account of the difficulty of arranging adequate lighting; because of the difficulty of securing sufficient sleep, and because of unwonted meal hours with consequent derangement of digestion. For profit alone, it is said, the manufacturers in the United States are producing munitions with feverish haste by methods which have been declared wasteful by the English investigators. The tendency is to lengthen the hours and to reduce wages, notwithstanding that the cost of necessities and rents is now out of proportion to even the high wages paid, as shown by a comparison with the wages in other New England industries in normal times. Connecticut, the state in question, it is said, has no law preventing all night work by women. They are allowed to work until 10 p. m., and the factories get around the law by having them rest from 10 to 12 and then go to work again, the law saying nothing specifically about when they may go to work in the morning. Among the suggestions for bettering conditions among women workers, Professor Hewes offers the following: prohibition of night work; reduction of working hours from ten to eight, and for only six days in the week; a minimum time of one hour for luncheon (15 minutes being now allowed in some factories); education in accident prevention, with a compensation law providing higher compensation and a shorter waiting period; provision for clinical treatment of sufferers from industrial diseases, and compensation as in the case of industrial accidents.

Too Many Medical Papers

The scarcity of paper and its increased cost seem to be universal. The *Policlinico* of Rome, in commenting on the fact that many medical journals have suspended and that others have been reduced in size, regards the condition as not an unmixed evil. "The most tangible result," it says, "is that the amount of material published is sensibly reduced. This is not a serious evil, as too much has been and is still being published. It is not a bad thing for literary production to be restrained, condensed, reducing particulars to inclusive wholes. . . . It is certain that the larger proportion of medical journals contain too much that is trite, deplorably banal. They accumulate too many useless data, which might be suppressed to great advantage. Many articles have not the slightest reason for existing, and they merely cumber medical literature. . . . Graphomaniacs [this is not a bad word; it would not be out of place if applied to some medical men in this country] abound among physicians; some are graphomaniacs from temperament, others from policy." Presumably the *Policlinico* means here that it is an elegant and ethical form of self-advertising. Farther on: "Regardless of the superficiality of certain arguments, they dilate on them and dilute their personal observations with a flood of already known facts and opinions. . . . Their writings contain very little that is new, and what is new and interesting is padded out and strung along *ad nauseam*. . . . The same work appears first in some first-class journal and then, under other titles and with slight changes, it appears in minor periodicals and it fills up space and wastes time in medical bibliography. . . . We refrain from further descriptions for fear that they might have a too personal tinge. We all know that the incontinence [a good word in the original—it is *incontinenza*] of these authors might be checked and corrected." The *Policlinico* then begs writers to spare the editorial staff the waste of time and energy required to pass judgment on unworthy articles, "not to mention the disagreeable task of rejecting such manuscripts, and the load of responsibility it places on the editorial staff." The writer concludes with this advice, which we respectfully pass on: "Abstain from recording the commonplace, and let those who have something really interesting to report suppress useless details, long historical introductions, and rehashing of textbooks."

Health Administration.—The results of the health survey of St. Paul, made by Surg. George B. Young, U. S. P. H. S., appear in *Public Health Reports*, January 12. This study is similar to those made by the service in other cities. Dr. Young finds that the situation from a legal standpoint is uncertain. Old ordinances contradict each other or are not in accordance with the charter, while some public health activities are untouched. Some of the provisions of the charter are contradictory and some of the ordinances have been automatically repealed as being in conflict with the charter. The general sanitary status of the city was found to be good; the fundamental elements of a healthful community—a healthful site, a good water supply, a prosperous population derived from strong stock and unweakened as yet by generally congested housing and insanitary industrial conditions—are all present. The death rate for the city per thousand of population was never higher during any year from 1906 to and including 1915 than 11.4, and more than half of those years it has been below 11.

Medicolegal

Using Mails for Fraudulent Scheme of Alleged Divine Healing

(United States vs. Schlatter et al. (U. S.), 235 Fed. R. 381)

The United States District Court, in California, overrules a demurrer to an indictment charging the defendants with the crime of conspiracy to violate Section 215 of the federal penal code. Briefly, the scheme devised and contrived by the defendants, as alleged in the indictment, was that they would induce any and all persons whom they could induce to communicate with them to believe that they could and would cure almost all manner of known diseases by and through the medium of divine power. Specifically, for instance, it was alleged that the defendants conspired to represent to credulous ones, with whom they could get into communication, that they could and would bless a handkerchief, and that, if a person afflicted would apply such handkerchief to the afflicted portion of his or her body, he or she would thereby become cured. This, of course, was to be quid pro quo or consideration; not necessarily certain or definite in amount, but such a sum as the one seeking a cure felt justified in contributing. Substantially, the charge against the defendants was that, with the knowledge that they could accomplish no cures, and with the deliberate intention to defraud, they conspired together to contrive and consummate a scheme wherein and whereby, through the medium of alleged divine healing, they would obtain and convert to their own enrichment the money and property of such persons as might be sufficiently gullible as to be attracted by their specious and alluring promises of relief, all the while intending that such persons should receive no return for their money and property, save that comprehended in a dismal and costly experience. As a part and parcel of the scheme, and in furtherance thereof, it was alleged that they intended to, and actually did, make use of the mails of the United States. The court says that, in its judgment, this stated a complete offense, and, if the proofs be made in adequate support of the allegations in the indictment, there was no doubt but that the defendants should suffer punishment therefor. The point made in the brief of the demurring defendant's counsel apparently was that the defendant was and professed to be nothing more than a divine healer, and that divine healing has been practiced since the time of Christ, and in some form or other is practiced now by many reputable and widely recognized individuals and cults. That mental healing, or even divine healing, per se or in and of itself, is, under the laws of the land, as lawful as healing with drugs or by massage, or other mediums is true. But it is not true, never has been true, and never will be true that fraud can be glossed over or rendered reputable in the eyes of the community merely because it is associated with, or a feature of, some undertaking otherwise lawful in its nature and innocuous in its effect. In other words, the mere fact that a fraudulent scheme centers about divine or other healing does not in any wise or sense serve to take it out of the domain of a fraudulent scheme, and if, in furtherance of such a scheme conceived in fraud, the mails of the United States are made use of, without doubt, by whomsoever conceived or consummated, the perpetrators of such schemes should receive prompt and merited condemnation and punishment. It was therefore no answer to the crime charged in this indictment to assert that the defendants were engaged in the praiseworthy vocation of divine healing. That in no wise answered the charge that, with a knowledge that they were rendering no service at all to their "patients," and with the deliberate intention on their part to defraud their patients, they were using the mails of the United States in aid of their scheme to separate their patients from their money. The whole question, without doubt, revolved around the proposition as to the good faith of the defendants. If they were acting in good faith in their promise to bring the bloom of health back to the cheek of him who might make use of one of their blessed handkerchiefs, then, no matter how visionary their view may have been, no matter how ill founded their conclusions may have been, no matter how much sheer incompetence in the exercise of judgment may have been their portion, they were not liable to prosecution as for the perpetration of a fraud on those who became their dupes. The simple query in the case was: Were they actuated by good faith? The indictment said they were not, but were moved by an intent to defraud. In the face of that they could not claim that no crime was charged against them.

Admissible Evidence of Criminal Abortion

(State vs. Newell (Minn.), 159 N. W. R. 829)

The Supreme Court of Minnesota, in affirming a conviction of the defendant of manslaughter in the first degree in the commission of an abortion on a young married woman, says that the woman went to the home of the defendant with the avowed purpose, if the testimony of her husband and her mother was credited, of procuring an abortion. There was evidence that there was an abortion. The evidence that the defendant caused it was largely circumstantial, but it rather clearly pointed to her guilt. The question was for the jury, and the evidence very amply supported the finding of guilty. Declarations made by the woman while under treatment, and before the abortion, as to the treatment given by the defendant, were competent evidence. Nor was there error in receiving on behalf of the state the testimony of another woman who stated that shortly before the date of the crime charged she went to the defendant for the purpose of having an abortion performed and that the defendant consented to perform it, though it was not performed. It was urged that the admission of this evidence, and other of like character, was error. The authorities approve such testimony. It is received for the purpose of showing a guilty or criminal intent in doing the act alleged to be criminal. It is not received in proof of the doing of the act or for the purpose of making it more likely in the minds of the jurors that the accused committed the crime charged. The proper application of this rule does not infringe on the general rule that it cannot be shown that the accused has committed other crimes. But the court on request should clearly limit the scope of the evidence.

Basis for Injured Person to Recover for Medical Treatment and Medicine

(Tarrant County Traction Co. vs. Bradshaw (Tex.), 185 S. W. R. 951)

The Court of Civil Appeals of Texas says that one of the physicians who attended Plaintiff Bradshaw and treated him for his injuries attributed to the negligence of the defendant company testified that the reasonable charges for the treatment and medicine which he gave him, if a man was able to pay it, would be $25. The Court thinks this was sufficient to sustain a recovery as to the medical services and medicine. The Court says that it does not think the inclusion of the clause, "if a man was able to pay it," would destroy or necessarily limit the force of the testimony to the effect that the reasonable charge for the treatment and medicine would be $25. The Court understands that the witness meant to say, or that at least such was the permissible construction of his language, that the services rendered and the medicine furnished were of the reasonable value of $25, and that the witness regarded the plaintiff legally bound by reason of said services and medicines furnished to pay said sum, but that by reason of the plaintiff's physical and financial condition, he might not be able to pay said amount, if any at all. Where a plaintiff is entitled to recover for medical attention and medicines necessary in the treatment of injuries, the defendant is liable, not for the amount actually expended or incurred by the plaintiff, but only for the reasonable or market value of such services, drugs, etc., as were reasonably necessary and for which the plaintiff has paid or has become legally bound to pay. The defendant, not being a party to the contract of employment between the plaintiff and the physician or nurse, or the contract of purchase between the plaintiff and the druggist, his liability, if at all, is not fixed by the amount paid or promised to be paid by the plaintiff for such services and supplies as were reasonably necessary in the treatment of the injuries, but the defendant's liability is limited to the reasonable or market value thereof. In this case the fact that the plaintiff sent for the physician, as testified by the former, and accepted his services, would, in the absence of some other agreement, create a legal liability to pay therefor on the part of the plaintiff. Therefore there were services requested, rendered and accepted, and evidence of the reasonable value thereof, which the Court deems to be all the law requires as to this character of proof.

Society Proceedings

COMING MEETINGS

Congress on Medical Education, Public Health and Medical Licensure, Congress Hotel, Chicago, Feb. 5-6.

Western Roentgen Society, Hotel Sherman, Chicago, Feb. 16-17.

CHICAGO MEDICAL SOCIETY

Meeting held Jan. 10, 1917

The President, Dr. A. Augustus O'Neill, in the Chair

Social Insurance: Its Bearing on the Profession and the Public as Observed in Great Britain and on the Continent

Francis Neilson, M.P., England: Americans are not informed as to the economic, industrial, social and religious condition of the British people. You cannot understand the genesis of insurance in Great Britain unless you know something about these conditions.

Those familiar with the history of the first half of the nineteenth century, and who have relied on newspaper reports for knowledge of current conditions, have assumed that Parliament has reformed certain conditions. It is a sad commentary on the economic conditions when you find people agitating for national insurance. There was no popular demand for the insurance act. It was sprung on Parliament and on the people. Perhaps no one was more surprised than Lloyd George himself. How was it possible for the Liberals to bring forward a measure that occupied half the time of Parliament without there being any demand for it? The national insurance bill was not in the official program put before the electors six months before the national insurance bill was introduced in the House of Commons. In the official program put before the electors in December, 1910; we asked for economic legislation, for constitutional reforms, for better housing laws, for electoral reforms, for educational reforms, and bills for many other things, but not for national insurance. It was simply a political dodge.

We had had a few years before a royal commission to inquire into the condition of the poor laws. Usually in Great Britain when we want to put a rather awkward question out of the way, we form a royal commission to inquire into it.

The Poor Law Commission reported that certain evils ought to be remedied by Parliament. This commission had the benefit of the investigations of Booth and Rowntree. I do not know to what extent the investigations of Booth and Rowntree on social evils are known in America. Booth showed that 12,000,000 British people, a little more than one fourth of the population of the United Kingdom, were living on the poverty line. We had employers' liability and the friendly societies. They did an enormous amount of good. But just before the insurance bill was introduced into Parliament, the government received returns from these friendly societies, showing that they were not all solvent but that through precariousness of employment there was something like a quarter of a million paying members lapsing in a year. Many of the smaller lodges, particularly in rural areas, were in serious financial condition. Under the old friendly society grant there was a great deal of malingering. Trade unions were also benefit societies. We had also small insurance societies, notably the Provident and the Etna, which catered particularly to the small wage man. That was the condition before the bill was introduced.

When the royal commission issued its report, the Fabians and socialists got busy. The Fabians, headed by Sidney Webb and George Bernard Shaw, drafted a manifesto based on the recommendation of the Poor Law Commission urging that there should be sickness benefit, medical benefit, disablement benefit and other benefits given to those who could not help themselves.

At the election in December, 1910, candidates had to answer questions from the socialists and Fabians based on the suggestion of the Poor Law Commission. The majority of men elected pledged themselves to urge the government to bring in a bill dealing with the recommendation of the Poor Law Commission. Lloyd George introduced a social insurance bill in 1911. It was known as the "fourpence for ninepence measure," because under the bill the insured worker pays fourpence, the employer pays threepence, and the state pays twopence, ninepence or 18 cents to be the amount per unit to pay for the scheme of insurance, and for that ninepence the laborer gets medical sickness benefits, disablement benefits, consumption benefits and other benefits besides. All persons between the ages of 16 and 65, with an income of not more than £150 a year, or $800, were to be insured persons under the act. There are one or two exceptions to that. The men's funds and women's funds are held separate. The full sickness benefit was to be for twenty-six weeks.

No sooner was the bill introduced than a storm broke out against it. The trade unions at first would have nothing to do with it. They said it would disintegrate all the work they had done for generations. Domestic servants were to be included. Wage earners getting from 25 to 30 or 40 dollars a week arose in disgust against the idea of having to insure domestic servants. They said, "When my servant is ill, I pay the doctor for his services, and look after the woman's or man's health. I do not want the state to step in and tell me what to do with my servant." Employers objected because the government fixed on them the responsibility of seeing that the employee was insured and that his contributions were paid regularly. With the vast amount of casualties among laboring men, chore women, washerwomen, and so on, the government saw the difficulty of drawing all the people between the ages of 16 and 65 with an income of less than $800 a year into the purview of the bill. Let me tell you of one difficulty in the case of the casual laborer.

I live in an agricultural county, and I have a man come one day a week to work in my garden. This man works one day a week for me, the next day he works for some one else, and so on, for six days in the week. I asked in the House of Commons who was to be responsible for his insurance money. A gentleman on the other side said, "We think that the man who employs him the first day in the week should be responsible for his insurance money." And that is the law. The man who pays him the first day is responsible for his insurance money.

Not long after the bill was in the House of Commons, a bigger storm than any of those I have referred to broke, and that was the storm of the doctors. I never knew they had so much energy. It was amazing. The doctors organized a tremendous agitation against the bill, and the House of Commons for three months or more was receiving objections from doctors from all parts of the country. Lloyd George said:

"The doctors proceeded with their criticisms on five assumptions, all of them erroneous. They proceeded on the assumption that the government had fixed the capitation grant. They did not. The amount of capitation grant was to be fixed by the friendly societies with no appeal to anybody. That is not the bill. One assumption was that under the capitation grant families were included. They were not. Another assumption was the system of club doctors was to become universal and not from choice. That was not the bill. And the last assumption was that all the bad cases were included under the capitation grant. They were not. The five main assumptions on which the whole of this agitation was based were absolutely erroneous. They had absolutely nothing to do with the bill."

He said that the government was making the most liberal provision for the doctors that had ever been made in club practice in England. The chief trouble in the minds of the doctors was that if the limit of income was to be $800 a year and the insured was to get ninepence for fourpence, there would be temptation on the part of those whose income was much larger than $800 a year to get within the limits of the bill. Many of you are wondering why this arbitrary limit of $800? In England we have an antiquated, effete system of taxation, the so-called income tax. Before the war, under the income tax act, incomes of £160 a year and over were liable to taxation. One of Lloyd George's excuses for not limiting the bill to those who could not help themselves was that they had no data on the £2 household. The £2 household would be the £140 a year house, so they fixed this £160 or $800 because the income tax began at that figure. But there is more difficulty in ascertaining in Great Britain the returns from the household of £160 than there is in getting returns from the household of £16,000. Any one who knows the industrial and economic life of the English people must understand the enormous difference in the social position of the family getting £2 and the other family getting £3. The doctors said: "We know the households and what they can pay better than the treasury. We know the members of the family who are working, and we know that the arbitrary fixation of $800 a year will mean that many a household that is getting £4 or £5 a week will not pay as much as they ought until each individual worker comes within the purview of the insurance act." They were getting ninepence for fourpence, and the government could not stop them.

We want you to be wise in your agitation regarding health insurance legislation and not make the mistakes we did in Great Britain. We want you to familiarize yourselves with every phase of the subject before securing legislation. I suppose in the main that the doctors who attend the very poor were never better off than they are now in Great Britain. If you get the state to assure you payment, naturally you would favor that system in the majority of cases.

After the insurance act went into operation, we found that there were resentment and dissatisfaction all over the country. A number of amendments had to be passed, but I think it is perfectly fair to say that the English act has not had a fair trial in the two years and a few months it was in operation before the war broke out. An act of that kind should be tested for at least ten years before final judgment is pronounced on it.

Lloyd George was right when he said that this measure was only palliative; it is not curative. If it is to be made an effective measure, we must deal with the land question. So instead of bothering yourselves about national insurance, old age pensions, and the blunders that have been made in Germany and Great Britain over social insurance, let me urge you to study fundamental questions, economic questions, the land question in this country, and then get the capital value of the land not only on the surface, but as far down as you can go, including the ores, the clays, the coals, the slates, the marble and everything, and put taxation on them, and then, when you have opened up the country again, you will find that people, having an equal opportunity, will not rely on the state, but will get out like men and women and work for themselves and produce in abundance. Having abundance and health and leisure, they will find their own souls.

DISCUSSION

Dr. William A. Evans discussed the proposed method of administration of the insurance act.

Prof. James H. Tufts, University of Chicago: The medical profession owes a duty to these now suffering worse in their health than the more well-to-do members in the community. We have a right to ask why so many are suffering and what can be done about it. Poorly paid people have much more ill health in proportion than the well-to-do. Part of poverty is due to ill health, just as part of ill health is due to poverty. A great deal of the burden of charity is due to ill health. It is tremendously to the advantage of the public that the medical profession should receive proper remuneration: that it should be well paid to have the best equipment for its work and to encourage the right sort of men to go into the profession. The compulsory feature is one of the things we should think about seriously. It is necessary in providing for better health of the large group of people who now suffer that there should be a compulsory feature. It is more economical to administer a system that includes practically every one than a commercial insurance system in which the expense of collecting is 60 cents on the dollar. The larger proportion of people who work are not employed by establishments which make provision for sickness. The great proportion of workers are not members of trade unions which pay sick benefits. A large proportion of working people are not provided for under the existing scheme. The proposed bill does not admit as a carrier any society for profit.

Dr. Charles J. Whalen: I agree with Mr. Neilson that we are a nation of imitators. I believe that social or health insurance has come to stay in this country. There is a demand for social insurance largely because eleven European countries have so far adopted it. The medical profession of Illinois cannot afford to oppose health insurance. We may disagree as to the method of administration; we may not like the tentative draft of the bill; we may have objections to this or that part of the insurance law. But to the general subject of health insurance I think we shall have to agree.

In England the law has not been in force a sufficiently long time to form a fair estimate of its working value, but in the short time it has been in effect it is claimed that the average income of the physicians in England has materially increased. In Germany, where it has been in effect a great many years, the law has materially benefited the medical profession. It is claimed that the slums have disappeared; that sickness has materially diminished, and that the average life of the individual of Germany has increased from thirty-six to forty-eight years.

Dr. K. A. Zurawski: It is not safe to leave legislation which concerns such a large amount of varied interests to self-appointed sociologic bodies. The scheme of health insurance which Dr. Evans has explained to us is a good example of how a thing should not be. Health insurance should consider three different factors: the employer, the employee and the medical man. Medical men are not represented on these governing commissions, and this is a feature that we should try to correct. We want to be full copartners in the administration of health insurance. Another point the medical profession should insist on is free choice of medical attendants; but the choice of hospitals or the methods of treatment should not be left to the patient but to the medical man or to a commission of medical men.

Dr. Carl Beck: Having seen some of the work of social insurance organizations in Germany and elsewhere, I can say that they have been unsatisfactory. The medical profession in Germany is very much dissatisfied. The *Münchener medizinische Wochenschrift* cautions physicians not to take this or that position as health insurance officer. It is bad for the people and for the physician. In some localities health insurance has done some good, while in others the effect has been the reverse. We should study all angles of the question before securing legislation.

Mr. William Beye, Illinois Steel Company: I do not believe that any legislation which destroys individualism is sound. The scheme which is proposed is fundamentally state insurance. It is the taking over by the state of private endeavor. I believe that a man who cannot afford to insure himself in an insurance company or who does not himself provide protection against sickness should be an object of public charity. Anything else is contrary to sound fundamental principles. In West Virginia, Ohio, Washington and Wisconsin there have been insurance funds established for carrying insurance under the Workman's Compensation Law, and there is not a single fund in any of those states that is solvent, because government as it exists in this country cannot manage an insurance proposition on anything but a wasteful basis. Let us consider health insurance as an indemnity after sickness has occurred. It does not prevent sickness any more than life insurance prolongs life.

Dr. William D. Pennington: The cure for this condition lies in prevention and not in remedial legislation. The way to cure this condition is to change the industrial situation, and that can be done only through legislation. Following the procedures outlined reduces the people to a condition of semicharity. If there is anything which people do not like, it is to feel that they have been forced to resort to charity for protection. The way to solve this problem is by legislation that will make it possible to make an honest and comfortable wage. The important field in medicine is not curative but preventive, and the way to cure this situation is to prevent it by enacting such laws and establishing such conditions as will make it possible for a man or woman who works in industrial institutions to make a living wage.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

January, XXI, No. 1

1 Chromosomes of Human Spermatocytes. H. L. Wieman, Cincinnati.—p. 1.
2 Changes in Composition of Entire Body of Albino Rat During Life Span. S. Hatai, Philadelphia.—p. 23.
3 *Experimental Studies on Origin of Vascular Endothelium and of Erythrocytes. F. P. Reagan, Princeton, N. J.—p. 39.

3. Origin of Erythrocytes and Vascular Endothelium.—Reagan summarizes the results of his extensive study briefly as follows: first, that mesenchyme in many regions of the body can turn into endothelium, and that endothelium is not an ingrowth from vessels on the yolk; second, that prevascular tissue can come from more than one germ layer; third, that mesenchyme cells which can form a given type of blood cell are not confined to a narrowly limited region of the embryo; fourth, that endothelium can transform into blood cells.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

January, LXXV, No. 1

4 *Fibromyoma Uteri and Cardiovascular Disease. B. R. McClellan, Xenia, Ohio.—p. 1.
5 *Prolapse of Uterus in Nulliparous Women. P. Findley, Omaha.—p. 12.
6 *Radium—Palliative. D. C. Moriarta, Saratoga Springs.—p. 21.
7 Standardization of Definite Procedures During Gynecologic Operations. E. A. Weiss, Pittsburgh.—p. 28.
8 *Modified Gilliam Operation and Its Ultimate Results. A. Goldspohn, Chicago.—p. 38.
9 Shortening of Round Ligaments by Transverse Suprapubic Incision. S. Stark, Cincinnati.—p. 47.
10 Pathology of Major Vestibular Ducts and Glands. J. E. Davis, Detroit.—p. 58.
11 Heat as Method of Treatment in Some Forms of Cavity Carcinoma. J. F. Percy, Galesburg.—p. 87.
12 *Surgical Treatment of Uterine Cancer. J. H. Jacobson, Toledo.—p. 97.
13 More Successful Surgery of Stomach. G. W. Crile, Cleveland.—p. 105.
14 Applying Animated Drawing to Teaching of Surgical Technic. W. J. Brownlow, Cleveland.—p. 110.
15 *Mechanics of Stomach After Gastro-Enterostomy. J. H. Jacobson and J. T. Murphy, Toledo.—p. 112.
16 Value of Pain, Jaundice and Tumor Mass in Differential Diagnosis of Diseases of Right Upper Quadrant of Abdomen. J. D. S. Davis, Birmingham, Ala.—p. 124.
17 *Excessive Drainage Complicating Surgery on Common Bile Duct. J. E. Sadlier, Poughkeepsie, N. Y.—p. 135.
18 Three Cases of Successful Repair of Urinary Bladder Fistulae Following Operations. J. N. West, New York.—p. 145.
19 Pelvic Varicocele. H. D. Furniss, New York.—p. 152.

4. Abstracted in The Journal, Oct. 21, 1916, p. 1252.

5, 6 and 8.—Abstracted in The Journal, Oct. 28, 1916, p. 1325.

12, 15 and 17. Abstracted in The Journal, Oct. 28, 1916, p. 1325.

American Journal of Orthopedic Surgery, Boston

January, XV, No. 1

20 *Analysis of Fifty-One Bone and Joint Affections Treated by Heliotherapy, with Special Reference to Tuberculosis. W. C. Campbell, Memphis, Tenn.—p. 1.
21 Two Cases of Fracture of Neck of Femur in Childhood. B. H. Whitbeck, New York.—p. 17.
22 Scoliosis. E. G. Abbott, Portland, Me.—p. 26.
23 Atlo-Axoid Disease; Report of Two Cases: Successful Operation in One. J. T. Rugh, Philadelphia.—p. 51.
24 Method of Marking Roentgen Plates. F. J. Fassett, Seattle.—p. 60.
25 Apparatus for Extension Attached to Bradford Frame. G. E. Bennett, Baltimore.—p. 61.

20. **Bone and Joint Affections Treated by Heliotherapy.**—Campbell strongly endorses heliotherapy which in his experience has proved beneficial, not only in tuberculous conditions, but other affections, especially acute sepsis.

Archives of Internal Medicine, Chicago

January, XIX, No. 1

26 *Clinical Value of Ambard's Coefficient of Urea Excretion. D. S. Lewis, Baltimore.—p. 1.
27 *Action of Several "Female Remedies" on Strips of Excised Human Uterus. J. D. Pilcher, Omaha.—p. 53.
28 *Present Significance of Amino-Acids in Physiology and Pathology. D. D. Van Slyke, New York.—p. 56.
29 *Progressive Muscular Dystrophy as Endocrine Disease. W. Timme, New York.—p. 79.
30 *Blood Changes in Albino Rats Following Removal of Spleen. C. C. Wolferth, Philadelphia.—p. 105.
31 Experiments on Origin and Conduction of Cardiac Impulse. J. A. E. Eyster and W. J. Meek, Madison, Wis.—p. 117.
32 *Occurrence of Nuclear Changes in Red Blood Cells Following Splenectomy. O. O. Gilbert, Ann Arbor.—p. 140.
33 *Effect of Heat and Continuous Incandescent Electric Light in Experimental Arthritis. W. E. Simmonds and J. J. Moore, Chicago.—p. 153.
34 *Further Quantitative Study of Duodenal Blood-Derived Pigments, J. P. Schneider, Minneapolis.—p. 156.

26. **Ambard's Coefficient of Urea Excretion.**—The coefficient of urea excretion is subject to certain variations in normals, but any value below 0.06 or above 0.09, Lewis says, should be regarded as abnormal unless the excessive variation can be readily explained. The coefficient is absolutely independent of the blood urea concentration. Its level is governed by the condition of renal function. The coefficient is depressed in fever, in hyperthyroidism, in hypertension with early changes in the renal arterioles, and in early chronic diffuse nephritis. The depression is an evidence of increased renal activity due to irritation. The coefficient is raised in myxedema. There is an increase of the coefficient in myocardial insufficiency. The coefficient is above normal in nephritis with renal insufficiency. This increase is more evident in chronic diffuse nephritis than in the vascular type, due to the greater frequency of renal insufficiency in the former cases. The coefficient shows an increase long before there is any evidence of nitrogen retention in the blood. The coefficient gives an excellent means of following the changes in renal function and of measuring the rate of progress of the disease. In a few severe cases the coefficient varies without there being any evident change in the clinical condition. The prognostic value of the coefficient is considerable. Values above 0.2 are seen only in the severe cases, while constants persistently above 0.3 are found only in persons with a maximal impairment of renal function. A coefficient above 0.2 has a graver import in vascular nephritis than in that of chronic diffuse type. For an accurate prognosis repeated determinations of the coefficient are of the greatest importance.

27. **Action of "Female Remedies" on Strips of Human Uterus.**—The action of pulsatilla, unicorn root, blue cohosh, blessed thistle, viburnum, black haw and oil of valerian on strips of human uterus was studied by Pilcher. It was found that pulsatilla, aletris and oil of valerian lowered the amplitude of the excursions or completely inhibited them; but the action was not so prompt or so great as on the guinea-pig uterus in the same concentration. Caulophyllum put the strips into tonic contraction, but again the action was less than on the guinea-pig; the tone was not increased above the maximum, as was frequently the case with the guinea-pig. *Cnicus benedictus* and viburnum were inactive.

28. **Present Significance of Amino-Acids in Physiology and Pathology.**—In examining both the urine and the blood from a considerable number of patients with toxemia of pregnancy, Van Slyke found in no instance that either blood or urine showed an abnormal concentration of amino-acids or of intermediate protein digestion products. Consequently, he says, the responsibility for the toxemias of pregnancy cannot be left with the amino-acids. He has also tested the hypothesis that acidosis is to blame, with essentially negative results.

29. **Progressive Muscular Dystrophy.**—Timme reports a somewhat atypical form of progressive muscular dystrophy, rather resembling Erb's infantile type, of extremely benign and slow progress. It occurs as a hereditary affection, now in the fourth generation, which has disabled fourteen individuals. Of the seven living members with the disease, all but two have been examined thus far by Roentgen ray, and of these five, four show distinct changes in the pineal gland producing shadows in the roentgenogram. The fifth, a youth of 15 years, whose affliction is rather of different type than the others, in that the bony growth is abnormal, shows an enlarged sella turcica, but no shadows in the pineal as yet. Weighing all the evidence that is advanced by previous investigators to show derangement of the internal glandular balance in cases of progressive muscular dystrophy, and giving due significance especially to the changes produced by tumors and diseases of the pineal gland on the various tissues of the body, changes that resemble in character, if not entirely in degree or disposition those present in progressive muscular dystrophy, Timme says, we must admit the extreme probability of a causal relationship between the two. If to this probability is adduced the evidence shown by cases of progressive muscular dystrophy of changes in the pineal gland demonstrated by roentgenology, the probability approaches pretty closely to proof that disturbances of the pineal gland play an important rôle in the pathogeny of progressive muscular dystrophy.

30. **Blood Changes After Splenectomy.**—Results of splenectomy were studied by Wolferth in sixteen rats whose spleens were presumably normal; also in eight rats with enlarged spleens. Rats after excision of a normal spleen showed a slight transient anemia, slight tendency to leukocytosis, well marked increase in resistance of erythrocytes, no change in percentages of reticulated red cells. There was an inconstant increase in the number of nucleated red cells during the periods of anemia. Removal of enlarged spleens was followed by rapid and usually fatal anemia, hyperleukocytosis, marked increase in the number of nucleated and reticulated red cells and, in two cases, by distinct jaundice.

32. **Nuclear Changes in Red Blood Cells Following Splenectomy.**—There can be little doubt, Gilbert says, that a close relationship exists between the loss of splenic function and the appearance of large numbers of nuclear particles in the blood. The nuclear particles occur in large numbers within a few hours after the removal of the spleen, and they continue to be present after the blood has become in other respects normal. That they occur independent of a primary blood disease is shown by the fact that they occur after the spleen has been removed in normal animals and in men (traumatic rupture of spleen). In no other conditions are they found with such constancy and in such large numbers as after splenectomy. Gilbert's studies have shown, further, that there is no definite numerical relationship between the nuclear particles and the presence of true nucleated red cells, or any other quantitative or qualitative changes in the peripheral blood. His preparations indicate that the nuclear particles originate from otherwise normal nuclei, and that the particles do not show in themselves qualitative degenerative processes.

33. **Effect of Heat and Light in Experimental Arthritis.**—It is evident from the results of experiments made by Simmonds and Moore that the treated animals were decidedly benefited by heat and light so far as the arthritic manifestations were concerned.

34. **Blood-Derived Pigments.**—The blood in cases of pernicious anemia and hemolytic jaundice, both before and after and with and without splenectomy, was studied by Schneider.

He found that splenectomy apparently immediately and permanently reduces the excessive blood-derived pigments of pathologic hemolysis to a normal level. There is no proof that a recurrence of a pernicious blood and clinical picture after splenectomy is due to a reestablishment of excessive blood destruction. A plus hematopoietic-hemolytic index in a given case should, he says, be regarded as one factor favorable to permanent postoperative recovery.

Boston Medical and Surgical Journal

January 11, CLXXVI, No. 2

35 Public Health Aspects of Leprosy. G. W. McCoy, Washington, D. C.—p. 43.
36 Some Experience Bearing on Medicolegal Value of Precipitin Test for Human Blood. E. L. Hunt and O. M. Mills, Worcester. —p. 48.
37 Fibroma of Mediastinum; Report of Case. S. J. Shen, Boston. —p. 53.
38 Fundamental Considerations in Treatment of Psychoneuroses. D. Gregg, Wellesley.—p. 57.
39 *Coincidence of Diabetes Mellitus and Syphilis. J. H. Barach, Pittsburgh.—p. 58.
40 Obliteration of Liver Dulness in Acute Perforation of Stomach and Duodenum; Report of Case. M. T. Field, Salem.—p. 60.
41 Study of Roentgenograms of Cases of Fracture of Long Bones at Massachusetts General Hospital. R. F. Sheldon, Boston.—p. 61.
42 Harvard Infantile Paralysis Commission and Its Work in Massachusetts. R. W. Lovett, Boston.—p. 62.
43 *Unusual Case of Umbilical Hernia. J. W. Lane, Boston.—p. 64.
44 Ringworm of Scalp and Alopecia Areata Appearing Simultaneously in Same Location. J. E. Lane, New Haven, Conn.—p. 65.

January 18, No. 3

45 Duty of Health Departments in Alcohol Question. H. Emerson, New York.—p. 77.
46 *Roentgenologic Follow-Up Report of Seventeen Cases of Pylorectomy for Ulcer. J. H. Lindsey, Fall River.—p. 80.
47 Obstetric Advances. J. O. Polak, Brooklyn.—p. 85.
48 Coefficient of Safety in Surgical Operations. H. L. Smith, Nashua, N. H.—p. 88.
49 Some Limitations in Roentgen Ray Evidence of Gastro-Intestinal Lesions. F. W. White, Boston.—p. 92.
50 *Three Cases of Thyroid Abscess. F. H. Lahey, Boston.—p. 94.
51 Anatomic Factor as Cause of Pyorrhea. C. M. Cobb, Lynn.— —p. 95.
52 *Sterilization Treatment of Furunculosis. J. T. Bowen, Boston.—p. 96.
53 Treatment of Perforated Ulcer of Stomach with Duodenal Feeding Tube. L. C. Miller, Worcester.—p. 97.

39. **Diabetes Mellitus and Syphilis.**—Three cases of syphilis, in which the *Spirochaeta pallida* is active and in which the clinical symptoms of diabetes mellitus appeared, are recorded by Barach as occurring among thirty-one cases of diabetes seen within a period of two and one-half years. Such cases are supposed to be rare and the relationship of these two diseases is not generally recognized.

43. **Unusual Case of Umbilical Hernia.**—Lane's patient had suffered for several years from a small incarcerated umbilical hernia. The present illness for which she sought aid was ushered in by a severe pain in the mass at the umbilicus. This pain persisted three days, when it suddenly ceased. During this time the patient vomited nearly twenty times, but whether the vomiting was fecal, was not known. On the evening of the second day the vomiting ceased and there were several evacuations of the bowels following a dose of citrate of magnesia. On the third day a redness and tenderness appeared about the umbilicus and the hernial mass disappeared. On the fourth day the area of redness had extended, and was very much more tender. The physical examination was generally negative except for the abdomen. The abdomen was somewhat obese and was not distended, but lax and tympanitic. These was no protrusion at the umbilicus, but the depression thereof was unusually large and surrounded by an area of redness and tenderness and induration about 6 inches in diameter.

An operation was advised and performed. At a depth of 1½ inches in the fat about 2 ounces of foul smelling pus were evacuated. The pus had an odor characteristic of an appendix abscess. After the excess pus had been wiped out there appeared in the upper end of the wound a red mass about the size of a lemon. This appeared to be the sac of a hernia with a rent about ½ inch in diameter. In the left lower border protruding from this rent was a piece of animal bone, 1⅞ inches long and ⅜ inch wide. A piece of small intestine was strangulated in the sac, reddened but not gangrenous, and showing a perforation of ¼ inch in diameter, with its mucous membrane everted.

46. **Roentgenologic Report of Cases of Pylorectomy for Ulcer.**—Nineteen cases of pylorectomy for ulcer are included in Lindsey's report, with roentgenographic study of seventeen. There is prima facie evidence in this series that the stomach, after pylorectomy, tends to enlarge or dilate and thus compensates for the part removed at operation. In some cases, in which a wide resection has been performed, the stomach does not seem to have much opportunity or occasion to dilate. From the clinical information given all of these patients, with the exception of two, seemed in good condition. In general, the efficient manner in which these stomachs have performed their function, at such long periods after operation, testifies to the essential conservatism of an apparently radical operation.

50. **Diagnosis of Thyroid Abscess.**—Two signs which Lahey found to be present in his three cases are limitation of chin elevation and depression of the chin on the sternum when swallowing. These two signs, he believes, are of great significance in cases suspected of thyroid abscess. They are brought about by the action of the sternohyoid, sternothyroid and omohyoid muscles on the abscess beneath them. Pain results from tightening of these muscles, and this tightening as the result of swallowing may be prevented by depression of the chin on the sternum.

52. **Sterilization Treatment of Furunculosis.**—The principle of this treatment is simply to keep the skin so far as possible sterile; as free from micro-organisms as it is endeavored to maintain it in abdominal surgery. In order to effect this, the patient is directed to take a hot bath morning and night, scrubbing the whole body, including the head, while in the bath, with soap. After this thorough washing with soap and hot water, the skin is dried, and the whole surface again bathed, this time with a saturated solution of boric acid in water, with the addition perhaps of a small proportion of camphor water. After bathing thoroughly with the saturated boric acid solution, the skin is allowed to dry. Then the individual furuncles are treated by dressing them with the following ointment spread on cotton or linen and bound lightly on:

		gm. or c.c.	
℞	Boric acid	4	ʒ j
	Precipitated sulphur	4	ʒ j
	Carbolated petrolatum	32	℥ j

This procedure is repeated morning and night. Every stitch of linen worn next to the skin should be changed daily, and in the case of extensive furunculosis all the bed clothing that touches the individual, as well as the night clothing, should be subjected to a daily change. This treatment has been uniformly successful in Bowen's hands in the treatment of furunculosis.

Iowa State Medical Society Journal, Des Moines

January, VII, No. 1

54 *Uremia. L. G. Rowntree, Minneapolis.—p. 1.
55 Renal Sufficiency Tests. C. Van Epps, Iowa City.—p. 5.
56 Internal Secretory Organs. C. Stutsman, Burlington.—p. 9.
57 Pyloric Obstruction in Infancy. C. A. Waterbury, Waterloo.—p. 15.
58 Rupture of Intestine Due to Abdominal Trauma; Report of Cases. W. S. Conkling, Des Moines.—p. 20.
59 Submucous Resection of Nasal Septum. W. E. Patterson, Waterloo.—p. 24.

54. **Uremia.**—According to the predominance of functional or organic changes, Rowntree points out that it is extremely important to recognize whether the case is one in which the uremia is due to organic or functional changes. The development of uremia in a case of marked chronic interstitial nephritis offers little in a permanent way as a result of treatment, whereas in an identical clinical picture encountered in back pressure kidney such as seen in cases of enlarged prostate, the prognosis may be good. This is familiar to the surgeon but not as a rule to the internist. Rowntree refers to instances in which following the use of the constant catheter, forcing of fluids, and limitation of nitrogen intake

uremia has disappeared, and in some instances, following a subsequent prostatectomy, renal function has returned practically to normal. In the vast majority of cases the treatment adopted is based on the theory of retention of products of metabolism. When edema of the brain is present the question of mechanical relief of cerebral pressure may need to be considered. Lumbar puncture may be of the greatest value in cases with marked headache dependent on cerebrovascular changes. If acidosis coexists alkalies should be administered but only to the point of correcting the acidosis, not indiscriminately in all cases of uremia nor in the large amounts recently advocated. In every case of uremia it is the physician's duty to determine if possible the underlying cause and to treat the case accordingly.

Journal of Abnormal Psychology, Boston

October-November, 1916, XI, No. 4

60 Persistent Complexes Derived Through Free Associations. C. S. Yoakum and M. C. Hill, Galveston.—p. 215.
61 Developmental Psychology of Stuttering. W. B. Swift, Boston. —p. 258.
62 Some Psychanalytic Studies of Character. L. E. Emerson, Boston. —p. 265.

Journal of Biological Chemistry, Baltimore

January, XXVIII, No. 2

63 Impure Picric Acid as Source of Error in Creatin and Creatinin Determinations. O. Folin and E. A. Doisy, Boston.—p. 349.
64 Estimation of Amino-Acid Nitrogen in Blood. J. C. Bock, New York.—p. 357.
65 *Comparative Biochemistry of Purin Metabolism. Presence of Allantoin in Mammalian Blood. A. Hunter, Toronto.—p. 369.
66 *Iodin Content of Food Materials. R. M. Bohn, Madison, Wis.—p. 375.
67 Colorimetric Methods for Determining Serum Cholesterol. P. G. Weston, Warren, Pa.—p. 383.
68 Mode of Action of Urease and of Enzymes in General. K. G. Falk, New York.—p. 389.
69 Id. D. D. Van Slyke and G. E. Cullen, New York.—p. 391.
70 Influence of Coagulation by Rennin on Gastric Digestion of Milk Proteins. J. T. Leary and S. H. Sheib, Nashville, Tenn.—p. 393.
71 Preparation of Guanidin. J. S. Sharpe, Glasgow.—p. 399.
72 Proteins of Central Nervous System. H. H. McGregor, Urbana, Ill.—p. 403.
73 Influence of Inosite on Excretion of Phenol in Dog. H. Dubin, Philadelphia.—p. 429.
74 *Studies of Infant Feeding. Chemical Changes Produced by Addition of Lime Water to Milk. A. W. Bosworth and H. I. Bowditch, Geneva, N. Y.—p. 431.
75 Saponin from Yucca Filamentosa. L. H. Chernoff, A. Viehoever and C. O. Johns, Washington, D. C.—p. 437.
76 New Method of Steam Distillation for Determination of Volatile Fatty Acids, Including Series of Colorimetric Qualitative Reactions for Their Identification. D. C. Dyer, Washington, D. C. —p. 445.
77 Mechanism of Cytolysis in Sea Urchin Eggs. A. R. Moore, New Brunswick, N. J.—p. 475.
78 Is Lysin Limiting Amino-Acid in Proteins of Wheat, Maize or Oats? E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 483.
79 Efficiency of Certain Milk Substitutes in Calf Feeding. R. H. Carr, G. Spitzer, R. E. Caldwell and O. H. Anderson, La Fayette, Ind.—p. 501.
80 *D-Mannoketoheptose, New Sugar from Avocado. F. B. La Forge, Washington, D. C.—p. 511.
81 Crystallographic and Optic Properties of Mannoketoheptose and of Osazones of Mannoketoheptose and Mannoaldoheptose. F. E. Wright, Washington, D. C.—p. 523.

65. **Allantoin in Blood.**—From the blood of the ox and the pig allantoin was obtained by Hunter in quantity sufficient for positive identification, while its presence in that of the horse and the sheep was rendered practically certain. Human blood, on the other hand, yielded no evidence of containing even a trace of allantoin.

66. **Iodin Content of Food Materials.**—It would appear from Bohn's studies that the presence of iodin in feeding materials of vegetable origin is accidental and serves no necessary nutritive function in the plant.

74. **Infant Feeding. Chemical Changes Produced by Addition of Lime Water to Milk.**—The addition of lime water to milk, which normally contains some insoluble dicalcium phosphate, Bosworth and Bowditch found results in the precipitation of more calcium phosphate, the insoluble phosphates under these conditions being a mixture of dicalcium and tricalcium phosphate, $CaHPO_4$ and $Ca_3P_2O_8$. The addition of lime water to milk brings the reaction of the serum toward the neutral point, the soluble alkalinity of the lime water being used up in the precipitation of the insoluble calcium phosphates mentioned above. When milk to be used for infant feeding is treated with lime water and finally diluted to such an extent that it has twice the volume of the original milk, or more, the soluble calcium and phosphorus may be reduced to amounts less than those which are present in human milk.

80. **D-Mannoketoheptose, New Sugar from Avocado.**—La Forge describes the isolation of a new ketose sugar, containing seven carbon atoms, from the fruit of avocado or alligator pear. The sugar exists in the free state in the fruit. The new sugar is both a ketose and a heptose and is accordingly the fourth natural ketose to be isolated, the other three being fructose, sorbose and ketoxylose, and is the first heptose to be found in nature, the previously known heptoses having all been prepared synthetically from hexoses.

Journal of Laboratory and Clinical Medicine, St. Louis

December, 1916, II, No. 3

82 Experimental Investigation of Certain Phenomena Relating to Action of Drugs on Rate of Oxygen Consumption in Animal Body. D. E. Jackson, St. Louis.—p. 145.
83 *Tissue Reactions to Various Products of Tubercle Bacillus. P. F. Morse and E. Stott, Detroit.—p. 159.
84 *Tonsillectomy During Course of Acute Rheumatic Fever. R. S. Morris, Cincinnati.—p. 168.
85 *Bacteriemias in Agonal Period. J. W. Fredette, Pittsburgh.—p. 180.
86 Diagnosis of Gastric Ulcer. J. W. Shuman, Sioux City, Iowa. —p. 189.
87 Detection of Semen. V. C. Vaughan, Ann Arbor, Mich.—p. 195.
88 Trypsin Broth—Ideal Medium for Making Blood Cultures. R. G. Owen, F. A. Martin and W. G. Pitts, Detroit.—p. 198.
89 Standard Method for Making Uniform Colloidal Gold Solution. W. K. Trimble, Kansas City, Mo.—p. 199.
90 Preservation of Erythrocytes for Wassermann Reaction. S. P. Reimann, Cleveland.—p. 200.
91 Simplified Complement Fixation Test. N. E. Williamson, Stockton, Calif.—p. 202.
92 Modification of Gerhardt's Test for Diacetic Acid in Urine. H. P. Barret, Charlotte, N. C.—p. 203.
93 Prevention of Frothing in Aeration Methods. A. B. Denison, Cleveland.—p. 204.

83. **Tissue Reactions to Products of Tubercle Bacillus.**—The tubercle bacillus according to Morse and Stott produces a microscopically characteristic lesion, not because it is a living particulate protein, but because its waxy substances act as a peculiar type of foreign body.

84. **Tonsillectomy During Acute Rheumatic Fever.**—With the subsidence of outward evidence of acute inflammation of the tonsils, Morris says, the danger of allowing them to remain in the body probably exceeds the danger of their removal. In all cases, he believes, an attempt should be made to relieve the joint tenderness by full doses of salicylates, before the operation is attempted. A certain amount of freedom of movement is necessary after the operation, to enable the patient to expectorate, etc.; during the height of an acute arthritis, pain on moving would often prevent the necessary changes in position.

85. **Bacteriemias in Agonal Period.**—Routine blood cultures taken by Fredette immediately after the death of 119 individuals reveal the presence of an unsuspected bacteremia in about one third of all fatal cases. Streptococci are the most frequent terminal bacterial invaders of the blood stream. The pneumococcus can be isolated in practically all cases of lobar pneumonia dying before the tenth day of the disease.

Journal of Nervous and Mental Disease, Lancaster, Pa.

January, XLV, No. 1

94 *Histopathology of Autonomic Nervous System in Certain Somatic and Organic Nervous Diseases. M. E. Morse, Boston.—p. 1.
95 Relation between Overactivity of Vagus System and Anaphylaxis. J. H. Smith, Richmond, Va.—p. 26.
96 Dispensary Work in Diseases of Nervous System. S. E. Jelliffe, New York.—p. 46.

94. **Histopathology of Autonomic Nervous System.**—The thoracicolumbar, semilunar and intestinal ganglia in seventeen cases were studied by Morse in connection with the central nervous system and the ductless glands. The cases

comprise two each of pellagra, senile dementia, paresis, cerebral syphilis, generalized (including cerebral) arteriosclerosis and one each of pernicious anemia; imbecility plus mitral insufficiency; dementia praecox plus lobar pneumonia; alcoholic dementia and generalized tuberculosis; manic depressive insanity and carcinoma of stomach; involutional depression and katatonic "hirntod." In no instance were the ganglia normal. In the cerebral syphilis cases, however, the changes were rather insignificant. The conditions found are grouped as acute and chronic degenerative changes in the nerve cells, and exudative manifestations in the stroma. Chronic degenerative changes in the ganglion cells predominated, as would be expected, in the chronic organic nervous diseases (paresis, senile dementia and cerebral arteriosclerosis). They were also found in ganglia in the vicinity or organs showing chronic lesions. Acute changes predominated in the case of katatonic "hirntod" (brain death), and in the local ganglia in certain pathologic conditions, as valvular heart disease and acute enteritis and peritonitis. Both acute and chronic conditions and those which might be either, as axonal reaction and neurophagia were present in pellagra, pernicious anemia, tuberculosis and involutional depression. A point of interest and importance is the special incidence of lesions in the ganglia, and their possible correlation with adjacent visceral conditions. In several instances the lesions were not universally distributed, but were limited to ganglia in the vicinity of affected structures. In an agitated depression changes suggestive of fatigue processes were found in the thoracicolumbar chain of ganglia, and in a case of katatonic "hirntod" marked lesions of an acute degenerative type, associated with neurophagia.

Journal-Lancet, Minneapolis

January 15, XXXVII, No. 2

97 Prophylactic Episiotomy. F. E. Leavitt, St. Paul.—p. 31.
98 *Tumors of Spinal Cord; Report of Eighteen Cases. E. H. Beckman, Rochester.—p. 35.
99 Deformities and Limited Motion in Joints Resulting from Causes Modifying Muscular Balance; Surgical Principles Involved in Treatment. C. N. Callender, Fargo, N. D.—p. 42.
100 Alimentary Tract as Focus of Infection. W. G. Richards, Billings, Mont.—p. 45.

98. Abstracted in The Journal, Dec. 2, 1916, p. 1694.

Kansas Medical Society Journal, Topeka

January, XVII, No. 1

101 Uses and Abuses of Ileosigmoidostomy. H. L. Charles, Atchison. —p. 6.
102 Process of Diagnosis. T. A. Jones, Liberal.—p. 8.
103 Endometritis. R. C. Henderson, Erie.—p. 10.
104 Some Unavoidable, or at Least Excusable Errors of Diagnosis, and Plea for Earlier and More Frequent Exploratory Operations in Abdominal Lesions. R. C. Dugan, Ottawa.—p. 14.

Medical Record, New York

January 13, XCI, No. 2

105 Cancer Problem and World War. W. S. Bainbridge, New York. —p. 47.
106 Diagnosis and Treatment of Poliomyelitis at Willard Parker Hospital. L. Fischer, New York.—p. 52.
107 Cultivation of Organism of Poliomyelitis on Solid Media. H. Greeley, Brooklyn.—p. 56.
108 *Benzoate of Mercury in Treatment of Syphilis. M. F. Lautman, Hot Springs, Ark.—p. 60.
109 Blood Fibrin Formation in Diagnosis. H. E. Smith, New York.—p. 61.
110 Which Is Safer, Ether or Nitrous Oxid and Oxygen? J. W. Seybold, Denver.—p. 63.
111 Laceration of Right Coronary Ligament of Liver; Report of Cases. M. R. Bookman, New York.—p. 65.

January 20, No. 3

112 Explosives-Industry Poisons. W. G. Hudson, Wilmington, Del. —p. 89.
113 Symptomatic Psychoses; Report of Cases. E. S. Brodsky, Westport, Conn.—p. 98.
114 Cost of Treating Pulmonary Tuberculosis, with Special Reference to Wage Earners and Communities. J. F. Russell, New York. —p. 101.
115 Consanguinity; Method of Indicating Degrees of Relationship in Terms of Blood Cells. A. L. Benedict, Buffalo.—p. 104.
116 Case of Scarlet Fever, Malignant Type, Successfully Treated with Recovered Blood. M. J. Synnott, Montclair, N. J.—p. 106.
117 Rheumatic Child. J. Epstein, New York.—p. 107.

108. **Benzoate of Mercury in Treatment of Syphilis.**—The preparation which Lautman employs is an oily emulsion of ten parts of mercury benzoate and two parts of quinin and urea hydrochlorid in one hundred parts of white liquid petrolatum. It is prepared by first grinding up the quinin and urea hydrochlorid with a little of the oil in a mortar and then adding with careful trituration small quantities of the benzoate and oil. A perfect emulsion is obtained, which can easily be aspirated through a twenty-gage needle. The method of injection is the same as with any other preparation of mercury. Lautman gives 1 grain of the benzoate (10 minims) at a dose, repeating this three times a week. In twenty-five unselected and previously untreated cases the blood Wassermann was changed from a four plus to a negative in an average of eight weeks. The influence on the existing lesions was very favorable.

New York Medical Journal

January 13, CV, No. 2

118 Relation of Chronic Infections of Genito-Urinary Tract to Obscure Internal Disorders. H. H. Young, Baltimore.—p. 49.
119 Bete Noire of Therapeutics. W. B. Konkle, Montoursville, Pa.—p. 55.
120 Borderline Cases of Lower Abdomen. H. Grad, New York.—p. 57.
121 What is "Cause" of Disability? W. R. Riddell, Toronto, Ont.—p. 60.
122 Narco-Anesthesia. H. Beates, Jr., Philadelphia.—p. 61.
123 Physical Examination of Prisoners on Admission to Prison. F. L. Heacox, Auburn.—p. 64.
124 Visceral Amebiasis; Report of Unusual Case. A. Klein and A. I. Rubenstone, Philadelphia.—p. 67.
125 Foreign Body in Aorta. L. G. Kaempfer, New York.—p. 69.

January 20, No. 3

126 Medico-Educational Problems in Treatment of Atypical Children. G. Hudson-Makuen, Philadelphia.—p. 97.
127 Grippe Pneumonia. B. Robinson, New York.—p. 100.
128 Fatal Streptococcemia in Epileptic. H. A. Knox, Skillman, N. J. —p. 101.
129 Generin; Agent which Induces Menstruation and Starts Gestation. J. Oliver, London.—p. 103.
130 Granuloma Pyogenicum; Report of Cases. M. G. Wohl, Omaha.—p. 106.
131 Giant Ventral Hernia. I. S. Haynes, New York.—p. 107.
132 Differential Roentgen Diagnoses in Bone Diseases. R. H. Boggs, Pittsburgh.—p. 112.
133 Surgical Value of Roentgen Ray. J. Rudis-Jicinsky, Chicago.—p. 115.
134 Paid Service in Hospitals. M. Schulman, New York.—p. 119.
135 Mercurialized Serums. F. E. Stewart, Philadelphia.—p. 121.
136 Id. L. Thompson, Hot Springs, Ark.—p. 123.

New York State Journal of Medicine

January, XVII, No. 1

137 *Technic of Vaginal Plastic Operations for Cystorectocele and Prolapse of Uterus. R. T. Frank, New York.—p. 3.
138 *Results and Technic of Vaginal Subtotal Hysterectomy for Procidentia and Cystorectocele, Associated with Fibroid Growths or Fibrosis Uteri. H. N. Vineberg, New York.—p. 5.
139 Field for Pessary Treatment in Retroversion and Prolapse. R. L. Dickinson, Brooklyn.—p. 7.
140 *Neuropathic or Nervous Child. E. B. Angell, Rochester.—p. 13.
141 Radical Mastoid Operation. T. J. Harris, New York.—p. 17.
142 *Cerebrospinal Fluid in Fifty Cases of Cerebrospinal Syphilis. C. C. Sutter, Rochester.—p. 23.
143 Internal Secretions and Eye Diseases. O. Schirmer, New York. —p. 27.
144 Mistakes in Diagnosis of Ectopic Pregnancy. C. C. Lytle, Geneva. —p. 33.
145 Proper and Efficient Disinfection of House. G. W. Goler, Rochester.—p. 36.
146 Welfare Work of Metropolitan Life Insurance Company for Its Employees. L. K. Frankel, New York.—p. 38.

137 and 138. Abstracted in The Journal, June 24, 1916, pp. 2122 and 2123.

140. Abstracted in The Journal, June 3, 1916, p. 1815.

142. **Cerebrospinal Syphilis.**—Ten cases of cerebrospinal syphilis, 11 cases of tabes dorsalis, 20 cases of general paresis and 9 cases of taboparesis were studied by Sutter. Most of these examinations were made after the patients had been given considerable treatment. The globulin reaction was present in 7 cases, weakly positive in 2, and negative in 2 out of the 11 cases. The cell count increased in 8, normal in 1, and borderline in 2 cases. The highest count was 55. The Lange gold chlorid reaction in this series of 11 cases did not show any characteristic curve. Five cases showed some color

changes but no marked color changes in the tubes were seen except in 2 cases which also showed a large increase in globulin and in the cell count. The Wassermann reaction was positive in the serum in 5 cases and in the fluid in 7 cases out of 11 cases. In 1 case it was negative in the serum and positive in the fluid. In all the other cases the findings were consistent. One case had decided ataxia but no other clinical signs. It was diagnosed as irregular tabes. The strongest and most characteristic reactions were seen in this series of 20 cases of paresis. All cases showed well marked color changes in the Lange colloidal gold chlorid reaction. The typical "paresis curve" was seen in all the tests. The highest cell count was 50. It was normal in 2 cases and there was only a slight increase in another. The globulin was positive in 16 cases, weak in 2 cases and negative in 2 cases. The Wassermann reaction was positive in every case except 2. One case showed negative reaction in the serum and positive in the fluid. Nine cases of taboparesis were studied. In all cases all the tests were positive.

Pennsylvania Medical Journal, Athens

December, 1916, XX, No. 3

147 Osteomalacia. L. Litchfield. Pittsburgh.—p. 161.
148 Chemical Diagnosis of Gallbladder Disease. M. E. Rehfuss, Philadelphia.—p. 166.
149 Value of Splenectomy in Diseases of Blood. E. B. Krumbhaar, Philadelphia.—p. 170.
150 Neuro-Otology; Intimate Relation of Ear to Nearly Every Part of Central Nervous System. I. H. Jones, Philadelphia.—p. 174.
151 How to Diagnose Cause of Dizziness. L. Fisher, Philadelphia.—p. 175.
152 Application of Neuro-Otology to Diagnosis of Actual Cases: Report of Cases. S. A. Brumm, Philadelphia.—p. 179.
153 What Can Be Done to Improve Milk Supply in Pennsylvania? L. A. Klein, Philadelphia.—p. 184.
154 *Fecal Incontinence. S. G. Gant, New York.—p. 190.
155 Obstruction of Common Bile Duct. C. D. Schaeffer, Allentown.—p. 195.
156 *Cholecystectomy; Operation of Choice. A. R. Matheny, Pittsburgh.—p. 198.
157 *Failing Heart; Recognition and Care of Certain Types. H. S. Anders, Philadelphia.—p. 201.
158 Recurrent Sarcomas at Limbus Treated by "Electric Desiccation." B. Chance, Philadelphia.—p. 205.
159 Goiter, Its Classification and Diagnosis. H. L. Foss, Danville.—p. 207.

154. Abstracted in The Journal, Oct. 14, 1916, p. 1180.
156. Abstracted in The Journal, Nov. 4, 1916, p. 1396.
157. Abstracted in The Journal, Oct. 28, 1916, p. 1328.

Surgery, Gynecology and Obstetrics, Chicago

January, XXIV, No. 1

160 *Removal of Stones from Kidney. W. J. Mayo, Rochester, Minn.—p. 1.
161 Clinical Data of Nephrolithiasis. W. F. Braasch, Rochester, Minn.—p. 8.
162 Treatment of Malignant Disease by Means of Deep Roentgen-therapy and Electrothermic Coagulation. G. E. Pfahler, Philadelphia.—p. 14.
163 Field of Neurologic Surgery in General Hospital. J. A. Wyeth and W. Sharpe, New York.—p. 29.
164 *Case of Hematocolpos, Hematometra and Hematosalpinx in Woman of Seventy-Four Years. G. Gellhorn, St. Louis.—p. 37.
165 Anatomy, Pathology and Treatment of Uterine Prolapse, Rectocele and Cystocele. R. T. Frank, New York.—p. 42.
166 Case of Malignant Papillary Adenoma of Kidney. M. G. Wohl, Omaha.—p. 61.
167 Case of Opisthotonus Fetus. F. H. Falls, Chicago.—p. 65.
168 Vasopuncture and Medication for Seminal Vesiculitis. B. A. Thomas, Philadelphia.—p. 68.
169 *Point in Differential Diagnosis of Pyuria; Lavage of Kidney Pelvis. A. H. Curtis, Chicago.—p. 84.
170 *Hemostasis by Interposition of Muscle, Fat and Fascia in Parenchymatous Organs. E. H. Risley, Boston.—p. 85.
171 Advantage of Pleural Effusion in Giant Hydatid Cysts of Liver. J. A. Wall, Santiago, Chile.—p. 90.
172 Significance of Bladder Symptoms in Diagnosis of Renal Disease. A. J. Crowell, Charlotte, N. C.—p. 91.
173 Clinical Course of Cancer in Light of Cancer Research. H. R. Gaylord, Buffalo.—p. 94.
174 Constitutional Factor in Gynecology and Obstetrics. C. P. Noble, Philadelphia.—p. 98.
175 Treatment of Infected Gunshot Wounds. J. R. Eastman, Indianapolis.—p. 108.
176 *Reestablishing Patency of Ureter in Pyonephrosis by Catheter. M. Molony, San Francisco.—p. 111.
177 Enteroplasty for Relief of Sigmoid Obstruction. W. F. Fowler, Rochester, N. Y.—p. 113.
178 Intranasal Treatment of Frontal Sinusitis. R. H. Good, Chicago.—p. 115.
179 Prostatectomy. Clinical Study of Fifty Cases with Particular Reference to Postoperative Treatment. W. B. Dakin, Los Angeles.—p. 120.
180 Central Eyed Needle in Surgery. P. P. Cole, London.—p. 122.

160. **Removal of Stones from Kidney.**—From Jan. 1, 1898, to Dec. 31, 1915, 450 patients with stone in the kidney were operated on in the Mayo Clinic (484 operations). Three died, a mortality of 0.6 per cent. This percentage represents the number of patients who died in the hospital without regard to cause of death or length of time after operation. Mayo says that the results achieved were due more to the painstaking care with which the diagnoses were made, the function of the kidney estimated, and the patients prepared for operation, than to any purely technical feature of the procedures employed in removing the stones. The presence of the stones was shown by the roentgenogram. By means of the pyelogram the urologist was able to say with certainty whether the stone was in the pelvis, calyx, or parenchyma of the kidney. Forty-eight patients (9.9 per cent.) had stones in both kidneys. In these cases, the second kidney was found pyonephrotic, a condition necessitating nephrectomy. In three instances stones were found in a single kidney and in two instances in a horseshoe kidney. The condition was diagnosed before operation as nephrolithiasis in an anomalous kidney. In one case of horseshoe kidney the stone had caused a pyonephrosis in the left half. This portion of the kidney was resected and recovery followed. Renal stones were found in two patients with duplication of the renal pelves. In both, the caudal pelvis was involved; in one, a pelviolithotomy sufficed but in the other a resection of the upper half of the kidney was necessary.

There were two cases of stones in the remaining kidney after nephrectomy. Multiple stones in the parenchyma of the kidney are prone to recur. In one case in which Mayo removed twenty-eight stones from one kidney and twenty-six from the other, he reoperated on the patient within two years for stones in both kidneys. The following operations were performed: pelviolithotomy, 206 cases; combined pelviolithotomy and nephrolithotomy, 34 cases; nephrolithotomy, 40 cases and nephrectomy, 204 cases.

164. **Hematocolpos in Woman of Seventy-Four.**—In a woman of 74 who had menstruated normally until thirty-five years previously, severe pain, pointing to obstruction of the urinary flow, led to the detection of a large fluctuating tumor which filled the entire plevis and extended upward almost to the umbilicus. The vagina was occluded by senile atresia. Laparotomy in spinal anesthesia revealed the tumor to be an enormous hematometra and hematocolpos with bilateral hematosalpinx. Panhysterectomy was performed successfully by Gellhorn, and the tumor, which was connected with the vagina only by loose connective tissue, was removed unopened. Convalescence was undisturbed; the patient left the bed on the twelfth day after operation but succumbed to an embolism on the fifteenth day. The cause of bleeding into the occluded genital tract was an adenocarcinoma of the body of the uterus.

169. **Differential Diagnosis of Pyuria.**—If urine is not obtained by ureteral catheterization the catheter is withdrawn from the ureter, and a second catheter passed. In the event of persistent failure of urinary flow, an empty Luer syringe is applied to the large end of the ureteral catheter which had been used first, and the catheter contents are forced out on a glass side. Curtis says that examination of this material yields a diagnosis in most "dry tap" pus infection cases. Usually there is considerable stringy mucoid material in addition to other pathologic constituents. This procedure has several times clinched a diagnosis when it would otherwise have been impossible, or possible only by exclusion.

170. **Hemostasis by Interposition of Muscle, Fat and Fascia.**—Risley reports the results of experimental work on the use of these tissues in stopping hemorrhage in such organs as the kidney and liver, when other forms of hemostasis are either impossible or undesirable. The interposed tissue is taken from the patient's own body at the time of operation.

Muscle tissue is the ideal hemostatic. In order most effectively to stimulate fibrin formation it should be cut jaggedly with a knife and not crushed as with a scissors cut, nor should its hemostatic properties be extracted by its contact with salt solution. Fascia and fat act to a more limited degree as hemostatics; fascia more than fat, but both very much less than muscle. In the liver, however, both fascia and fat seem at times to be very efficient hemostatics. These tissues readily unite to the bleeding surface to which they are sewed and form a smooth, solid scar. Microscopic examination of specimens removed at varying intervals after operation show in Risley's series absence of sepsis, a beginning transformation of muscle into fibrous tissue, a partial absorption of fat and change into fibrous tissue, no change in fascial transplants, in practically every case a firm blending of the interposed tissue with the cut surface of the parenchymatous tissue, the formation of new blood channels and no degenerative changes of any note.

176. **Reestablishing Patency of Ureter in Pyonephrosis.**—In Molony's case a catheter was passed into the kidney with the aid of the cystoscope and brought out through a nephrostomy wound in the loin. To the point of this was sewed a No. 11 catheter. After removing the cystoscope, traction was made on the small catheter bringing the large one down through the kidney and bladder and out through the urethra. The catheter was drawn out as far as possible so that the largest diameter of it was in the pelvis and upper portion of the ureter. Six or 8 inches of the tip of the catheter were cut off close to the urethra and a strong plaited silk ligature was attached to the cut end. By pulling on the upper end in the wound the lower end was drawn up into the bladder with the plaited silk ligature hanging out through the urethra. This piece of silk ligature caused no irritation in the urethra, it also gave control from both ends when it was necessary to move the catheter up or down and adjust the lower end of it so as not to irritate the neck of the bladder. The catheter in the kidney, the ureter and bladder caused no inconvenience whatever, and the bladder was irrigated with solutions daily by inserting the nozzle of an irrigator into the upper end of the catheter projecting out of the wound. The large catheter was changed every few days by inserting an extra long wire stilet through it, withdrawing the catheter and inserting a fresh one over the stilet. The catheter was removed after three weeks. The patient increased in weight and vigor and was able to go about soon after the catheter was removed. By inserting the nozzle of an irrigator into the fistula, a pint of solution could be run through into the bladder in a few minutes, thus proving the patency of the ureter.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

December, 1916, XXI, No. 7

1 Roentgen Ray Appearances in Gas Gangrene. A. Savill.—p. 201.
2 Recognition of Gas within Tissues. H. M. Berry.—p. 213.
3 Sarcoma and Roentgen Rays. G. F. Gaarenstroom.—p. 220.

British Medical Journal, London

December 30, 1916, II, No. 2922

4 Bacillemia Due to Infection with B. Fecalis Alcaligenes. C. H. Shearman and T. G. Moorhead.—p. 893.
5 *Cytologic Examination of Joint Fluid as Aid to Prognosis in Penetrating Gunshot Wound of Knee. W. S. Lazarus-Barlow.—p. 895.
6 Psychanalysis. C. A. Mercier.—p. 897.
7 Certain Points Observed with Regard to Cerebrospinal Fever in Belfast Military District. W. J. Wilson, R. B. Purce and G. Darling.—p. 900.

5. **Cytologic Examination of Joint Fluid.**—Starting from the point that normal synovial fluid of the knee joint is acellular, Lazarus-Barlow says that when gunshot injury occurs and hemorrhage takes place into the synovia the ratio of leukocytes to erythrocytes found immediately must be that of normal blood, say, one leukocyte to 500 red cells. With the subsequent migration of leukocytes due to inflammatory reaction the number of white cells goes up. Thus he has notes of cases in which the ratios of leukocytes to red blood corpuscles were 3 : 500, 5 : 500, 9 : 500, 25 : 500, 50 : 500, 70 : 500, 125 : 500, 1,000 : 500. Further, normal blood contains roughly 70 per cent. polynuclears, 30 per cent. mononuclears, and the leukocytes found in the mixture of synovial fluid and blood immediately after the injury must be present in these ratios. If the subsequent migration of leukocytes be called forth by an "aseptic irritant" the ratio will remain unchanged or the percentage of mononuclears may ever increase. If the migration be called forth by a "bacterial irritant" the polynuclear percentage will increase. Hence, if a sample of knee joint fluid removed from a patient in a hospital shows, for example, 500 reds to five whites, and a differential count of the whites shows 50 per cent. polynuclears and 50 per cent. mononuclears, it differs fundamentally from another sample showing, for example, one red to four white, when the whites on differential counting are 99 per cent. polynuclears and only 1 per cent. mononuclears. The case from which the first sample was taken is clearly one in which infection is absent or negligible, the second is one in which it has undoubtedly occurred. In all Lazarus-Barlow has examined fluids and given prognoses in eighty-nine cases.

Indian Journal of Medical Research, Calcutta

October, 1916, IV, No. 2

8 Tests for Certain Narcotic and Anesthetic Drugs. E. H. Hankin.—p. 237.
9 Epidemiology of Malaria Fever in Malay Peninsula. C. Strickland.—p. 256.
10 New Species of Protanopheline from Malaya, Myzorhynchus Hunteri. C. Strickland.—p. 263.
11 Umbrosus-Like Anopheline from Malaya—Myzorhynchus Novumrosus. C. Strickland.—p. 271.
12 Investigation into Ankylostome Infection in Eleven Thousand Inhabitants of Darjeeling District of India. C. Lane.—p. 274.
13 *Gland Index in Tuberculosis. A. Lankester.—p. 285.
14 Some Facts Relating to Birth and Marriage Rates Among Brahmins. W. F. Harvey.—p. 303.
15 Birth Rates, Marriage Rates, Fertility and Proportionality of Sexes at Birth Among Some Fighting Indian Communities. W. F. Harvey.—p. 313.
16 Effect of Inoculating Rabbits with Cholera Vaccine Prepared in Various Ways. C. J. Fox.—p. 335.
17 Scurvy in Zhob, Baluchistan. A. L. Sheppard.—p. 340.

13. **Gland Index in Tuberculosis.**—There is abundant pathologic evidence to prove the frequency of enlargement of the bronchial and cervical glands in small children in cases of early pulmonary tuberculosis, and also as a primary manifestation of the disease in cases in which the lungs have not been affected. It would seem probable, moreover, both on clinical and pathologic grounds, that tuberculous infection in small children tends to enter the system via the upper part of the alimentary canal, the mouth, tonsils, fauces, etc., rather than through the respiratory tract. This would explain the frequency with which children exposed in their homes to infection from consumptive parents are found to suffer from tuberculous cervical glands. During the course of Lankester's investigation it was a constantly recurring experience to obtain from schoolchildren, showing glandular enlargement in a marked degree, the clearest possible recent history of tuberculosis contact. No prolonged examination of individual cases was made; the children were placed in lines and examined in succession by the two hands, one on each side of the neck. The submaxillary and cervical regions alone were palpated and all cases were marked as negative in which enlargement of the lymphatic glands was not instantly apparent. It was found that after the age of 12 years the percentage of cases of enlarged glands rapidly declined, showing that the enlargement itself is in most cases—whatever be its cause—of a temporary nature. The percentage of such cases among about 240,000 children examined in 1913, was 10.5, falling to 8.8 in 1914.

Journal of Laryngology, Rhinology and Otology, London

December, 1916, XXXI, No. 12

18 Etiology and Pathogenesis of Otogenic Sinusphlebitis. H. Mygind.—p. 497.
19 Choanal Polypus. W. S. Syme.—p. 515.
20 Case of Herpes Zoster Oticus. A. Ryland.—p. 518.
21 Von Bezold's Mastoiditis. H. L. Whale.—p. 520.

Journal of Tropical Medicine and Hygiene, London

December 15, 1916, XIX, No. 24

22 Meteorology of Malaria. M. D. O'Connell.—p. 285.

Lancet, London

December 30, 1916, II, No. 4870

23 Hygienic Lessons of War. H. R. Kenwood.—p. 1083.
24 Legends and Lore of Genesis of Healing Art. R. Crawfurd.—p. 1086.
25 Warfare on Brain. E. F. Buzzard.—p. 1095.
26 *Plant Hairs as Pseudoparasites. R. Donaldson and R. C. McLean.—p. 1100.
27 Outbreak of Cerebrospinal Meningitis. T. D. Halahan.—p. 1102.

26. **Plant Hairs as Pseudoparasites.**—An examination of the stools of a patient admitted to the hospital on account of diarrhea revealed the presence of large numbers of bodies which at the first glance resembled ancylostoma, and in addition small bladder-like structures. The former had a hooked pointed tip, while the other end, which was somewhat expanded, showed the presence of small spines. The whole appearance suggested the male form of ancylostoma. The size, however, was entirely against its being such, the largest being roughly 300 microns. Moreover, no oral aperture and no evidence of any internal organs could ever be detected and no ova could be found. The patient's blood, while showing a slight degree of anemia, gave no evidence of eosinophilia. A consideration of the foregoing facts pointed to the bodies as being plant hairs, and after further investigation they were identified as the grapnel hairs of the common runner bean.

Practitioner, London

January, XCVIII, No. 1

28 Twilight Sleep. H. Croom, H. Williamson, C. Berkeley and J. S. Fairbairn.—p. 1.
29 Treatment of Placenta Praevia. J. B. Hellier.—p. 25.
30 Some Experiences in Local Anesthesia. B. P. Campbell.—p. 30.
31 Anatomic Relations of Optic Nerves and Chiasma to Sphenoid Bone. G. F. C. Wallis.—p. 41.
32 Ultraviolet Light in Medicine and Surgery. F. S. Hawks.—p. 53.
33 Diagnosis in Cases of Massive Splenomegaly. G. Ward.—p. 62.
34 Beriberi. G. M. Findlay.—p. 69.
35 Difficult Dislocations in General Practice. W. Paulson.—p. 79.
36 Galvanometric Diagnosis and Dielectric Therapy. G. Mahomed.—p. 81.
37 Case of Traumatic Winged Scapula. S. H. Bennett.—p. 85.
38 Case of Egg Poisoning and Asthma. H. S. Palmer.—p. 88.

Paris Médical

December 9, 1916, VI, No. 50, pp. 513-528

39 Primary Infectious Febrile Jaundice. (L'ictère infectieux primitif à phénomènes généraux prédominants.) M. Garnier.—p. 513.
40 *Benefit from Intravenous Vaccine Therapy of Typhoid. (Vaccinothérapie de la dothiénentérie.) M. Petzetakis.—p. 516.
41 Skull Wounds from Small Scraps of Shells. (Les lésions du crâne par petits éclats d'obus; leurs complications.) A. Martin.—p. 521.
42 Displacement of the Carpus with Fracture of the Radius. (Subluxation en avant et en dehors du carpe gauche avec fracture cunéenne externe du radius et fracture de la base de l'apophyse styloide du cubitus.) A. Mouchet and R. Toupet.—p. 526.

December 23, No. 52, pp. 545-560

43 *Attenuated or Latent Forms of the Myocarditic Syndrome in Cervicosciatic Rheumatism. P. Nobécourt and Peyre.—p. 545.
44 Treatment in the Field Hospitals at the Front of Wounds of the Soft Parts. (Traitement des plaies des parties molles dans les ambulances de l'avant.) A. Schwartz.—p. 546.
45 *Sign of Glossopharyngeal Paralysis. M. Vernet.—p. 551.
46 Simplified Technic for Quantitative Test for Sugar. (Dosage du glucose.) P. Vansteenberghe and L. Bauzil.—p. 556.

40. **Vaccine Therapy of Typhoid.**—Petzetakis reports in detail two cases of typhoid in which vaccine therapy was applied by the intravenous route, without any other measures. The patients were men of 23 and 30 and the fever subsided, in both, the first or second day after the first or second intravenous injection of the vaccine. Similarly prompt results were obtained in five cases of typhoid in another's service, given the intravenous treatment. The charts show the unmistakable influence on the fever from the vaccine given the eighth and thirteenth day in one case and the tenth day in the other.

43. **Attenuated Myocarditic Symptoms with Sciatic Neuralgia and Cervical Rheumatism.**—Nobécourt and Peyre have encountered a number of cases in soldiers in which sciatica and meningeal reactions, manifest in the cerebrospinal fluid, were accompanied by rheumatic disturbances in the neck and dilatation of the heart, without other symptoms of latent myocarditis. Such cases are usually labeled cerebrospinal meningitis at first, but this is rendered untenable by the rapid improvement under rest in bed, lumbar puncture and sodium salicylate. No symptoms attract attention to the heart, but it will be found enlarged and the patient should be given a leave of absence for convalescence for a month or two. After this, if the heart is still enlarged, whether the beat is regular or not, the man cannot be considered cured, and should be sent to a sanatorium to recuperate further. The same principle should be applied to convalescents from acute articular rheumatism, typhoid or paratyphoid, scarlet fever, etc.

45. **Glossopharyngeal Paralysis.**—Vernet states that paralysis of the superior constrictor of the pharynx is generally responsible for difficulty in swallowing solid food. This muscle is innervated by the glossopharyngeal nerve. Paralysis of the pneumogastric or spinal nerve does not entail this difficulty in swallowing solids. Another feature of paralysis of the superior constrictor is a curtain movement of the posterior wall of the pharynx from the affected side toward the sound side. There is also disturbance in the sense of taste of the posterior portion of the tongue when the glossopharyngeal nerve is profoundly altered or has been severed. The diagnosis of glossopharyngeal paralysis may aid in determining the site and extent of other, associated paralysis. His chart showing his conception of the innervation of the pharynx differs in several respects from those of the textbooks.

Presse Médicale, Paris

December 18, 1916, XXIV, No. 70, pp. 577-592

47 Work in Munitions Factories as Affecting Pregnancy and Childbirth. E. Bonnaire. Title page.
48 *Pellagra. L. Sambon.—p. 577.
49 Spontaneous and Immediate Obliteration of Large Arteries of the Limbs in War Wounds. P. Bertein.—p. 581.
50 Fracture of Lower Jaw. (Les fractures de l'angle et de la branche montante du maxillaire inférieur.) A. Herpin.—p. 583.
51 Continuous Extension for Stump after Amputation. (Extension continue sur les moignons d'amputation.) A. Binet.—p. 584.
52 Principles for Apparatus for Reeducating the Maimed. (Conception nouvelle des appareils de rééducation.) Privat and Belot.—p. 584.
53 Present Status of Etiology and Prophylaxis of Epidemic Poliomyelitis. M. Romme.—p. 585.

December 21, No. 71, pp. 593-600

54 *Recurring Tuberculous Pleurisy. (La pleurite tuberculeuse à répétition. Piéry.—p. 593.
55 Electric Test for the Hearing. (Examen des surdités de guerre. Procédés nouveaux d'acoumétrie.) R. Foy.—p. 595.
56 *Throbbing in Felons, etc. (De la sensation du "doigt qui bat" dans le panaris.) R. Lutembacher.—p. 597.

48. **Pellagra.**—Sambon has maintained for eleven years that pellagra is probably an infectious disease, possibly the work of some protozoon, which is transmitted by the sting of some winged insect. Recently he has studied pellagra in the various foci of pellagra in Europe, the United States and the Antilles, and he has established its presence in the British Isles, in British Guiana, and in several parts of France. He has noted the prevalence of pellagra in quite young children in the endemic foci, also the great importance of the disease as a cause of insanity. He says that the history of pellagra as he traces it through the centuries and in different countries shows that it occurs in certain regions, like sleeping sickness, and that those endemic foci remain permanent. Outside of the endemic foci the disease can neither be contracted nor transmitted. No instance is known, he affirms, of transmission of the disease in the hospitals or asylums to the medical or nursing force or other inmates, or from a pellagrin to her nursing infant. In the endemic foci the disease is inevitably contracted, and usually within the first year. The period of incubation may be less than two weeks. The youngest pellagrin he has encountered was a 3 months babe. The recurrences of the disease are like those of malaria; the flare-up may occur in March while the new cases develop later, in April, May or June. In conclusion Sambon remarks that pellagra was known in Europe long before the introduction

of corn from America, and the geographic distribution of the cultivation or consumption of corn does not coincide with the distribution of pellagra, while prophylaxis based on the corn theory has proved futile.

54. **Recurring Tuberculous Pleurisy.**—Piéry calls attention to this benign and common form of tuberculosis. He discusses the factors, the symptomatology and the pathogenic import of this affection which subsides in two or three weeks under proper treatment, but is liable to return again and again when the same etiologic factors are encountered anew. In about 25 per cent. of the cases there is a little patch of cortical pneumonia below the pleurisy. The part of the pleura involved is usually at one or both of the fissures of the lungs, and these fissures should be ausculted when we have a patient with symptoms suggesting bronchitis.

56. **The Throbbing in a Felon, etc.**—Lutembacher ascribes the throbbing in a felon and in certain abscesses, headaches, etc., to the concentric pressure from the edema which raises the arteriole pressure to the level of the diastolic pressure, so that the arterial walls vibrate with each systole.

Progrès Médical, Paris

December 20, 1916, XXXI, No. 24, pp. 233-244

57 *The Scientific Literary Output of the War. (Des enseignements de la guerre germanique sur le front français.) E. Delorme. —p. 233.
58 *Treatment of Ulcerative Sore Throat and Stomatitis. (A propos du traitement de l'angine de Vincent et des stomatites ulcéromembraneuses.) F. Ramond.—p. 241.
59 Treatment of Acute Gonorrhea. (Quelques détails pratiques sur le traitement de la blenorrhagie aigue aux armées.) Carle.—p. 242.
60 Deforestation and Depopulation in Certain Districts in France. (La dépopulation de nos campagnes.) A. Satre.—p. 243.

57. **The Scientific Literary Output of the War.**—Delorme is medical inspector general of the French army, and he remarks that not only the unprecedented number of the wounded but the fact that three fourths of all the physicians and surgeons of France have been engaged in war surgery, and the stability of the fighting line, have rendered possible the patient study of data and control of methods. Repair of wounded nerves soon became the impassioned study of surgeons and neurologists, as the frequency of paralysis attracted attention. He adds, "The number of stiff and ankylosed joints soon roused surgery to feel the responsibility for its previous inexcusable disdain for long treatments. Surgery even now will not admit the share in these deformities that belongs to apparatus which undoubtedly simplified surgical treatment at first but too often compromised the ultimate outcome. However this may be, the results we see, and often they are regrettable. Mechanotherapy has shown itself to be merely palliative." Delorme then reviews the works that have been published in book form, and in the medical and surgical journals, mentioning in detail the more important communications on war surgery.

58. **Treatment of Ulcerative Stomatitis and Vincent's Angina.**—Ramond cleans out each ulceration mechanically, then applies silver nitrate. The patient gargles first with a 1 per cent. solution of cocain. In five minutes the ulceration can be cleaned out. If there is slight hemorrhage this can be arrested by gargling with a solution of hydrogen dioxid. The cavity of the ulcer is then dried with cotton and then touched with a tampon moistened with a 1 : 50 solution of silver nitrate. The procedure is not painful but it has to be repeated daily for two or three days. The technic is the same for ulcerative stomatitis except that he sometimes uses a hard brush instead of the blunt curet to clean out the ulceration.

Revue de Chirurgie, Paris

1916, XXXV, No. 6, pp. 781-914

61 *Classification and Treatment of Crippling Callus Production in the Ankle. (Cals vicieux du cou-de-pied.) J. Tanton.—p. 781.
62 Extraction of Projectiles in the Pelvic Region. G. Léo.—p. 830. To be continued.
63 *Primary Tumors of the Aponeuroses. G. Bolognesi.—p. 876.
64 Ligation of Carotid Artery or Its Branches for War Wounds of Vessels; Eleven Cases. (Plaies vasculaires des régions cervicales et cervico-faciales.) J. Gatellier.—p. 899.

61. **Deforming Callus of the Ankle.**—Tanton remarks that any vicious consolidation of the ankle upsets the balance of the foot on the leg either sideways or forward and back, and there are numerous varieties of each form of disturbance. Radiography is indispensable, and he explains how to interpret the findings. Valgus flatfoot includes deviation of the axis of the foot as well as the sinking of the plantar arch, and it is important to detect even minimal disturbance of the kind as a guide to treatment. It is revealed by the imprint of the two feet side by side. The sagittal planes of the two feet then form an angle of 14 degrees, the two lines meeting at a point just as many inches back of the heels as the feet are long. A perpendicular line between the diverging lines shows the slightest deviation from normal. Another test is by outlining the foot with a pencil and then working the pencil under the sole to outline the region where the sole is not in actual contact with the paper on which it is standing.

63. **Primary Tumors of the Aponeuroses.**—Bolognesi analyzes the cases on record of a primary tumor developing in the membrane of the aponeurosis and reports the details of three cases of the kind. One was an ossifying fibroma of the thigh in a farmer of 22. The second was a giant cell sarcoma of the fascia lata of the left thigh in a woman of 77. The third was a hard fibroma of the left iliac aponeurosis in a young woman. The tumors had been first noticed from two to four months before their removal; the first patient had been kicked in the region by a horse and the tumor had been noticed soon afterward.

Berliner klinische Wochenschrift

November 20, 1916, LIII, No. 47, pp. 1261-1284

65 *Principles for Management of Kidney Disease. (Richtlinien in der Klinik der Nierenkrankheiten.) F. Umber.—p. 1261.
66 Difference in Agglutinating Property of Dysentery Bacilli Strains. (Unterschiede in der Agglutinabilität verschiedener Ruhrstämme und deren Bedeutung für die serologische Diagnose der Ruhr.) L. Dünner and I. Lauber.—p. 1266.
67 Case of Hereditary Progressive Dystrophy of Muscles. (Fall von hereditärer progressiver Muskeldystrophie mit Beteiligung der Gesichts-, Lippen- und Zungenmuskulatur.) C. W. Rose.—p. 1267.
68 *Proportion of Surviving Children Grows Less with the Number of Children in a Family. (Beitrag zu der Frage, ob Kinderzahl und Kindersterblichkeit zusammenhängen.) C. Hamburger.—p. 1269.
69 Physical-Therapeutic Measures for the War Sick and Wounded. (Ueber den jetzigen Stand der Anwendung physikalischer Heilmethoden für Kriegsbeschädigte.) A. Laqueur.—p. 1271.
70 The Problem of the Children from Rape. (Das Kriegskinderproblem.) K. Bauchwitz.—p. 1281; (Erwiderung.) H. Lieske. —p. 1282.
71 Special Diet Food Cards Seldom a Reliable Basis for Morbidity Statistics. (Nahrungsmittelatteste und Statistik.) H. Kohn. —p. 1283.

65. **Principles for Management of Kidney Disease.**—Umber classifies pathologic kidneys in three groups, 1, those with degenerative processes in the epithelial segments of the kidney—the nephroses; 2, those with inflammatory processes in the glomeruli, and 3, those with primary arteriosclerotic changes in the smaller kidney vessels. The prognosis in the first type is good; in only three of his forty-eight cases of nephrosis did the condition progress to shriveling (amyloid contracted kidney in two of the three). There was neuroretinitis in five of his 170 cases of acute glomerular nephritis, although in two of the five the kidney affection had subsided. Acute glomerular nephritis usually subsides under proper treatment; otherwise it passes into a chronic phase. This acute type is the one observed in soldiers on active duty; cold and wet predispose to it, but the actual cause is toxic action, streptococci and certain bacteria having apparently a special affinity for the glomeruli.

He insists that the degree of albuminuria is of no import for the prognosis. The highest albumin content is found in the first, the mildest and most curable type, the nephroses—which in their acute and subacute phases correspond to the old conception of parenchymatous nephritis. Albuminuria is merely a sign that the kidney is not entirely intact. It has absolutely no bearing on the prognosis in comparison to the tests of the diluting and concentrating power of the kidney, the retention of nitrogen, and the blood pressure findings. The same may be said of the formed elements in the urine;

the sediment is most striking in the first type, the nephroses, but it is of little import for the prognosis unless blood corpuscles in the kidney urine suggest involvement of the glomeruli.

This classification allows rational treatment as, in sparing the kidney, all we need to spare is the special function which has become impaired. In the first type, the nephroses, the elimination of water and salt is defective and there is a tendency to edema. Consequently in this form it is better to refrain from attempts to flush out the kidneys by copious ingestion of water. Salt also should be restricted. The trouble is extrarenal, the vessels outside of the kidneys having become abnormally permeable under toxic influences. Restriction of water is the more rational under these conditions as the sewerage power of the kidneys is not impaired otherwise. Restriction to milk is wrong, as there is too much salt and fluid in the milk, if enough milk is taken to supply the needed calories; 3 liters of milk contain 5 gm. of salt. With chronic nephroses, the elimination of water proceeds approximately normally, so the intake need not be reduced.

In the second type, glomerular nephritis, when acute, he orders 1.5 liters of fluid a day. In the second stage of the chronic form, manifested by albuminuria and gradually rising blood pressure, dietetic measures have no influence although excesses in eating and drinking should be avoided. In the third stage, fluids should be given up to 3 liters a day to postpone uremia unless there are cardiovascular contraindications. The same applies also to the malignant form of the third type, sclerosis of the finer kidney vessels. The benign type does best with restriction of fluids, as this spares the heart and peripheral vessels; he warns against more than 1 or 1.5 liters of fluid a day in this type. The first type, the nephroses, do not require restriction of albumin in the diet, but this is imperative in glomerular nephritis at all stages and in the malignant form of the third type. It is astonishing how the azotemia and with it the subjective disturbances subside when the intake of nitrogen is restricted. The albumin content of a liter of milk—5.5 gm. nitrogen—is more than azotemic nephritics can stand. From 3 to 5 gm. a day is the limit for them. The salt should be limited to 5 gm. a day; this amount can be taken in acute glomerular nephritis as well as in azotemic and sclerotic nephritis, but it is far too large in the first type, the nephroses, and also when glomerular nephritis is associated with a nephrosis, unless there is no tendency to edema.

Venesection is useful in azotemic kidney disease, especially when combined with intravenous hypotonic saline or a 41 per cent. grape sugar solution. With uremic convulsions from swelling of the brain, when there is retention of water and salt, as in glomerulitis plus nephrosis, lumbar puncture is the sovereign remedy.

In the first type, the nephroses, the retention of salt and water is due to extrarenal causes, to abnormal permeability of the vessels elsewhere. We know of no drugs that will modify this toxic permeability, but it corrects itself, often suddenly and unexpectedly, so that the fluids pass on into the kidneys and diuresis is increased, regardless of what drugs may or may not have been given. This, he exclaims, is unfortunately often attributed to the medicines that have been given. Hence the vogue of diuretics. Umber thinks that their efficacy in kidney disease without cardiovascular disturbance is but slight. They may increase the output of water a little in azotemic kidney disease, but the elimination of waste products is not increased by them. The drugs given are also liable to be retained themselves and have dangerous cumulative effects. This is particularly menacing with digitalis and strophanthin in the malignant form of the arteriosclerotic kidney.

He defines the clinical picture of the first type, the nephroses, as normal or nearly normal blood pressure, no retention of nitrogenous waste and no secondary cardiovascular disturbances, but extrarenal retention of salt and water, the concentrating and diluting power of the kidney unimpaired. The third type, the arteriosclerotic, in which the finer kidney vessels are the seat of primary sclerotic changes, may be merely one part of a general tendency to arteriosclerosis. In the benign form the kidney disturbances are overshadowed by those from the arteriosclerosis in the heart or brain, but still they are responsible for the high blood pressure, with slight or no albuminuria, and for the tube casts. When the kidney disturbances predominate, we have the malignant form, the chronic interstitial nephritis of the old school, true contracted kidney in its narrower sense. Analysis of his 150 cases of sclerotic kidney has demonstrated that the outcome of the cases—whether they are to be benign or malignant—depends on whether the glomeruli get a chance to functionate properly or not. When they can work properly, the kidney trouble is of minor importance, and the patient dies at last from the heart or brain arteriosclerosis.

68. **Death Rate in Relation to Birth Rate in Families.**—Hamburger tabulates statistics from 1,042 families in 1908 and 1,047 in 1913 showing the number of conceptions and of children surviving to the sixteenth year. The figures show a constant decline from over 76 per cent. surviving to the sixteenth year in families with one child and over 66 and 72 per cent. in families with two children, to only 30.66 and 30.37 surviving in the families with most numerous conceptions. The number of children that died also showed a constant increase from the one and two children families to the more numerous families.

Deutsche medizinische Wochenschrift, Berlin

November 30, 1916, XLII, No. 48, pp. 1469-1500

72 Suture and Plastic Operations on the Eyeball Immediately after Injury. (Die Erfolge der Augapfelnaht und -deckung zur Erhaltung des Auges bei frischen Augapfelverletzungen.) F. F. Krusius.—p. 1469.
73 Visual Disturbances after Skull Injuries. (Sehstörungen bei Schädelverletzungen.) T. von Mutschenbacher.—p. 1471.
74 *Ostitis of Paratyphoid Origin in Soldiers. (Zur Frage der Ostitis bei Kriegsteilnehmern.) R. Stephan.—p. 1473.
75 The Question of Simulation in Soldiers. G. Voss.—p. 1476.
76 "Five-Day Fever." (Zur Frage des Fünftagefiebers.) Schwinge.—p. 1477.
77 Elimination of Uric Acid in Disease of Glands with an Internal Secretion. (Ueber Harnsäureausscheidung bei einigen Fällen von Blutdrüsenerkrankungen.) J. Nowaczynski.—p. 1478. Concluded in No. 49, p. 1510.
78 *False Rust's Disease. (Malum Rustii.) Hnatek.—p. 1480. Commenced in No. 47, p. 1445.
79 Stereoscopic Localization of Projectiles. (Ueber den Stereoplanigraphen und seine Verwendung zur Lagebestimmung von Geschossen.) Drüner.—p. 1482.
80 Field Bedstead. (Eine Feldbettstelle.) K. Laubenburg.—p. 1486.

74. **Paratyphoid Ostitis.**—Boring pains in the legs, suggesting ostitis, accompanied by leukopenia and relative lymphocytosis, seem to be a tardy phase of paratyphoid B infection, testifying to renewed toxic injury of the blood-producing system. Stephan relates that only 10 per cent. of the numerous cases of paratyphoid B that he has encountered presented the classic clinical picture of abdominal paratyphoid or paratyphoid gastro-enteritis. In 80 per cent. the disease ran a protracted course indicating a chronic infection of the blood-producing system, the lymph glands, spleen and bone marrow. In this chronic course a wave of renewed toxic action on the bone marrow may cause pains suggesting a new and different infectious process in the bone involved. This may occur without any rise in temperature, but the number of leukocytes drops and the proportion of lymphocytes increases. Stephan suggests that one reason for the different course of infectious diseases in military and civilian circles is that direct contact is mainly responsible for the infection in army circles, while elsewhere contamination of food, etc., must be incriminated.

78. **Gumma and Gout Involving Upper Vertebrae.**—The first instalment of Hnatek's communication was summarized on page 230. He here describes a case of supposed Rust's disease in a man of 35 who had had for four months pains and stiffness in the suboccipital vertebrae. It proved to be the work of a syphilitic gumma and, after this had retrogressed under specific treatment, a defect was left in the arch of the atlas. In another case described, a woman of 48 had been subject to intense migraine from childhood. At the menopause it had become transformed to neuralgia in the occiput, radiating to the temples. Typical attacks of gout had occurred at times during the last ten years, mostly in the hands and arms, one joint becoming affected as another returned to

approximately normal, each attack dragging along for weeks. Finally the occiput region became very painful; any pressure on the atlas region caused intense pain, as also any movement of the head. This state of things continued for eight days and then gradually subsided to complete disappearance of all local symptoms in this region by the end of six weeks. Hnatek says that the whole trouble was thus shown to be merely a gouty attack, localizing at this point. The woman took antineuralgics and electric treatment, the high frequency current. Gout, syphilis and articular rheumatism hence must be excluded before we label a case as Rust's disease.

Medizinische Klinik, Berlin

November 26, 1916, XII, No. 48, pp. 1249-1274

81 *Stomach and Bowel Trouble from Standpoint of Fitness for Military Service. (Ueber die militärische Dienstverwendungsfähigkeit der Magen- und Darmleidenden.) L. Schüller.—p. 1249.
82 *Venesection plus Autoserotherapy. (Eigenserum und Aderlass—Lehre und Anwendung.) B. Spiethoff.—p. 1252. Commenced in No. 47, p. 1223.
83 Cerebellar Ataxia after Diphtheria. Serog.—p. 1255.
84 *Austin's Water Test Meal for Examining the Secretory Function of the Stomach. (Untersuchungen über die Wassermahlzeit nach Austin zur Bestimmung der sekretorischen Leistungsfähigkeit des Magens.) B. Brendle.—p. 1257.
85 Improved Technic for Conservative Amputation of Knee and Foot. Stern.—p. 1258.
86 Treatment of Stump Ulceration. (Zur Behandlung der Stumpfgeschwüre.) E. Fuchs.—p. 1259.
87 Improved Technic for Artificial Leg. (Die Macholdprothese.) R. Pressburger.—p. 1260.
88 Indications for Obstetric Operations by the General Practitioner. (Zur Indikationsstellung bei den geburtshilflichen Operationen des praktischen Arztes.) H. Walther.—p. 1261. Concluded.

81. **Gastro-Intestinal Disease and Fitness for Military Service.**—Schüller has been impressed by the rarity of nervous dyspepsia among the troops on active service. Even those previously subject to it seem to feel well and stand the conditions on the firing line as well as others. Excessive gastric secretion does not impair military efficiency if an ulcer can be positively excluded. He has found anacidity much more common than in peace, as also gastric ulcer, active or healed. A number of men with gastro-enterostomy have gone through the campaign as efficiently as others. He has examined about a hundred.

82. **Venesection Plus Autoserotherapy.**—The first part of Spiethoff's article was reviewed in these columns, January 27, p. 310, abstr. 44. He here presents data which confirm that robust persons show no permanent consequences contraindicating rapidly repeated venesection. One robust young woman with eczema but otherwise healthy, had a red blood count that ranged from 4,136,000 to 4,872,000 with 80 per cent. hemoglobin, in the course of the third day, after withdrawal of 100 c.c. blood seven times within thirteen days. The white count was 12,000 at first and 9,200 at the last. For less robust persons, not over 30 or 50 c.c. of blood should be removed. On the whole the effect seems to be a modification of the general organism or of certain parts of it. This is most evident when drugs and other measures, which had lost all power to induce a reaction on the part of the tissues, reacquired therapeutic efficiency after reinjection of the patient's own serum or injection of sodium nucleinate. The benefit from venesection and the reinjection of serum is best explained by stimulation of the production of antibodies and their mobilization.

84. **The Water Test Meal.**—Brendle remarks that the difficulty in obtaining white bread and tea for the Ewald test meal has led to the adoption at the Freiburg policlinic of Austin's water test meal in testing stomach functional capacity. In 150 cases the parallel findings with the Austin and Ewald test breakfasts were compared in five sets of tests. The findings confirmed that a single water test breakfast according to Austin is sufficient for determination of the chemistry of the stomach. Nervous inhibition, with achylic findings, is more liable to be induced with the Austin than the Ewald-Boas technic. But this can be warded off more or less completely by addition of raspberry juice to render the test breakfast more palatable, and giving the patient something to chew on and swallow, such as a malt bonbon. It is a great advantage of the Austin method that bile, blood, relics of food, etc., in the stomach content show up much better, and further tests, like Salomon's test for albumin, can be more easily applied. Brendle uses 100 c.c. of water plus two tablespoonfuls of raspberry juice. The malt bonbon is calculated at 10 gm.

Münchener medizinische Wochenschrift, Munich

November 14, 1916, LXIII, No. 46, pp. 1613-1648

89 Silver Preparation Salve in Treatment of Vaginal Gonorrhea. (Behandlung der Frauengonorrhöe mit Protargolsalbe.) E. Kuznitzky.—p. 1613.
90 *The Sugar in the Blood and Dietetic Treatment in Addison's Disease. (Blutzucker und Diättherapie bei Morbus Addisonii.) L. R. Grote.—p. 1614.
91 Paratyphoid A; Two More Cases. (Zur Klinik des Paratyphus A.) F. Loewenthal.—p. 1616.
92 *Symptomatology of Patent Ductus Arteriosus or Botalli. J. Forschbach and M. Koloczek.—p. 1617.
93 Antitoxin Not Required in Nasal Diphtheria as a Rule. H. Schwerin.—p. 1619.
94 Ring through Stump to Aid Control of Artificial Leg. (Einige Bemerkungen über Stumpfbehandlung und über ein neues, durch die Oberschenkelstumpfmuskulatur bewegliches künstliches Bein.) Blencke.—p. 1633.
95 *"Five-Day Fever." (Zur Kenntnis des "Fünftagefiebers"—Febris Wolhynica.) F. Sachs.—p. 1635.
96 Operative Treatment of Contracture of Knee and Elbow. G. Hohmann.—p. 1639.
97 Harpoon Method for Locating Projectiles with Roentgen Rays. (Die Weskische Geschossharpunierung. Leitsätze zu einer schulgemässen Operationstechnik der Geschossentfernung auf Grund praktischer Erfahrungen.) A. Schäfer.—p. 1640.
98 Two Scraps of Shell Entering through One Wound and Diverging. (Schädelgranatsplittersteckschuss, 2 Splitter bei einem Einschussloch.) O. Kiliani.—p. 1642.
99 Superior Advantages of Adjustable Pulley Extension for the Arm while in Bed. (Armbewegungs-Rollenzugapparat im Bett.) Frensdorf.—p. 1644.
100 Treatment of Hysteric Loss of Voice, etc. (Zur Behandlung hysterischer Stimmstörungen.) H. Curschmann.—p. 1644.
101 Management of Functional Neuroses. (Vorschläge zur Versorgung der funktionellen Neurosen.) Schlayer.—p. 1645.
102 *The Wassermann Reaction in Typhus. (Auftreten Wassermanscher Reaktion bei Fleckfieber.) Bittorf.—p. 1646.
103 Suture of Carotid Artery. (Resektion und Naht der A. carotis communis.) v. Parczewski.—p. 1646.
104 Advantages of Grinding Instead of Chopping Bones for Soup Stock. (Vergleichende Untersuchungen von Brühe, die aus zerschlagenen und gemahlenen Knochen hergestellt ist.) O. Gottheil.—p. 1647.

90. **Improvement Under Dietetic Measures in Addison's Disease.**—Grote reports a case of severe primary Addison's disease, the young man lying apathetic in bed. No benefit was apparent under suprarenal treatment until efforts were made to increase the sugar content of the blood by feeding extra sugar. Rapid improvement followed, the appetite increased, he gained in weight, and by the end of eight weeks could walk for an hour without special fatigue, and the pigmentation retrogressed. Grote cites evidence to show that the sugar content of the blood has been found abnormally low in two thirds of the cases of pronounced Addison's disease examined to date. At the same time, the tolerance for sugar is exceptionally good. In his case there was no elimination of sugar in the urine after 100 gm. of levulose or 200 gm. grape sugar. At the beginning of treatment the sugar content of the blood was 0.05 per cent.; in two weeks after 100 gm. sugar had been added to the daily ration—which already included 300 gm. carbohydrates—the sugar content of the blood rose to 0.056 per cent.; in eight weeks it was 0.1 per cent., and the ninth week 0.9 per cent., the rise constantly and closely paralleling the clinical improvement. The blood was examined mornings before breakfast. Arnoldi recently announced that carbonated baths seemed to stimulate suprarenal functioning, as he found the sugar content of the blood higher after such baths—an "asphyxia hyperglycemia." Grote consequently gave his patient carbonated baths in addition to the dietetic measures and the organotherapy. The literature bearing on the various questions involved in treatment of Addison's disease is discussed in detail.

92. **Symptoms of Patent Ductus Arteriosus.**—The two patients were girls of 10 and 17, both with curvature of the spine, and the older girl had never menstruated. In both during prolonged inspiration and the Valsalva test the systolic murmur dwindled or disappeared entirely, while the Roentgen shadow showed a flattening of the second arc of the heart's left outline—all demonstrating a reduction in the

pressure in the aorta under the influence of the increased alveolar pressure.

95. **"Five-Day Fever."**—Sachs reports nine cases and declares that this name for the disease is absurd, as there is no such regularity in the recrudescences of the fever. The term "Wolhynic fever" is also irrational as the disease is not restricted to Wolhynia. He suggests as the most descriptive term tibialgic or neuralgic fever.

102. **Wassermann Reaction Positive in Typhus.**—Bittorf some time ago called attention to the appearance of positive Wassermann findings in nonsyphilitics after injury or destruction of organs particularly rich in lipoids, as with cancer of the liver and tumors in the brain or spinal cord. As these organs are especially involved in typhus, the blood in this disease likewise responded positively to the Wassermann test in the two cases he has examined for the purpose. There was nothing to suggest syphilis in either case, and the response was repeatedly negative when tested from six to nearly eight weeks later.

Wiener klinische Wochenschrift, Vienna

December 7, 1916, XXIX, No. 49, pp. 1547-1578

105 Study of Limping. (Ueber das Hinken.) A. Saxl.—p. 1547. To be continued.
106 *Diagnostic Agglutination of Proteus Bacilli in Typhus: the Weil-Felix Reaction. (Vorkommen der Weil-Felixschen Reaktion bei Fleckfieber vom Balkankriegsschauplatz.) J. Cancik.—p. 1552.
107 *Special Type of Roentgen Shadow with Chronic Gastritis. (Ueber die Erkennbarkeit einer bestimmten Form von chronischer Gastritis im Röntgenbilde und deren Bedeutung für die Ulcusdiagnose.) G. Schwarz.—p. 1554.
108 *Galvanopalpation of the Abdomen. M. Kahane.—p. 1557.
109 *Changes in Leukocyte Picture after Vaccination against Typhoid. (Bemerkungen zu den zytologischen Veränderungen nach Typhusimpfung.) L. T. E. v. Draga.—p. 1559.
110 Magnesium and Aluminum Alloy for Sets of False Teeth. (Zahnersatzstücke aus Magnalium.) F. Schenk.—p. 1559.
111 *Syphilitic Aorta Disease. L. v. Korczynski.—p. 1561. Concluded.
112 J. F. W. Krimer, 1795-1834. (Zur medizinischen Kulturgeschichte. III.) I. Fischer.—p. 1564.
113 Vasomotor Paralysis and Allied Groups of Symptoms in Soldiers on Active Service. (Nervöse Kriegsdienstschädigungen. I.) O. Gross.—p. 1577.

106. **Reliability of Weil-Felix Reaction.**—Cancik writes from Prague that the Weil-Felix test gave positive findings in 90 per cent. of his cases of typhus in a recent epidemic. In many cases the titer rose from low to high during the course of the disease, while the findings were negative in other patients and in the healthy, or only faintly positive at 1:25. They were constantly negative in forty typhoid cases. On the other hand, the Widal reaction sometimes grew more pronounced in typhus patients who had had typhoid at some time or been vaccinated against it. (The Weil-Felix reaction was described in The Journal, Jan. 6, 1917, p. 55.)

107. **Roentgen Picture of Certain Form of Chronic Gastritis.**—Schwarz calls attention to the indented outline of the entire greater curvature of the stomach in a man of 35 who for years had suffered occasionally from severe gastric disturbances for which no cause could be detected. The prominences and inlets shown in the Roentgen picture were most pronounced in the lower part of the greater curvature outline, some of the indentations here being from 1.5 to 2.5 cm. deep, but they could be traced almost up to the cardia. The peristaltic waves did not modify this outline. The laparotomy showed the stomach apparently normal, with no external signs of an ulcer or tumor, but two minute healed ulcers were found in the duodenum, and gastro-enterostomy was done. The mucosa of the inner wall of the stomach was found swollen and hyperemic, thrown up into numerous thick folds which projected into the lumen of the stomach, thus explaining the indented line of the shadow. During the three years since this operation, Schwarz has encountered a number of similar cases, although none so extreme as the first. Dietlen described an analogous case in 1912, but he interpreted it as inoperable malignant disease, and was surprised to find the patient much improved by the end of a year without special treatment. He then assumed that perigastritic changes must have been responsible for the indented outline. Handek ascribed the indentations to traction from an assumed ulcer on the lesser curvature. Lengthwise folds in the stomach mucosa may be regarded as physiologic. Horizontal folds are evidence of a chronic gastritic process, probably induced by irritation from primary hyperacidity and hypersecretion. The conditions thus favor production of an ulcer, which may or may not be present with this "corrugating gastritis."

108. **Electric Palpation of the Abdomen.**—Kahane expatiates on the instructive findings with what he calls galvanopalpation of the abdomen. With a rheostat and galvanometer he seeks to determine the sensitiveness to a very weak galvanic current. He says that an electrode tapering to a point, connected with a 1 milliampere current, can be passed over normal tissues without their feeling it, but it irritates diseased tissues. They smart or burn under this galvanopalpation while the vessels dilate, the skin growing red in the area tested. He applies the point of the electrode by repeated tapping over a small area. The reaction weakens if the test is applied too long in one area. The area of the smarting or burning response to the electric current does not always coincide with the location of spontaneous pains or tenderness, but the vascular reaction accompanying it confirms the reliability of the information thus derived. For instance, if there is pain in the right iliac fossa but negative galvanopalpation findings, while there is a pronounced response to the galvanopalpation in the gallbladder region, the probabilities are in favor of the latter's being the source of the trouble. Another advantage of the galvanopalpation is that the light touch of the electrode does not injure even acutely inflamed tissues below, when the palpating finger elicits severe pain. Among the points learned in the course of Kahane's experience with this electric examination of the abdomen, he mentions the constant positive findings in the right iliac fossa with spastic constipation, and in the left iliac fossa with atonic constipation. In a case of pathologic exaggeration of the gastroduodenal reflex, with diarrhea directly after eating, galvanopalpation revealed a hypersensitive area at the junction of the pylorus and duodenum. All other methods of examination gave a negative response. Nothing else will locate with such precision the pathologic area as this galvanopalpation, he reiterates, urging others to apply it just before operations and compare the findings with both. In the gastric crises of tabes, the stomach region gives negative findings, while positive findings are the rule in the region of the lower dorsal nerve roots. With one patient with attacks resembling tabetic gastric crises, but for which hysteria and enteroptosis proved to be responsible, no positive galvanopalpation findings could be elicited anywhere. Of course the reaction indicates merely irritation of the nerve terminals in the skin, but experience has demonstrated that this irritability of the nerve terminals corresponds to a pathologic process below.

109. **Eosinophilia After Antityphoid Vaccination.**—Draga rejects Labor's conclusions as to the eosinophilia he found in men who had been vaccinated against typhoid. Draga has found this eosinophil leukocytosis extremely frequent among his hospital patients, both military and civilian, representing different Balkan nations, and a few had been vaccinated against typhoid. He scarcely ever found helminths in the stools, but the necropsies revealed an astonishing prevalence of helminths in the body. He declares that nothing short of necropsy justifies an assertion of freedom from helminths.

111. **Syphilitic Aortitis.**—The preceding instalments of Korczynski's article were reviewed in these columns, page 233. He notes that the location of the mesaortitis seems to be of more moment than its extent. Even when the coronary vessels are suffering, this may be due directly to the syphilitic virus, without actual irreparable organic changes. Hence energetic treatment of the syphilis may induce wonderful improvement even when the patient seems doomed. He insists on repeating the course of treatment if the Wassermann reaction is still positive at its close.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 3, 1916, XXXVII, No. 97, pp. 1521-1536

114 Toxic Action of Asphyxiating Gases. (Contributo alla conoscenza dell'azione tossica dei gas velenose usati dagli Austro-Tedeschi.) G. Pisano.—p. 1521.

December 14, No. 100, pp. 1569-1584

115 *Obliteration of Varicose Veins by Injection of Iodin Solution. (Contributo alla cura chirurgica delle varici degli arti inferiori secondo il metodo Schiassi.) A. Franchini.—p. 1570.
116 Auto-Inoculation of Ulcus Molle. (Auto-inoculazione di ulceri molli alla regione pubica, per grattamento, in un ammalato, affetto da phthiriasis pubis.) C. Vignolo-Lutati.—p. 1574.

115. **Treatment of Varicose Veins.**—Franchini expatiates on the advantages of Schiassi's method of treating varicose veins by injecting into them 25 or 30 gm., to a maximum of 50 or 60 gm., of a solution of 1 gm. metallic iodin and 1.1 gm. potassium iodid in 100 c.c. distilled water. The injection is made slowly into the peripheral stump of the saphenous vein, about four fingerbreadths below where it joins the femoral vein. The patient stays in bed, with the limb raised a little, for two or three days. By the end of the week the saphenous vein is transformed into a hard cord. In two weeks he can get up, and can resume his ordinary occupation by the end of a month. The results were extremely gratifying in Franchini's eighteen cases.

Brazil-Medico, Rio de Janeiro

November 25, 1916, XXX, No. 48, pp. 377-384

117 Flagellate Parasites of Mammals in Argentina. (Sobre os flagellados parasitos dos mamiferos da Republica Argentina.) O. O. R. da Fonseca.—p. 377.
118 *Cure of Ulcerating Granuloma under Intravenous Injections of Tartrate of Antimony and Potassium. (Emeticotherapia endovenosa no granuloma ulceroso.) A. A. da Matta.—p. 378.

December 2, No. 49, pp. 385-392

119 *Study of the Biology of Species of the Schistosomum Mansoni. A. Lutz.—p. 385.
120 Nematods of the Cucullanus Genus. (Nota sobre cucullanidae nov. fam.) A. L. de B. Barreto.—p. 388.

December 9, No. 50, pp. 393-400

121 Mechanism of Humming Sound in the Arteries. (Do ruido de pião—tambem chamado de piorra, corropio, rodopio e berra-boi.) P. Valladares.—p. 393.
122 Antitoxin in Diphtheria. (Factos contradictorios sobre a sorotherapia antidiphterica.) O. Clark.—p. 394. To be continued.

118. **Treatment of Ulcerating Granuloma.**—In Da Matta's patient the granuloma had persisted for eight months. It was in the genital region and measured 3 by 5 cm.; a smaller ulcer had developed opposite on the thigh. It had only been aggravated by local measures, but marked improvement was noted after the third intravenous injection of tartrate of antimony and potassium, according to the usual technic, and both ulcers soon healed over. Eighteen injections were given in all in the course of thirty-four days.

119. **Evolution of the Schistosomum Mansoni.**—Lutz reports considerable research on this schistosomum, the results confirming Leiper's statements. He found that the larvae could hatch out from the ova many days after they had been expelled in the feces. Contact with water is required for the ova to hatch, and the larvae prefer to stay on the surface of the water. These three facts facilitate contagion. He experimented with five species of fresh water snails, striving to infect them with the schistosomum, but was able to succeed only with one species, the *Planorbis olivaceus Spix,* which is encountered mostly in northern Brazil. Infection occurs by way of the antennae, the changes in which show when infection is installed. Other flat and long snails attract the larvae and they invade the antennae but the evolution of the schistosomum does not proceed to completion in either of them. The *Schistosomum mansoni* requires heat for its development, its growth and proliferation being impeded or checked entirely by low temperatures.

Semana Medica, Buenos Aires

October 13, 1916, XXIII, No. 41, pp. 359-418

123 *Echinococcus Disease. (Equinococosis.) J. Llambias.—p. 359.
124 Influenza and Vaccine Treatment. (Algo acerca de una epidemia.) F. G. Alvarez.—p. 367.
125 *Genital Prolapse. (Tratamiento del prolapsus utero-vaginal.) E. A. Fox.—p. 370.
126 Placenta Previa: Etiology and Treatment. U. Fernandez.—p. 372.

123. **Echinococcus Disease.**—Llambias found the parasites in the liver in 113 of the 143 cases of echinococcus disease that he has examined after death. In 68 cases the liver seemed to be the only site, but in 11 cases the lung was also involved and in 34 cases other organs.

125. **Uterovaginal Prolapse.**—Fox's communication is based on 105 operative cases in the last five years. He aims to reenforce the perineum and make the genital hiatus narrower. The uterus is not removed unless for special indications, as this needlessly complicates the operation. Twelve of the women were left with incontinence of urine but this was corrected by anterior colporrhaphy or torsion of urethra.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

November 25, 1916, II, No. 22, pp. 1921-1984

127 Action of Radium Rays on the Heart Functioning. (Radiumbestraling en hartswerking.) H. Zwaardemaker, C. E. Benjamins and T. P. Feenstra.—p. 1923.
128 Presbyopic Asthenopia. W. Koster.—p. 1929.
129 Industrial Insurance and Accident Legislation in the Netherlands. (Over uitkeeringen door de rijksverzekeringsbank krachtens de ongevallenwet 1901, verleend in gevallen van ernstige verminking op jeugdigen leeftijd.) G. P. van Trooijen.—p. 1932.
130 To Remove the Tonsils or Not? (Het vraagstuk der tonsillectomie.) P. J. Mink.—p. 1937.

Finska Läkaresällskapets Handlingar, Helsingfors

October, 1916, LVIII, No. 10, pp. 1471-1582

131 War Wounds of Lower Jaw and their Treatment. (Bidrag till behandlingen af skottskador i underkäken; tillika ett bidrag till förfärdigandet af provisoriska resektionsproteser för underkäken.) R. Faltin.—p. 1471.
132 Myxomatous Tumors. (Iakttagelser öfver strukturförhållanden i bindväf. II.) H. Eklöf.—p. 1505.
133 *Alcohol and Precision Work. (Alkohol och precisionsarbete.) U. Tötterman.—p. 1527.
134 Case of Chronic Actinomycotic Suppurating Mastitis. (Ett fall af kroniskt förlöpande, varig mastit, förorsakad af en cladotrixart.) F. Langenskiöld.—p. 1538.
135 Differential Count of the Leukocytes in the Counting Chamber. (Kan en leukosytformel, baserad endast pa procenttal, gifva en rätt föreställning om blodets morfologiska sammansättning?) T. Sandelin.—p. 1552.
136 Accommodation in Comparative Ophthalmology. (Ogats ackommodation inof djurräckan.) V. Grönholm.—p. 1558.

133. **Alcohol and Effect on Needle-Threading Tests.**—Tötterman's research was conducted on himself, and the findings are tabulated over a period of forty-three days, two weeks free from alcohol alternating with two weeks under the influence of 100 c.c. of a 25 per cent. solution of alcohol taken each evening at 11 p. m. The test consisted in the attempt to thread as many needles as possible in a given time. This work was done at 10 a. m., thus eleven hours after the ingestion of the alcohol. He had 200 No. 6 needles stuck on a cushion where they could be easily picked up. The threads were No. 36 white thread, cut into 20 cm. lengths and laid over a board so that they hung down over the edge, a couple of rulers laid over the threads preventing tangling. As the needles were threaded he dropped them on a paper, and every fifth minute a new paper was drawn over the old one. For each test the ends of the threads were cut off fresh. Some charts show the falling off under the influence of the alcohol; for example, in one test the number of needles threaded dropped from 182 to 160 in the first period and from 185 to 158 in the second.

Hygiea, Stockholm

1916, LXXVIII, No. 23, pp. 1761-1808

137 *Tumors of the Carotid Gland. (Bidrag till kännedomen om karotiskörteltumörer.) P. Wetterdal.—p. 1761.

137. **Tumors of the Carotid Gland.**—Wetterdal's attention was attracted to this subject by two cases encountered, one in a man of 47, the other in a woman of 56. The tumors had been noticed for several months. The man's tumor had invaded the large vessels and he died after a second operation which became necessary within six months. The woman's tumor was removed without trouble. Wetterdal has found records of seventy-four cases in the literature but only sixty-three can stand analysis. These he tabulates, with details as to the size of the tumor, nature, outcome, etc. Both sexes are about equally represented in the statistics, and both sides. These tumors are generally benign and cause no symptoms, but a certain proportion display a malignant tendency and invade the vessels so that the mortality is about 25 per cent. It was 29 per cent. in the last series of fifty-nine operative cases.

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THE AFTER-CARE OF POLIOMYELITIS AS A PUBLIC PROBLEM

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No recent event in medicine has caused more anxiety than the epidemic of poliomyelitis during the summer of 1916, which became a panic in certain localities. Moreover, the history of the 1907 epidemic and similar records give reason to fear extensive recurrences of the disease during the next two years.

While the subject of prevention is one of great importance and public interest, what now demands serious consideration is the care of the wreckage left after the epidemic. It is this problem that I desire to discuss. I shall speak (1) of the extent of recent epidemics, (2) of the inadequacy of the ordinary facilities for providing the requisite care, and (3) of plans suggested for meeting the existing needs.

During the past summer there were reported to the health authorities in the United States no less than 27,000 cases of poliomyelitis. About one half of these occurred in the state of New York. The other states in which the epidemic was most severe, in the order of the greatest relative prevalence, were New Jersey, Connecticut, Massachusetts, Minnesota, Delaware, Rhode Island and Pennsylvania. In only four states — Nevada, New Mexico, Georgia and California — were no cases reported.

An official analysis[1] of the New York City cases was made in October. This showed that the fatality had been about 26 per cent. Of 2,715 patients who recovered and were investigated at their homes, 65 per cent. showed a "serious paralysis of one or both lower limbs" and were "unable to walk," and 19 per cent. more "were partially paralyzed in the lower limbs, although still able to walk." These figures from New York City give a scale by which one may measure the whole group in a general way, for the figures will probably not differ materially wherever they may be taken.

It need hardly be said that no such prevalence of the disease has ever been recorded, and that the statement occasionally heard that there has not been much more poliomyelitis than usual this year and that it is really a newspaper sensation is wholly misleading. It is obvious that these thousands of paralyzed children constitute a humanitarian and economic problem of no mean dimensions — a problem which must be defined a little before we proceed farther.

Poliomyelitis leaves behind it, in many cases, a paralysis which is of itself disabling, and which, if neglected or badly treated, often leads to serious and disabling deformities. These deformities are preventable, with the exception of those affecting the spine and shoulder, by treatment. In carrying out this treatment we are striving to prevent deformity and disability, which necessitates a struggle lasting over years. Muscles in most instances are weakened rather than totally paralyzed, and the fate of many of them depends on whether in the first year they are protected from fatigue and stretching, and are carefully exercised, massaged and, if need be, supported, under which favorable conditions they may recover; or whether the children are allowed to go about as they will, without efforts to develop muscular strength and without careful therapeutic supervision, in which case the muscles are not likely to recover, and deformities are liable to result.

If a modern industrial enterprise had to meet the problem of treating these children properly now or carrying them through life as dependents, there would be no doubt about the financial and economic aspect of the matter, and prompt care would be provided.

The dangerous time in infantile paralysis from an economic point of view is not in the first two or three months after the attack. That period has its dangers, but in the only three states of which I have first hand information — Vermont, New York and Massachusetts — the disease in this period is efficiently and carefully treated by the general practitioner. In 1,700 cases of this year's epidemic recently seen in New York state there have been very few cases in which any preventable deformity, even a dropped foot, had occurred, and not one case in which was found evidence of neglect on the part of the attending physician.

At the end of from three to six months, however, there begins a period which lasts for years, during which time many a patient acquires needless, lasting and perhaps disabling deformity. As an instance of this, at one of the recent New York clinics among forty patients there were three who will illustrate this point. One was a little girl, affected three years previously, whose parents were poor, but who had spent a great deal of money on irresponsible fakers. She had acquired a badly overextended knee and could barely walk. The condition can be remedied by a brace costing about $5. Two boys had been quadrupeds for nine and seven years, respectively. They walked on all fours like monkeys. One went to school and went about the class room in this way; they could go up and down stairs and about the house, but always as quadrupeds. One needs a pair of braces, a corset and crutches to walk like a human being, at a cost of not over $25. The other needs a preliminary division of some shortened muscles, which will keep him in bed about six weeks, after which, with the apparatus mentioned for the other boy, he can go about.

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[1] New York City Bulletin of Health, Oct. 23, 1916.

With regard to the general problem, two states — New York and Massachusetts — have answered that in their opinion the situation requires special measures. To these should be added a third and pioneer state — Vermont — which decided in 1914 that an epidemic of about 300 cases was severe enough to warrant state care and supervision, which has been in effect there since January, 1915.

The state-wide care of this disease is new, but in Vermont it has seemed efficient. It has perfectly clear reasons for its adoption, just as there are certain objections to it which can easily be formulated.

The conditions to be met in rural communities and in the small cities, in which there are few, if any, dispensaries, no orthopedic workshops, special hospitals or clinics, are different from those in the large cities, in many of which all of these things are available. The question, therefore, will be discussed from both of these standpoints.

RURAL COMMUNITIES

A case occurs in a rural community, or in one of the smaller cities. It is well and efficiently cared for by the family physician for from three to six months, but the child remains paralyzed. If the parents are rich, the child can be sent to the city and obtain the advice and treatment of a specialist. But if they are poor, what can the physician do? He has carried the case through the early dangers; he has so far prevented deformities, and he is now faced with the necessity of formulating the future treatment of the case. He can send to the city and order apparatus, but it may not fit, and he must leave the design largely to the instrument maker. The physician cannot furnish massage or muscle training because there are no experts available, and often he decides to settle down to the routine use of electricity in the hope that it may do some good and because nothing else seems available. Finally he and the patient may drift apart, and the latter either does nothing or seeks the aid of fakers who take his money and give him nothing worthy of the name of treatment. This happens again and again in rural and suburban communities, less often in the cities, and the family physicians deplore the situation as much as any one.

As a result of this situation, deformities, sometimes of the most disabling type, may occur; the patients may become bedridden and distorted; being no longer wage earners, many of them become a burden on the family or on the state. Apart from any humanitarian aspect, it is an economic blunder to let this happen on a large scale.

IN LARGE CITIES

Take next the paralyzed child in the large cities which are adequately equipped with special hospitals and dispensaries. How is he likely to fare? The modern treatment of the after-results of poliomyelitis does not consist in putting on a brace and telling the parents to let the child walk as much as he can and to return when the brace is worn out or no longer fits. The dispensaries are quite adequate to carry out this sort of treatment on a large scale, but this does not meet the situation, and the time has come when we should do better.

Certain patients are so lightly affected that they will recover, no matter how inefficient the treatment. Others are so extensively paralyzed that no treatment will have any great remedial effect; but in the bulk of cases in my experience the ultimate function is greatly influenced by the character, efficiency and continuity of the treatment in the first two years. If the patient is to benefit from careful modern treatment at the dispensary, he must report regularly and continuously. First comes the question of carfare, often a burden to poor families. This expense may be avoided by providing ambulances to carry children to and fro; but the number of ambulances required to cover adequately New York City, for instance, in the present emergency would be very great. Second, the time consumed in the trips is a tax on the mothers of large families. It is difficult, therefore, for these and other reasons to secure long continued and regular attendance at dispensaries. At first the patient is taken to the dispensary with more or less regularity, and receives good or bad treatment, according to the dispensary which he attends. But whether the treatment is good, average or poor, the progress of the recovery from the paralysis is in most cases slower than the parents desire and expect, and in time many of them drift away seeking other dispensaries. The unintelligent ones turn to the fakers, and others become discouraged and abandon treatment, making up their minds to accept the paralysis as a misfortune which is beyond remedy. In this way many become hopeless cripples quite unnecessarily. An adequate follow-up system is a help in minimizing this condition. Dispensary attendance to be of therapeutic value must go on week by week, month by month and year by year if satisfactory results are to be obtained.

Again, in epidemic centers the special dispensaries will in the months following the epidemic be greatly overcrowed, a condition which will inevitably lessen their efficiency. Adequate treatment demands a thorough examination, and in each case of poliomyelitis a correct muscular diagnosis can be made only by an examination of each accessible muscle or muscle group in both arms, both legs, back, abdomen and neck. This takes time and care as well as experience and skill.

Continued residence in a hospital has been advocated by some persons, but such residence to be effective must go on for two or three years in order to cover the dangerous period. The objections are obvious: (1) Few parents would consent, (2) an enormous number of beds would be required and would be taken from patients with acute cases, (3) the scheme is expensive, and (4) such radical measures are wholly unnecessary.

Having thus presented the disadvantages of the dispensary and hospital solution, I turn to that solution which seems to me to be the most satisfactory and most generally applicable both to urban and rural communities, namely, the home care of the patient.

The practical aspect of this question — the question of how to meet the problem in a rural community — was presented to me in a concrete form in Vermont in 1915. I had been requested by the Vermont State Board of Health to undertake the after-treatment of about 300 patients paralyzed in the summer of 1914. These patients were scattered through the northern half of the state, many of them living in the country on farms and in the mountains. There were no special hospitals or clinics in the state, and the only available means of dealing with the cases seemed to be to assemble the patients at clinics in five centers. At these clinics each patient was thoroughly examined by me, with the aid of one muscle trainer, in consultation with the attending physician, who was generally present. If apparatus was needed, it was measured for by me, made under my direction and sent to the physician. If muscular exercises were needed, they were formulated at the time of the examination, and the mother was taught to give them and received written instructions describing them. The family and the physician were warned of the bad effect of fatigue, and the whole situation was discussed and emphasized before the patient left the clinic. The usual arrangement was that the mother or father was to give the exercises, and the physician was to supervise the treatment. After these clinics no attempt was made to hurry, and the patient received quite as much time and attention as in private practice. If the family physician was not present, a letter was written to him describing the case and the treatment advised, and in every case a copy of the record was sent to him. If apparatus was necessary and the parents were too poor to pay for it, it was partly or wholly paid for out of a fund at the disposal of the state board of health. If operation was necessary, it was arranged for at a local hospital or elsewhere. No follow-up nursing care was attempted at this time, because no one sufficiently skilled in muscle training was available. There the plan rested, and no further clinics were held until July, 1915, six months after the first series, when I went to the same places and held a second series of clinics. The results were surprisingly good, and to my astonishment seemed on the whole better than results from routine dispensary treatment. The crude plan worked out to meet a special emergency had succeeded.

At this time a woman skilled in muscle training was secured and left in Vermont for the summer, visited it at intervals during the winter, and lived there during the summer of 1916. She made rounds of the centers, visited the parents, encouraged the mothers and kept them up to their work, talked with the physicians, reported delinquents and defects in apparatus, kept patients away from the quacks and charlatans, and changed exercises when necessary. Although highly efficient and working to the limit of her strength, she could not keep track of all the cases, and a resident qualified assistant is now to be employed.

As a result of this work in Vermont, directed by the board of health, many children have been prevented from becoming cripples and from acquiring needless and often disabling deformities, the families have become intelligently interested in the treatment, and the physicians have without exception cooperated, and have become interested in the after-care, as a result of which, I believe, they have become better equipped to treat these cases than most general practitioners in the large cities.

A third series of clinics was held in July, 1916, from which certain data were obtained, which have been published,[2] and it is the purpose of the board of health to continue as long as necessary the supervision and treatment of these patients.

Such is an account of a pioneer attempt to carry out state care of poliomyelitis patients on a simple scale.

In the autumn of 1916, the state department of health of New York decided to undertake the treatment of the cases in New York State outside of New York City, following the Vermont plan, and I was asked to inaugurate and supervise the work, which began, Oct. 17, 1916, at White Plains.

Clinics are given at centers selected according to the grouping of the cases, and four clinics each week are held. Associated in the work are Dr. Armitage Whitman of New York and Dr. John T. Hodgen of Boston. Under them are several highly skilled nurses who have been taught muscle training, and two crews of two women each, experts in spring balance muscle testing, because quantitative studies are deemed a most important part of the work.

To follow up the after-treatment of the cases, nurses who are skilled in muscle training are left behind, one in a district, to work under the physicians and see that the treatment prescribed is followed, that exercises are done as ordered, that such exercises are modified as need arises, that apparatus is worn, that fatigue is avoided, and that patients report at subsequent clinics.

To replace these nurses who are dropped in the districts, new nurses are taken on to travel in the unit, there to be educated in muscle training and in their turn left behind in a district. As soon as the first round of clinics is completed, which will have taken nearly three months, a second series of clinics will be held in the same places, and the treatment will be modified as necessary. Such a scheme to be productive of the best results cannot be finished in one year, but must go on for two or three years, and possibly for a longer time.

In Massachusetts, where the epidemic started later than in New York, the Harvard Poliomyelitis Commission was requested by the state department of health to assume the responsibility of the after-care of the cases of paralysis in the state, and in November, 1916, undertook this in addition to the purpose for which it had been originally appointed, namely, to aid in the diagnosis and treatment of the acute stage and to undertake the study of the etiology of the affection.

Here the Vermont plan, in a somewhat modified form, is again being followed. The Children's Hospital, by the generosity of an anonymous donor, has been enabled to open a special clinic for the treatment of poliomyelitis, which has been designated as the central clinic of the commission, with which certain other clinics cooperate. This is intended to serve the area within 20 miles of Boston. For the other parts of the state, clinics will be held at different centers, following the same plan as in Vermont and New York.

New York City has appointed a committee on the after-care of poliomyelitis, and various other municipalities have inaugurated public clinics. The state of Minnesota also is considering a campaign of a similar sort.

The essentials for state or city care are:

1. A traveling or stationary unit headed by one or more surgeons, which may be taken to the affected centers where free public clinics are held. The visiting surgeon acts as consultant to the family physician and deals with the cases through him.

2. Sufficient time given to each clinic to secure adequate and thorough examination, and careful formulation of treatment by the surgeon and skilled assistants.

3. Follow-up care in the homes by highly skilled women, who supervise the muscular exercises, encourage the families, see that the family physician's instructions are followed, and that the patients are kept from falling into the hands of charlatans.

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[2] Lovett, R. W., and Martin, E. G.: Certain Aspects of Infantile Paraylsis, with a Description of a Method of Muscle Testing, The Journal A. M. A., March 4, 1916, p. 729.

4. Subsequent clinics held in the same place at intervals of three months or more over a period of at least two or three years.

5. A copy of each record filed with the state department of health or central directing committee.

The advantages of the plan are: Special advice and treatment become available to all patients; the families are enlisted in the care of their children and share the responsibility; the family physician is assisted and not superseded; skilled assistance in after-care is provided over an indefinite time by those specially trained; the patients are kept under supervision; the clinics are educational to the profession, and the expense is not excessive.

The objections to the plan are: Like all schemes of state care it savors of paternalism; it is difficult to convince the community and the profession that such elaborate and long continued measures are really necessary; it has long been the custom to regard infantile paralysis as a chronic affection, on the whole hopeless, best treated by braces, with perhaps massage and exercises which any nurse or masseuse can give. One of the most serious obstacles to the scheme is the difficulty of making it understood that muscle training in poliomyelitis is a delicate and serious matter requiring much skill and experience. A simple explanation will show this. A child is left with certain muscles in a limb normal and many weakened. If exercises of an inaccurate character are given, the child inevitably uses the strong and not the affected muscles, and the strong muscles become overdeveloped and the weak ones are not used, so that the resulting condition is worse than if nothing had been done. Loosely given muscular exercises are dangerous and harmful. The person directing the exercises must know enough functional anatomy to prescribe such as will exercise only the weak muscles, a task far beyond the ordinary masseuse or nurse who has not had special training.

The question of how far the financial burden should fall on the state and how far on private individuals is a delicate one, but as a matter of record most similar new enterprises of state-wide importance in America have first been partly or wholly cared for by private benefactions. This is not the time to hesitate about a theoretical matter of this sort. Any plan will require expenditure of money, and to be adequate must be formulated and put into effect promptly in the most seriously affected communities; consequently, private funds must be employed. Since delay means disability, deformity and incapacity to so large a number of children, no affected community is likely to hold back long if a satisfactory plan for relief is presented.

One danger deserves comment, namely, indiscriminate giving to independent enterprises not correlated to the main one. A sound plan is the first essential, administered by the state or city or capable private interests, and to this plan should be tributary and related special funds.

SUMMARY

I have tried to show that the number of paralyzed children among us demands an increase in our existing facilities for relief; that the problem affects both rural and urban communities; that dispensary treatment and hospital residence have defects; that state or city care offers a more satisfactory solution and has proved efficient in Vermont; that the Vermont plan is being tried in other states, and that to be successful the plan must have related and subordinated to it independent organizations for relief.

234 Marlborough Street.

BACTERIAL FINDINGS AND THEIR RELATIONSHIP TO PYORRHEA ALVEOLARIS AND INTERSTITIAL GINGIVITIS *

A. W. LESCOHIER, M.D.
DETROIT

Few subjects in medical history have given rise to more frequent controversies than the inflammatory diseases of the gums. The classification, nomenclature, pathology, even the anatomy of the parts involved have afforded material for protracted argument. Probably no phase of the subject has been more keenly discussed than the etiology, and during recent years much of this interest has centered on the part played by bacterial invaders.

The probable relationship of pathogenic bacteria to the development of pyorrhea has been recognized for several decades. Mallasez and Galippe[1] (1884), Black[2] (1887), Miller[3] (1889) and Kirk[4] (1898) were some of the early investigators of its bacteriology. A variety of organisms were described, none of which could be specifically associated as the causative factor. Probably the first to ascribe etiologic significance to any particular micro-organism was Arkövy[5] (1904), who attributed acute cases of alveolar suppuration to streptococcic infection.

A detailed review of the voluminous literature on the bacteriology of pyorrhea and allied conditions appears neither necessary nor desirable. Many of the reports were based on studies the scope of which was limited both by the paucity of cases under observation and the facilities and training for their intelligent investigation. It seems advisable rather to try to correlate the facts established by those investigators who have definitely contributed to the bacteriology of the disease.

Perhaps the most notable of the early studies on the relationship of micro-organisms to the pathology of pyorrheal diseases is that of Goadby.[6] His first report in 1907 described a variety of organisms occurring in connection with pyorrhea, to none of which it was possible to attribute a definite etiologic relationship. This group of organisms included, in addition to the pyogenic cocci, various types of bacilli and spirilli. Curiously enough, in view of later developments and the fact that a study of his protocols shows that streptococci and staphylococci were found much more frequently, Goadby appeared to attach considerable importance to the bacillary forms. In 1908 Goadby reported the successful treatment of two acute cases of pyorrhea alveolaris with autogenous vaccines; in one of these the infection was mixed streptococcus and *Staphylococcus albus,* and in the other streptococcus was present almost in pure culture. In 1909-1910 a supplementary study of seventy cases was reported, in which the findings are given in Table 1.

During the period from 1907 to 1912 articles dealing with the bacteriology of pyorrhea were contributed by numerous workers, among whom may be mentioned Carmalt-Jones and Humphrey,[7] Sims,[8] Eyre and

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* Read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Mallasez and Galippe: Compt. rend. Soc. de biol., 1884.
2. Black: Indep. Pract., New York, August, 1887.
3. Miller: Die Mikroorganismen Mundhöhle, Leipzig, 1889.
4. Kirk: Dental Cosmos, 1898.
5. Arkövy: Brit. Med. Jour., 1904, **2**, 1371.
6. Goadby: Brit. Med. Jour., Sept. 9, 1905; Tr. Odontological Soc., March, 1906; Lancet, London, March 9, 1907; Brit. Med. Jour., Aug. 22, 1908; Lancet, London, Dec. 25, 1909; Practitioner, London, 1912, **88**, 107.
7. Carmalt-Jones and Humphrey: Lancet, London, Dec. 28, 1907.
8. Sims: Dental Practitioner, Toronto, October, 1908.

Payne,[9] Fletcher,[10] Beebe,[11] Best,[12] Williams,[13] Logan,[14] and Leary.[15] The results of their investigations were diverse and do not materially assist in clearing up the confusion existing relative to the bacteriology of the disease. The only deduction which they justify is that a number of microorganisms, potentially pathogenic, may under certain conditions be isolated from suppurative lesions of the gums.

The possibility of spirochetes being concerned pathologically in pyorrhea has received some attention. Various workers, including Noguchi, have described spirochetal types found in the oral cavity, and in 1912 Noguchi[16] isolated, in pure culture, from a case of pyorrhea a mucin producing spirochete which he named *Treponema mucosum.* This organism is not regarded by Noguchi as strictly parasitic, but he ascribed to it pyogenous action under conditions in which the tissues have been so injured as to enable it to survive. The strong fetid odor in some cases of pyorrhea he believes to be due in part at least to the presence of *T. mucosum.*

TABLE 1.—ORGANISM FINDINGS IN SEVENTY CASES OF PYORRHEA ALVEOLARIS

Organisms	No. Cases Present
Streptococcus	19
Pneumococcus	5
B. necrosis-dentalis	14
M. catarrhalis	23
B. septus	15
Staphylococcus aureus	12
Saccharomyces	5
Micrococcus citreus-granulosis	6

Recent bacterial studies which seem to be entitled to careful consideration are those reported by Medalia,[17] Brown,[18] and Hartzell.[19]

Medalia's reports were based on a study of 115 cases, in which a careful bacteriologic investigation appears to have been carried out. The series included fourteen incipient, sixteen moderately advanced, and eighty-five advanced cases. The findings reported are as given in Table 2.

We would be led to infer from these results that the pneumococcus is the most important organism to be considered, as it was found either alone or in combination in 107 of the 115 cases (93 per cent.), and the streptococcus only an occasional invader, as it was reported as being present in only fourteen cases (12 per cent.). The work of other investigators does not, however, substantiate this deduction. Brown in forty-eight cases observed *Streptococcus viridans* twenty-three times, hemolytic streptococci thirty times, and nonhemolytic streptococci twenty-eight times. Pneumococci were present in twenty-seven cases, staphylococci, diphtheroids and organisms of the *Bacterium influenzae* group being also frequently found.

Hartzell's work, perhaps the most convincing of any that has been reported, points strongly to the importance of the streptococcus in pyorrhea. His observations have indicated that approximately three fourths of the bacterial content of pyorrhea pus pockets is made up of pyogenic cocci of the *Streptococcus viridans,* and staphylococcus types, and the remaining one fourth of other organisms. Hartzell's animal inoculations have shown that following the intravenous injection of pus from pyorrhea pockets streptococci of the viridans type are usually recovered, occasionally staphylococci.

Personal observations relative to the occurrence of streptococci, staphylococci and pneumococci in pyorrhea would place streptococci first in frequency, staphylococcus next, pneumococci being observed in only a small percentage of cases.

The scope of this paper does not extend to a consideration of the relationship existing between pyorrhea and systemic diseases. The importance of oral infection in metastatic infections of the heart, blood vessels, joints, kidneys and other tissues is, however, generally recognized. Hartzell has emphasized the fact that of the organisms found in the mouth, there are none having the varied possibilities for disease production characteristic of the streptococcus group. Clinical observations as well as the results of animal inoculations have clearly shown that in the remote pathologic effects of oral infection, the streptococcus overshadows in importance all other organisms which may be present in pyorrhea pockets.

A discussion of the causative factors in pyorrhea necessarily involves a consideration also of its pathology. Considering interstitial gingivitis and pyorrhea alveolaris as phases of the same disease, we generally recognize that bacterial invasion is characteristic of the pus stage and is not necessarily present in cases of interstitial inflammation without pus. The bacterial studies which have been reported are based largely on investigation of cases of the purulent type. The occurrence of gingival inflammation, without infection, as the result of trauma, irritation and constitutional influences during the nonpurulent inflammatory stage of the disease is scarcely open to question. On the other hand, the conclusion of some investigators that bacterial invasion in pyorrhea is invariably a secondary factor, infection being universally absent prior to the pustular stage of the disease, does not seem to be established. An infected zone around the root of the tooth, usually due to acute streptococci infection, may exist. It would be strange indeed if this were not so, since the poorly protected gingival crevice offers a splendid opportunity for bacterial attack, the microbic penetration being aided by the formation of calculi on the roots of the teeth or at the gingival margin and

TABLE 2.—BACTERIAL FINDINGS BY MEDALIA IN 115 CASES OF PYORRHEA ALVEOLARIS

	No. Cases with Organisms	Per Cent.
Incipient Cases (14)		
Pneumococcus and staphylococcus	10	71
Pneumococcus	2	14
Staphylococcus and streptococcus	1	7
Sterile	1	7
Moderately Advanced Cases (16)		
Pneumococcus and staphylococcus	8	50
Pneumococcus	6	37
Staphylococcus	1	6
Sterile	1	6
Far Advanced Cases (85)		
Pneumococcus and staphylococcus	49	57
Pneumococcus	18	21
Staphylococcus	1	1+
Pneumococcus and streptococcus	3	3+
Pneumococcus, streptococcus and staphylococcus	10	12
Pneumococcus and Micrococcus catarrhalis	1	1+
Staphylococcus and Micrococcus catarrhalis	2	2+
Sterile	1	1+

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[9] Eyre and Payne: Proc. Roy. Soc. Med., Odontological Section, Nov. 22, 1909.

[10] Fletcher, M. H.: Unclean Mouth and Its Evil Results, The Journal A. M. A., July 13, 1912, p. 94.

[11] Beebe: Boston Med. and Surg. Jour., Oct. 28, 1909.

[12] Best: Dublin Jour. Med. Sc., **133,** 91.

[13] Williams: Am. Jour. Med. Sc., 1911, **112,** 666.

[14] Logan: Dental Rev., 1911, **25,** 649.

[15] Leary: Dental Cosmos, 1909, p. 55.

[16] Noguchi: Jour. Exper. Med., 1912, **16,** 194.

[17] Medalia: Boston Med. and Surg. Jour., 1912, **167,** 868, 922; Dental Cosmos, January-February, 1913.

[18] Brown: New York Med. Jour., 1915, **98,** 1201.

[19] Hartzell: St. Paul Med. Jour., 1916, **18,** 77; Report First District Dental Society of the State of New York, Jour. Allied Dental Societies, March, 1916.

the number of the infecting organisms being augmented by the neglect of oral hygienic measures.

The tendency to consider any etiologic factor in pyorrhea as an entity instead of in relationship to other influences is unfortunate. Irritation, trauma, metabolic disturbances and microbic invasion constitute a vicious circle in the development of alveolar diseases. The bacterial element is probably the most important element in the destructive tissue changes and certainly so in the serious sequelae. While it is impossible definitely to classify interstitial gingivitis or even pyorrhea as primarily a microbic disease, the pathology is intimately associated with the results of bacterial invasion and the adequate consideration of its treatment must necessarily recognize the importance of the infectious element.

THE ROENTGEN RAY IN THE DIAGNOSIS OF PYORRHEA *

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Roentgenography for the demonstration of pyorrhea alveolaris does not differ in its technical plan from that used in other procedures intended to shed light on diseases located in the jaw bones. The constant feature of the disease which makes its demonstration by roentgenoscopy possible is the ulceration of the presenting margins of the alveolar process and the more intimate bone about the roots. In general the extent to which this marginal bone is found to be eroded is the measure of the extent of the disease recorded on Roentgen-ray films or plates. The relative simplicity of a Roentgen-ray procedure which is required to show only the height or depth of a bone profile in so thin an object as the human jaw is quite apparent, and in reality no such rigid technic is necessary in pyorrhea as in the demonstration of periapical disease, in which a focus of minor decalcification must be detected in and surrounded by a considerable mass of bone of variable and often complex structure.

This rough delineation of the general present depth of the process with respect to the dental roots in a case of known pyorrhea is therefore a relatively simple problem, and in itself is scarcely deserving of a lengthy dissertation. But in any series of pyorrhea cases the general roentgenographic survey is capable of bringing to light some of the minor changes about the roots of individual teeth, such as the localized or beginning extension of the disease toward a given apex, the softening of the adjacent alveolar wall due to an early inflammation of a single peridental membrane—the signs, in short, of the early and deeper encroachments of the disease which are so important in the complete diagnosis and prognosis of a pyorrhea case. For the detection of these minor but most important changes in the bony investments of the teeth only the most critical roentgenography is of value, and this must be combined with a careful and intelligent reading.

In roentgenograms of the normal denture, the spongy bone of the jaw uniformly envelops the dental roots and proceeds fully up to the point of attachment of the peridental membrane. In the most critical roentgenograms, the shadow of this spongy bone is seen through the shadow of the dental root, but is most prominently visible in the septal bone. The septal bone is characteristically of triangular shape, with more compact bone at the marginal apex, and at this apex one often sees an apparent fusion of the white line surrounding the adjacent roots. This so-called white line is the shadow cast by the denser walls of the alveolus between which and the roots themselves is the slight space occupied by the peridental membrane.

It is well known dental pathology that in pyorrhea the primary site of bone liquefaction is in that bone immediately adjacent to the peridental membrane. For this reason it is so often seen in roentgenograms that the marginal line of persistent bone is wavy with the deepest erosions in juxtaposition with the teeth. Whenever in roentgenograms it is seen that a localized or deeper absorption has occurred, it must be admitted that no correct inference can be made as to whether this erosion lies primarily on the labial, buccal or lingual aspect of the process. There is seldom seen in the most critical roentgenograms a double marginal line which could be known to represent, respectively, the inner and outer limits of erosion, and even where the double line is seen, it is impossible to distinguish the inner from the outer. Moreover, the film method calls for the projection of the light at such angles that, while the teeth show with minimum distortion, there is a palpable displacement on the film of the position for attachment of the peridental membrane externally with respect to its internal attachment. Should, therefore, the double line be visible in every case, a correct interpretation would involve a reasonable discount for angular displacement. For this reason, the most accurate and comprehensive portrayal of the exact position and the extent of the erosion is often obtained by the stereoscopic method, in which the stereoscopic shift is made along a vertical line rather than along the usual horizontal line, for reasons apparent to those versed in stereoscopic roentgenography in general. To obtain the most valuable average line as a gross measure of the ulcerative process, roentgenograms may be made at a considerably lower angle than for demonstration of the apexes, although an elongation of the dental shadows themselves will result.

Whether or not the general line limiting the ulcerative process can be followed across the shadows of the roots themselves, it will usually show plainly in the region of the septal bone. Wherever the teeth are normally spaced and the septal bone abundant, the marginal dissolution at the interspaces is very plain. In case the teeth are closely crowded and the septal bone small in amount, or when for any cause the ray angle used in the exposure was such that a lateral overlapping of dental shadows has resulted, the depth of septal bone is indeterminate. Inasmuch as the septal bone erosion is usually less than that in the immediate vicinity of the peridental membrane, the amount of septal destruction is not to be taken as the true limit of the encroachments of the disease on the jaw. Rather, this must be based on a careful observation of the integrity of the bone enveloping the peridental membrane farther toward the apex. Often a lateral or circumferential absorption can be followed deeply toward the apex. This appearance denotes a localized pyorrhea pocket, and is often concentrically funnel shaped. In conjunction with this funnel shaped dissolution, which extends around the tooth to a greater or less depth beyond the line of septal erosion, is often seen a more delicate partial decalcification of the

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white line extending to and around the apex, together with a slight widening of the space occupied by the peridental membrane itself. This finding is the premonitory sign of the inflammation of peridental membrane which precedes extension of the funnel shaped pocket to and around the apex. It is now only a matter of a short time till the entire depths of the root are surrounded by the liquefied products of the ulcerative pericementitis.

The limitations in the value of the Roentgen findings in any disease should also be mentioned. While the Roentgen findings in pyorrhea as a rule agree very well with findings elicited by a digital or instrumental examination, and are obtained with far less discomfort to the patient, there are certain respects in which they are disappointing. Let me mention a few of these: Sometimes a pyorrhea tooth is quite loose, and a well defined pocket is expected in the roentgenogram. Instead, it may require a stretch of the imagination to find in the roentgenogram more than a simple loss of the normal white line. This is undoubtedly because the atrophy which has occurred is diffuse and poorly demarcated. Again the tooth shows no looseness on examination, and the roentgenogram shows the deepest kind of a pocket. This apparent discrepancy is undoubtedly due to the escape from the disease of a limited portion of the investing structures, not recognizable roentgenographically, but sufficient in amount to maintain the stability of the tooth for the time being. A very important point in the diagnosis may be entirely undemonstrable by Roentgen methods, and I refer to the activity of the disease at the time of examination. Quite frequently roentgenograms are essentially similar in cases in which gross amounts of infective material can be expressed from the jaw to those in which the disease in all its clinical manifestations is entirely quiescent or advancing at a very slow rate. It may be sufficient to mention the general roentgenographic fact that in an ulcerative process in which bone shadows show partial or poorly limited decalcification, the process is in an active or rapidly progressive stage, whereas in well demarcated cases, in which areas of complete liquefaction lie directly adjacent to areas of undisturbed bone, the process may be considered more chronic in type.

CONCLUSIONS

A general survey of the denture by a series of dental films is an important adjunct to the examination of a pyorrhea case. It is often a short cut to a diagnosis and is less disagreeable than an instrumental examination, but should supplement rather than displace other diagnostic methods. The most important diagnostic points are observable in the region of the intimate bony investments of the roots and are obtainable only from the most critical roentgenograms.

122 South Michigan Avenue.

Disposing of Sputum.—One of the problems in taking care of tuberculous persons is to dispose of the sputum, according to the *Sanitary Bulletin* of the Buffalo Health Department. Sometimes in chronic or advanced cases this amounts to a great deal, and when no furnace fire is available, its safe disposal taxes the ingenuity of the attendants. A nurse suggested a plan which is said to be effective and feasible. Provide a galvanized pail or garbage can and place in the bottom of it some charcoal. Place in this the sputum cups, cover with kerosene and take into the alley or yard and set on fire. The charcoal will hold the fire until everything is consumed.

THE IMPORTANCE OF A CORRECT DIFFERENTIAL DIAGNOSIS OF THE PREDISPOSING CAUSES

IN CASES OF INTERSTITIAL GINGIVITIS OR PYORRHEA ALVEOLARIS *

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Periodically, we are told that interstitial gingivitis, or pyorrhea alveolaris, is caused by some special organism which the writer has just discovered. Specific investigation and attempts to corroborate these vaunted discoveries have always proved them to be erroneous. We are just beginning to recover from the shock of how little we know about the *Endameba buccalis*. The fact that a prominent research worker in medicine proclaimed to the world that the endameba was responsible for every case of pyorrhea, and that this disease was present in 95 per cent. of our population, has been the direct cause of much confusion. Physicians lacking education in mouth physiology and pathology were especially imposed on by this dogmatic assertion.

Research work which I have conducted in the mouths of animals has corroborated the work of general observers to the effect that infection is impossible in an individual otherwise physically well. Considering, as we are, end-organ tissue, it must be admitted that unless prophylactic measures have been adopted, the so-called dental organs are the first to exhibit a diminution in immunity to infection, if any form of malnutrition is in evidence. If, by exercise, massage and other hygienic measures, the circulation in the ultimate capillaries is kept moving, the gums and peridental tissue will frequently retain their immunity, even though malnutrition is present.

Pyorrhea alveolaris is a result of malnutrition plus infection, and also most frequently plus irritation, and it is greatly intensified if arteriosclerosis of the ultimate capillaries sets in. Only daily observation of the dental tissues can make one familiar with the appearance of a normal mouth, and without this knowledge, it appears impossible for any one to differentiate the different appearances of these tissues in different diseases.

While all forms of pyorrhea must commence with some form of gingivitis, yet the tissues in this and all succeeding stages vary in clinical appearance as markedly as do the generic types of malnutrition which interfere with a proper equilibrium of the circulation. The blue line in the gums as a result of mercurial toxemia, and the mucous patches due to syphilis, are old landmarks in medical diagnosis. In like manner the physician awaits the eruptive stage in order to make a correct diagnosis as between smallpox and measles, or any of the other exanthems. It may, therefore, be asserted with assurance that the variations in clinical appearance of the gums and pericemental tissues point with unerring fidelity to the cause of the dyscrasia. When these are once read with the same assurance with which we now read the blue line, a great advance in the diagnosis of this disease will have been reached. When it is once duly appreciated that pyorrheal symptoms are a possibility at the very onset of any interference with the normal action of any vital function, and that a proper reading of their clinical appearance will disclose at once the nature of the trouble, the study of the dental organs will be properly comprehensible, and not until then.

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The fact that pyorrheal manifestations are very frequently observed, without the investigator being able to obtain any confirmatory diagnosis of some form of malnutrition, is generally due to the fact that impairment of the vital organs progresses very slowly, and that frequently with our present day methods it is impossible to make a correct diagnosis until the disease has reached an advanced stage.

When, finally, as the organic disease increases, a correct diagnosis is made, it is not uncommon to find that this organic disease is believed to be caused by the pyorrhea. The poor diagnostic sense of the uninformed dentist is the cause of this frequent error in diagnosis, this placing of the cart before the horse. While an abnormality of some important organ or organs of the body is generally the predisposing cause, we see other types of pyorrhea where the predisposing cause is the decrease in functional power of the teeth themselves. Here loss of teeth by extraction, irritation under the gingivae from unpolished fillings, and every type of malocclusion become the predisposing causes instead of their being caused by some organic disease.

Every dentist will corroborate the great variation in the mouth picture which presents itself in different pyorrheal cases. We see the case without any deposit on the root in strong contrast with those in which these deposits seem to overwhelm all the exposed root structure. We see the gum abnormally dry and parched in contrast to those cases in which the mucous follicles are constantly excreting varying quantities of fluids. There is the pale anemic gum in contrast to the ruby red inflamed gum. We find pockets under the gums free from suppuration or exudation, in contrast to those cases in which there are purulent discharges, and the gums are so inflamed and spongy in character as to bleed on the slightest provocation. There are cases in which the gingival border is atrophied to a knife blade edge in contrast to every type of hypertrophied tissue. The gums at times will be found in all possible shades of color, and in certain cardiac diseases there is a sharp division line between a normal pink and dark blue in the gums in the same mouth.

We find no such variation in symptoms in any infectious disease. Smallpox, tuberculosis, typhoid fever, measles, syphilis, yellow fever, diphtheria, etc., all possess well defined symptoms, which mark them unmistakably as the disease in question.

In interstitial gingivitis or pyorrhea alveolaris, the clinical appearance is but a reflection of the predisposing cause. Each different picture will always be found associated with one particular predisposing cause. A carefully recorded study of these different pictures will soon make the observant stomatologist familiar with at least some of the more common types of malnutrition, and after a time he can readily recognize them on sight.

It has been my good fortune, because of experience with these clinical pictures, to have frequently been the means of directing the patient in the early stages of some serious ailment in keeping with rational treatment. It is impossible to estimate too highly the value of such a diagnosis being made in an early stage. It is wrong for us to discuss this subject as though we were speaking of some specific disease instead of addressing ourselves to pathologic symptoms of one of many diseases.

The time will come, when the subject is under discussion, that it will be confined to the particular malnutrition causing a given type of pyorrhea. In 1894, I presented such a method of classification by prefixing or adding an adjective stating the name of the disease, which is causing the pathologic symptoms in the oral cavity, as "diabetic pyorrhea," "tuberculous pyorrhea," etc. Only under such a classification can rational discussion be held on this subject. Take, for example "nephritic pyorrhea" and "diabetic pyorrhea." While renal abnormalities occur in the predisposing cause in each type, nevertheless, the symptomatology and treatment should be entirely different in each type. When this point is conceded, due importance will thereafter be given to the necessity of making clear the nature of the predisposing cause of the cases under discussion.

It is well understood in general surgery that operative procedure is attended with great danger to life itself in patients suffering from diabetes not under control. Consequently, the same danger to life exists when surgical interference is commenced in pyorrhea when there is present an active condition of diabetes. The at one time well nigh universal habit of dentists using surgical intervention in diabetics without making any diagnosis of the predisposing cause has produced its quota of fatal consequences. In advanced stages of fatal diseases, it would be unnecessary brutality to subject the patient to the discomforts of surgery. On the other hand, when the disease is curable, it is of great importance that the stomatologist should be given an accurate statement by the internist of every body disturbance, so that all local treatment should proceed in therapeutic harmony with the general treatment.

Prognosis of pyorrhea or gingivitis must largely depend on the possibility of obtaining a cure of the malnutritional factor. It is for this reason that the results of all physical examination, etc., should be in the hands of the stomatologist, so that he cannot only work in harmony with the physician, but also keep accurate record of any tissue changes that may take place.

When the preponderating importance of an accurate diagnosis of the predisposing cause of pyorrhea is appreciated, an important factor in the maintenance of our point of view is established to the effect that the dentist treating these and all other mouth diseases should be as efficiently educated in general medicine as is the specialist in any other department of medicine.

38 East Sixty-First Street.

Heredity and Cancer.—A committee of the life insurance companies in cooperation with the American Society for the Control of Cancer in a recent investigation on various phases of the cancer problem, found, among other things, from the records of a large life insurance company, that among 20,000 applicants for life insurance whose parents had both died of cancer, only four had cancer. Out of 492 instances in which one or both parents had died of cancer, 43 per cent. of the other parents had died of some other disease, 56 per cent. were living at the average age of 61, and less than 1 per cent. (four out of 492) had died from cancer.—Arthur Hunter, President, Actuarial Society of America, *Insurance*, Dec. 22, 1916.

SOME STUDIES IN THE TREATMENT OF PYORRHEA ALVEOLARIS *

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In the consideration of the treatment of pyorrhea alveolaris, as with any other disease, we must presuppose a knowledge of the disease. There are, however, so many conditions suggested as being causative factors in pyorrhea, that it is hardly possible to assume that any one of them is responsible for pyorrhea, to the exclusion of the rest. Among the conditions which have been advanced as being causative agents in pyorrhea might be mentioned syphilis, rheumatism, liver affections and autointoxication. These conditions and any other which will lower the resistance of the tissues must be considered as causative factors in pyorrhea, and their eradication, wherever possible, must be accomplished when the treatment of pyorrhea is undertaken.

Pyorrhea should be looked on as an infectious disease and treated as such. Its inception, then, is based on the resistance of the tissues to bacterial invasion, which must be lowered before the infection can be overcome. This means the building up of the resistive forces throughout the entire body, as it is difficult to perceive how the resistance, under these conditions, can be raised in the gum tissues alone. This must be done not only to throw off the present infection but also to guard against its recurrence. The lowered resistance to the tissues surrounding the teeth is due, in many cases, to the well known calcium deposits and irritations produced by faulty dental work. These conditions must be corrected.

If, however, we better understood the causes of pyorrhea and knew more about the tissues most vitally involved in making a repair, we would be able to treat this disease more intelligently, and there would result a greatly increased number of recoveries.

I have been greatly surprised at the wonderful recuperative power of the cementum. The literature relating to this tissue is confined, in the main, to its description and histologic structure, very little being said about its use. Cementum is the bond between the teeth and the bone, the tooth and bone seemingly being unable to form a union themselves. It seems to have about the same recuperative power as bone, and, furthermore, under proper conditions, cementum has the power to regenerate, after it has been cut in grooves or removed entirely from the root, provided a sufficient amount of the cementum is left on the root from which regeneration can take place. If, however, a large portion of the cementum is removed and the remainder then weakened or entirely destroyed by such mild germicides as trichloracetic or sulphuric acid, we should not expect to have any reformation of the cementum. When this is done, we might just as well take the next step at once and extract the tooth as wait and do the same thing at a later date or let nature throw it off herself.

Some time ago I had occasion to make an upper denture for a woman about 50 years old. She had worn full upper and lower dentures for some twenty years. On examining her mouth I noticed an enlarged and inflamed surface in the region of the second bicuspid. She informed me that it had been giving her trouble for a long time and that she had to have a place cut out of the denture to avoid pressure on it. I opened into it and removed about one third of the root of the second bicuspid which had been broken off when the tooth was extracted. The one side was flattened, but there were no sharp edges. A cross-section was made, and when put under the microscope it was found to be completely encased in cementum, the cementum on the flattened surface being nearly a third thicker than the other. A section made near the apex of the root showed a normal condition, with no variation in the thickness of the cementum. When this root was extracted, instead of breaking off at right angles, it split at an angle, and the cementum remaining not only regenerated sufficient tissue to cover that portion of the root that had been stripped of its cementum, but a third more. Dr. Fletcher has recorded a case in which the crown had been broken off in an attempted extraction, and the cementum had not only grown over the dentin but also had partly filled the canal. In this case, too, the cementum which had grown over the dentin was much thicker than normal. These cases seem to show that we may expect a restoration of tissue to a great extent, if not entirely, provided the conditions governing such a growth are ideal. This means that the new cementum forming must not be removed daily or weekly in the overzealous use of scalers and files, nor must the healthy cementum and paradental membrane be removed. To get something, something must be left. The regeneration of the cementum must be the result of stimulation, brought about by the careful use of the affected teeth, and there must be an active blood supply. This can be encouraged by careful but not too diligent massage, and the absence of astringent mouth washes. The teeth must be cleaned, not merely brushed.

The bacteria commonly found in pyorrhea are constantly present in the mouth. If oral hygiene is a common practice with the individual, their numbers are greatly lessened; if not, they become very abundant. A person can go for years with ill fitting crowns and maintain an ideal condition for the development of pyorrhea. That is resistance; and when it is lowered, pyorrhea follows quickly. As long as he maintains that resistance, he is immune; but as soon as it is lowered, pyorrhea overtakes him. In order to recover, that resistance must be returned; otherwise the pyorrhea will only be kept in check, never cured. To prevent the formation of tartar deposits, after they have been removed, Epsom salt is most proficient. It might be said that constipation plays an important part in the formation of these deposits, and should form a sort of index in cases of chronic constipation.

There are a great many pathologic conditions which have or are supposed to have their origin in mouth infections, of which pyorrhea is a common and important one; but it must be remembered that there are lots of people with arthritis who are wearing full upper and lower dentures and have been so doing long before they become afflicted with arthritis. There are a great many cases of arthritis that have their foci in the mouth, but these infections are sometimes present in cases of arthritis, the removal of which does not result in the disappearance of arthritis to any degree. In these cases, therefore, while there may be pyorrhea and other foci of infections present, and while every effort must be made to eradicate them,

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we must not devote all energy to these infections to the exclusion of foci in other parts of the body which may be the chief foci, and relief cannot be had until they are located and removed. Further, there are many roentgenograms which show rarefied areas around the apexes of the roots that are rightly interpreted as being foci of infection, but it must also be remembered that there are lots of others which show the same rarefied areas which are not foci of infection, being localities in which there possibly once was a focus but which has been removed, and the tissue not yet completely filled in, which may never completely take place. This is amply proved by using an aspirator and removing a portion of the content of that supposed focus, only to find it to be nearly free from bacteria. Except in extreme cases, therefore, there is no justification for the extraction of a tooth, simply because a roentgenogram showed a rarefied area, unless substantiated by other diagnosis. The extraction of teeth, in an effort to check infections in other parts of the body, just because a roentgenogram showed a rarefied area, except in extreme cases, is to be condemned. If this practice is to be indulged in, it must have its completion in the extraction of all devitalized teeth whether or not the Roentgen ray shows a rarefied area to be present. Also all teeth that are pyorrheic would have to be extracted because they are foci of infection, and those that are not yet affected would have to be extracted because they might become foci of infection.

THE ETIOLOGY AND TREATMENT OF INTERSTITIAL GINGIVITIS *

EUGENE S. TALBOT, M.D., D.D.S.
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My researches on interstitial gingivitis and pyorrhea alveolaris[1] were published in book form in 1899. In this work every conceivable phase of the disease was studied on animals as well as man. The pathology was beautifully illustrated from its beginning to the formation of abscess, on the one hand, and exfoliation of the teeth, on the other.

The object of this paper is to try to make clear the etiology, pathology and treatment based on the researches laid down in my work.

The tissues about the roots of the tooth may become diseased under extreme local irritation or from constitutional disease, but as a rule the progress of tissue building about the first and second set of teeth prevents tissue degeneration. Not until the bone has obtained its growth, from 27 to 35 years of age, does degeneration take place to any great extent, although marked inflammation of the gums may be present. When the alveolar process has obtained its growth about the second teeth, the bone may be said to have reached the senile stage, and absorption under favorable conditions begins.

THE ETIOLOGY

In considering the etiology of interstitial gingivitis, my researches have shown that the tissues surrounding the roots are end-organs, owing partially to the fact that the teeth, so far as nerves and blood vessels are concerned, are foreign bodies, and partly to the end-structure of the bone. An end-organ is a structure in the body in which nerves and arteries extend to the extreme end and then stop. The veins being extremely sluggish, the blood containing poison remains, and, being unable to return, sets up a low form of inflammation. The dental pulp is the best example of an end-organ in the human body. A study of this structure under the microscope, of persons over 40 years of age, will reveal all the degenerative pathologic conditions possible.[2]

The blood, then, which flows into the alveolar process, owing to local irritation about the gum margin or root of the tooth, does not return into the circulation. Blood charged with metallic, drug or body poisons collects in the alveolar process and produces irritation. Stasis results (Fig. 58, Interstitial Gingivitis[1]), nutrition is cut off, and a low form of inflammation is produced. Nerve end degeneration takes place, endarteritis obliterans, and arteriosclerosis occurs.

Ziegler[3] says:

> The causes of inflammation may lie either in mechanical, thermal, electrical or chemical influences, as well as in the influence of parasites. The common characteristic of all these injurious agencies is the production, in the first place, of a local tissue degeneration, which, when of a certain extent and intensity, is associated with disturbances of the circulation and of vascular secretion.

This exactly describes the condition found in the alveolar process. Stasis of blood in interstitial gingivitis is, then, due to mechanical irritation and possibly chemical changes in the blood.

Ziegler[3] again says:

> Under the designation inflammation are grouped those pathological processes, consisting on the one hand of tissue degenerations and tissue proliferations, and on the other, pathological exudations from the blood vessels.

In this particular form of inflammation, tissue degeneration takes place. There is no pain, heat or swelling as observed in the other forms of inflammation.

When we consider the peculiar endotransitory nature of the alveolar process, degeneration of tissue is the natural result. At the senile period when the excretory organs are diminishing in activity and in disease, vital resistance is at its lowest ebb, metabolism is diminished, and degeneration and absorption of the alveolar process is in active operation. As age advances, the destruction of bone is a natural normal pathologic process.

The disturbances in circulation bring about tissue degeneration because the gingival border of bone is very thin, transitory and easily destroyed. The action of this mechanical irritation is to produce artery changes, nerve end degeneration and absorption of bone about the arteries, called halisteresis. Stasis of blood may take place in a circumscribed area, or on the entire border of the alveolar process; or the apical end of one or more roots may be involved. This depends on the nature and quality of the irritant. The nature and severity of the irritation, stasis of blood and a lowered vitality of the patients will also determine the extent of the destruction of tissue, whether the irritation is located at the apical end of

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* Read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Talbot, E. S.: Interstitial Gingivitis or So-Called Pyorrhea Alveolaris, Philadelphia, S. S. White Dental Manufacturing Company, 1899.

[2] Talbot, E. S.: Developmental Pathology, Boston, Richard G. Badger, 1912, chapter on the dental pulp.

[3] Ziegler: General Pathology, p. 314.

the root, midway between the apex and the cervical margin, or at the cervical margin.

When the inflammation has once become established at the cervical margin, the absorption is progressive to a greater or less extent until the tooth or teeth are removed. Owing to the transitory nature of the alveolar process when irritation and stasis of blood occur, the nutrition of the part is interfered with and the bone tissue may be partially or wholly destroyed, leaving the fibrous tissue (trabeculae) undisturbed, thus holding the tooth firmly in position, although it can be moved laterally by the fingers. In most cases, however, the entire structure, including the fibrous tissue, is destroyed.

My researches have shown that the deposits on the roots of the tooth, other than tartar, are the detritus of destroyed bone and not deposits from the blood, as was formerly supposed. The pus stage is an after-consideration, and has nothing to do with the disease.

In summing up the etiology, then, in this disease: 1. We have to contend with the bone as an end-organ in which the blood accumulates (stasis). 2. Stasis of blood cuts off nutrition. 3. Local and constitutional irritation and chemical changes in the blood set up a low form of inflammation and bone absorption. 4. The absorption is enhanced because of the transitory nature of the alveolar process. 5. Nerve end degeneration and arteriosclerosis occur. 6. Want of vital resistance assists absorption.

LOCAL TREATMENT

The first symptom of interstitial gingivitis is bleeding of the gums on the slightest injury. The classification of the different phases of the disease renders the treatment, so far as we are capable of directing it, simple and easy.

The first thing that naturally comes to the mind of the operator is to remove the cause. The local treatment may begin immediately. For personal reasons of cleanliness of the patient and the operator, one or two applications of iodin should first be made to the gums, which will destroy the germs and cleanse the mouth. After this has been accomplished, the removal of all local irritation may begin.

We have seen that stasis of blood cuts off nutrition, causing degeneration of tissue (absorption of bone). *The main object to be obtained in the treatment of this disease is to remove the stagnant blood, reestablish the metabolic process and cause a normal flow of fresh blood to nourish the parts.* The nutrition of the part must be renewed that Nature may restore the tissues to health.

How shall this be accomplished? To remove congested blood, physicians, from fifty to a hundred years ago, resorted to cupping, leeches and scarifying the tissues. These methods must be resorted to at the present time in treating this disease. If the gums are congested and festoons hang down between the crowns of the teeth, they may be removed on a line with the alveolar border with a lance.

The gums should be allowed to bleed as freely as possible. In removing the deposits from the roots of the teeth, the parts may be injured as much as possible with as little pain to the patient as possible, the germs having first been destroyed. In this way much of the congested blood can be removed.

The suction process, not unlike the old method of cupping, is excellent when properly performed.

Scarifying the gums is also a good method of procedure. Vigorous gum massage with a stiff gum massage brush should now be employed to stimulate the tissues to healthy action.

Before the operation and after bleeding, iodin should frequently be employed to destroy all germs in the mouth. All loose teeth should be removed.

The following preparation has been used since 1878:

Water	10 parts or grams.
Zinc iodid	15 parts or grams.
Iodin	25 parts or grams.
Glycerin	10 parts or grams.

The iodin destroys all germs in the mouth and cleanses the tissues. The zinc iodid is used to contract the tissues, the glycerin to assist absorption. This preparation is applied to the gums, teeth and mucous membrane by a long, slender applicator with cotton wound about the end. It should be applied as often as every other day if possible. It is not to be used by the patient.

Friction and stimulating methods must be employed by the vigorous use of a "gum massage brush." The brush should be so shaped that it will reach the festoons between all the teeth.

It should be made of the stiffest unbleached bristles that can be obtained. The brush should be inserted into the mouth, the mouth and teeth closed. In performing this operation the mind should be concentrated on the gums and not the teeth. When the tissues have become revitalized, deposits from the alveolar process on the roots of the teeth will cease to form.

One of the best gum washes for the patient to use in connection with "gum massage" is that of the zinc sulphocarbolate recommended by Dr. W. H. Whitslar of Cleveland. This drug may be used in different strengths and in many forms. The following is a combination which I use:

GUM WASH

Zinc sulphocarbolate	60 grains
Alcohol	1 ounce
Distilled water	2 ounces
True oil of wintergreen	8 drops

The patient should use this gum wash and massage the gums three times a day. The patient should be under the care of the operator at least two or three times a week, so that he may direct the treatment. The treatment of interstitial gingivitis at the apical end of the roots must be carried out according to symptoms.

CONSTITUTIONAL TREATMENT

While the local treatment is being conducted, the patient's general health should be inquired into. A twenty-four hour sample of urine should be obtained, and a thorough laboratory examination made. If there are casts and high acidity, and indican is abundant, meat should be excluded, the patient placed on a vegetable diet, and the acidity reduced. The bowels should be kept open and large quantities of water consumed. There are many methods of cleaning the system and bowels. The following may be used to good effect; a teaspoonful in half a glass of warm water every four hours:

Calcined magnesia (heavy)	½ ounce
Sodium bicarbonate	1½ ounces

If the patient has sugar, albumin or other complications, it is best to refer the patient to a physician for general treatment.

By this method of treatment the patient, in the estimation of the average dentist, is cured, not, however, as other diseases of the body are cured. Eternal vigilance is necessary on the part of both operator and patient to prevent blood from again collecting in the blood vessels of the alveolar process, and a return of the disease.

The bone is still an endotransitory structure, and having once become diseased, it is much easier for the stasis of blood again to take place. As the patient advances in years, the excretory organs become senile, poisons collect in the blood, resistance is lowered, and there is a gradual absorption of bone taking place about the teeth throughout life.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LESCOHIER, POTTER, RHEIN, HARRIS AND TALBOT

Dr. Arthur D. Black, Chicago: The first most outstanding feature of the pathology of this group of diseases is their chronicity and this has possibly contributed much to the difficulty of a clear understanding of the pathology. This condition, which I will term a chronic suppurative pericementitis, will, in the average case, be progressive extending over ten, fifteen or even thirty years. In those cases where we have a systemic cause as the principal one, we would naturally expect to find a general involvement of the peridental tissues. Except for some added local exciting cause, there is no reason why one or a few teeth should be picked out; all of the teeth should be included in the manifestation of the disease where the systemic condition is the principal cause. On the other hand, in those cases where a limited number of teeth are involved, we would naturally expect to find that the local exciting causes had played the primary rôle. As to the bacteriology, many men have endeavored to find a specific organism which could be associated with this disease, and they have failed. One fact argues against a specific organism as being the cause, and that is the progress in these pockets, and this progress is very much more rapid toward the apexes than laterally around the roots. We observe many cases in which from an original pocket there have developed a number of other surface pockets, without any involvement of contiguous surfaces of the teeth. The tendency is for a tooth to move away from the side of the pocket, because encircling each tooth are the fibers of the peridental membrane. These are on a tension, and when the tissue is destroyed on one side of the root the balance of those fibers is lost, and the fibers of the opposite side draw the tooth in that direction, unless some obstruction of occlusion prevents this. There never is a detachment of the peridental membrane alongside the root that is not preceded by a gingivitis. In the destruction of the tissues about the root one of the earliest manifestations of the presence of a pocket alongside the root is a stripping off of these tissues from the cementum. As time passes there is left a connective tissue which has nothing which may differentiate it from a general connective tissue. Those elements which are necessary to a normal reattachment of tissue to the tooth are lost. What else has happened? The cementum has absorbed the products of that suppurative process. It has been changed from a positively chemotactic tissue into a negatively chemotactic tissue, which will repel tissue attachment.

As to rebuilding of the cementum: I have examined many cases and seen many in which there has been an absorption, not only of the cementum, but of a considerable portion of the dentin of the tooth, but I have never seen any in which there was a detachment in that area. They were not infected cases; there had been no suppuration. They were not cases in which, if you leave the end of a root, you will find cementum building over it. Dentin has no power of rebuilding cementum. Some one said it was closely comparable to bone. It is, except that it has no circulation. Its life depends on the cementoblasts on its surface. No changes take place within it. As the pocket progresses farther down the side of the root, we must expect the first absorption of the alveolar process to take place near the crest, and then as it continues around the root, in cases of long standing we have a funnel formation in the bone. That is one of the marked symptoms of progress of this disease. I would like to criticize Dr. Potter's use of the term erosion in connection with these destructions or absorptions of the bone. It seems to me that the term rarefication is hardly applicable to these cases, because the bone is either destroyed or absorbed. Dr. Potter spoke of looseness and tightness of some of these teeth. Many times we have a very loose tooth, so far as motion is concerned, and yet it is difficult to extract. As a result of inflammation, the fibers of the peridental membrane which remain attached to that tooth have lost their tonicity; they are not taut, and are apparently lengthened considerably, so that the tooth has an excessive motion, which does not at all compare with the amount of destruction of tissue which has occurred. Treatment will tone up those fibers and they will again exert their normal pull.

Dr. Floyd D. Leach, Chicago: There is a certain amount of tooth movement laterally, that is, from buccal to lingual. Dr. Black said something about a peculiar action of the microorganisms which caused a destruction of the investing tissues of the teeth, especially along the proximal surfaces of the roots. We have all seen this condition, causing the breaking down of the contents, due to the lateral motion in the act of mastication. It is not easy to guess or feel quite sure that those fibers of the peridental membrane which die to the buccal, labial and lingual sides of the socket should take the mechanical strain. I have an idea this condition may be the reason why the progress of the destruction is more pronounced on the proximal surfaces of the roots than on the buccal, labial and lingual. You have always noticed that the pockets are really on the interproximal surfaces. The gum would recede from the lingual, labial and buccal surfaces of the roots, and still in a great many cases be very firm as to attachment. Food substances constantly massaging these areas, and the friction of the brush when a brush is used in cleansing the gums and teeth stimulate to a greater extent those areas on the buccal, labial and lingual surfaces. But I think the mechanical arrangement of the fibers adds more resistance, more tone and more strength to these buccal, labial and lingual vestiges.

Dr. Russell W. Bunting, Ann Arbor, Mich.: We have been told by some that pyorrhea is the result largely of constitutional factors, and by others that pyorrhea is the result of local disturbance, such as infection and irritation. Almost all have agreed that very frequently there are combinations of these two. May I present this view of the situation? May we say that pyorrhea is caused by an exciting condition, such as the infection which destroys the tissues about the teeth and severs their attachment? But infection is not the determining cause? The determining factors are all the predisposing causes, either local or general, which make the characteristic action of the exciting causes possible. I like Dr. Rhein's statement that healthy tissues cannot be infected. How often have we seen ten times the local infection that would be necessary to produce pyorrhea existing in the mouth, and no pyorrhea present? Why? Because those tissues were so healthy that they were not infected, even under very untoward local conditions. If this is true, we must recognize not only the local but the general conditions as causative factors. As Dr. Rhein said, our constitutional factors are often so obscure that the ablest and most careful internist cannot detect where they are located, or what their nature is. The infective condition alone which is present in the mouth could not have produced the pyorrhea in such cases but for that remote constitutional condition which made it possible for this to happen. Fortunately, we find that very frequently the clearing up of the local causes allows the tissues to come back to an apparent normality.

Can we cure pyorrhea? I have taken the stand that we cannot cure pyorrhea unless we can obliterate the pockets. Dr. Harris said that the pocket may be obliterated because cementum is built on the denuded surface, and that new attachment is had to the tooth. Dr. Black does not believe that pyorrheic teeth can ever have a reattachment. We must admit that if pyorrhea is to be cured absolutely, either the soft tissues must be reattached to the tooth completely up to the free line of the gum or else the gum line must be retracted down to the place on the root at which it is attached. If it is true that these tissues can never be reattached, why should we not treat pyorrhea by opening the pockets, cutting away all overlying tissue, clear down to the bottom of the pockets, exposing the healthy tissue and allow it to heal? We would then have obliterated the pocket and the pyorrhea. But is that the only way in which it may be done? It is my conviction that the tissues may be made to physically join to the surface of the root after they have been denuded from it in the formation of a pyorrhea pocket, if the conditions are right. I have had many specific instances of pockets, in which I could get one quarter, one half or three quarters of the length of the root with an explorer, or any other instrument, and at the conclusion of a month or two of surgical treatment, assisting the tissues to return to as near the normal as possible, I have been unable to get the finest instrument between those soft tissues and the root of the tooth in the identical place where the pockets had existed previously. What has taken place in those pockets? Are there any other two tissues in the body that would so approximate and still not be physically attached? I do not think so. Let us take a surface view of that pocket. Pyorrhea seldom goes down circumferentially, attacking the tissues equally. It rather goes down one surface. If we prepare this root surgically and make it clean, we have remaining on either side living, healthy pericementum, which is capable of reproduction and filling in the space with new tissue. This is laid down first in the form of granulation tissue from which tissues may develop having the propensity to form a bony-like material, or even true bone, which may be deposited on the surface of the root, and attach those primitive fibers, or embryonic type of transitional tissue, to the surface of that root. When a root is resorbed there is in many cases entire breaking up of the fibers. The bone is entirely taken out at a given area and only a transitory type of tissue remains. Dr. Black said that in one case the destruction was not infective and that in the other it was. But was it not destroyed in both cases and what is the difference? There are cases on record in the literature in which a bone has been cut across; a section has been taken out, and in the gap there has been placed an ivory bit that reproduced as nearly as possible the bone which was removed. Later that section has been removed and has been examined in microscopic section. It was found that the ivory had about it a layer of new bone which was quite like a lamellar bone placed on the outside of the ivory. Outside of the bony layer a soft tissue formed, quite like periosteum. These tissues had adapted themselves to form a direct attachment of soft tissue by a bone forming process to the ivory, in which there was no circulation, without which Dr. Black stated reattachment could not occur. We are told that exactly the same thing has been done with platinum in which bone has been laid on top of platinum, and the soft tissues glued to the platinum in the same manner.

DR. EUGENE S. TALBOT, Chicago: I conceive an entirely different condition of things than has been explained to you by Dr. Black and Dr. Bunting in regard to pockets. There is no question about the pathology. It is all laid down in my work, and has been verified in a great many different methods of experimentation. My own researches explain that many of the statements, made by Dr. Black and Dr. Bunting, are much more simple than the points brought out by them. For instance, arteries run through the alveolar process and the peridental membrane. When irritation takes place, whether local or constitutional, the artery is filled with irritation. If constitutional, it may be poison; if local, it may be anything that produces a local irritation. If you will examine the illustrations in my book, you will find that the bone extends around the artery. The irritation, then, is set up in and around the artery, and if there are a dozen arteries there are a dozen points of irritation, inflammation and absorption, and the absorption starts out from the artery. We will say that this irritation is due to lead or mercurial poison. That material is carried down into the artery, and it may extend clear to the end of the root. What has taken place? Absorption has taken place around that artery, and only one artery is involved. Absorption has gone down to the end of the root. But if the irritation is greater, either constitutional or local, these arteries passing in a lateral direction, as well as those passing longitudinally, may absorb the entire process on the one side of the tooth, while absorption has taken place downward in the other case clear to the end of the root in one or two arteries. To explain Dr. Bunting's point about filling up of the alveolar process with new material if the inflammation has extended down the side of the root, with one, two or three arteries involved, the bone is liable to heal up if the cause is removed. If, on the other hand, the bone has been entirely destroyed downward and pockets have been formed, that bone is never restored, because the fibrous tissue is entirely lost. Bone absorption takes place by halisteresis before the fibers of the peridental membrane are destroyed—just the reverse of Dr. Black's idea.

DR. MEYER L. RHEIN, New York: Not a thing has been said in regard to cemental repair that can be denied under certain conditions, and yet we have listened to statements that appear to be absolutely in opposition to each other. I know that Dr. Bunting is correct in what he has said. I know that exposed cementum can be repaired and the normal condition replaced, but each of the speakers has omitted to state in what conditions repair, or lack of repair, takes place. Dr. Talbot gave a very lucid description of what takes place in the tissue when arteriosclerotic conditions manifest themselves. We get these conditions in certain forms approaching the period of senility, in certain forms of malnutrition, nephritic and diabetic conditions, and under such conditions that repair of the kind that Dr. Bunting spoke of is impossible. Why does a pocket form? We get a pocket on account of imperfect nutrition to that particular spot, and as a consequence there is the impossibility of repair which must ordinarily take place throughout the body daily. The same conditions that produce pyorrheal conditions are at work in erosion, where there is found a continuing loss of gum tissue, exposing the root surface, except that the local resistance, due to many causes, has prevented infection from taking place. In other words, in the retraction of the gum which results in the exposure of considerable of the root surface of the teeth, we meet with the same lack of nutrition that is demanded at every ultimate point of nutritional circulation. Pyorrhea may occur in people suffering from fatty degeneration about the heart. What are the appearances of the mouth in this condition? There is no suppuration. There is no deposit on the roots, but very extensive pockets that frequently go down deep, and we find the gum in ribbons over these pockets. They are great big flabby pockets, with a deterioration in color and character of the circulation. I have never seen one with any purulent condition. I have seen those gums come back absolutely to what we would consider comparatively healthy gum tissue under the Nauheim treatment. If the malnutritional factor has disappeared after treatment, you may call that patient cured. What is the reason that exposed cementum, considering that there is no condition of malnutrition present, will not permit the tissues to recover? It is due to the fact of exposure of this cemental surface to the irritating fluids that are in circulation. I believe it will take exceptional conditions to permit a cemental surface that has suffered abrasion to repair, because of the danger of retrograde metamorphosis going on from its exposure to the fluids of the mouth, consequently the therapy must be of such a mechanical nature to cover that cementum that it will not be exposed to the fluids of the mouth. I have done this for many years by coating the surface of such cementum with chloropercha, keeping the exposed cementum hermetically sealed and thus protecting it from the fluids of the mouth.

DR. GEORGE B. HARRIS, Detroit: I have been misunderstood a little in regard to the regeneration of cementum. In the first place, I do not wish to be understood as saying a complete regeneration takes place. The point I wanted to bring out is that there are cases in which the cementum has regenerated, and these cases were not under aseptic conditions. Can anybody imagine the crown of a tooth cut off below the gingival margins or split half the length of the root with the cementum forming over it, and say that this portion was in an aseptic condition? I do not believe it. Further, where the cementum is diseased we can remove it, leaving nothing but the healthy cementum below, producing a condition that is as near aseptic as it is possible to get under the conditions, a condition at least equal to those mentioned where the cementum did reform. It is possible, then, that the cementum will reform there. Whether it ever has or not, I do not know, because there is no way of measuring it as it takes place in the mouth, unless you would happen to find a tooth where the difference in density of the cementum will show, or where it would be shown by the new cementum making a thicker coating.

Dr. G. H. Smith, Medina, O.: This subject of pyorrhea has been of intense interest to me for five years, and I would like to suggest to the medical profession that they advise more of their patients to select an ethical dentist. Dr. Moorehead made a statement in his address that I can hardly substantiate. He claims that only 10 per cent. of the dentists were efficient. There are dentists commercializing, but with the cooperation and advice of the medical profession many patients would escape many dental disorders.

Dr. William C. Fisher, New York: I want to ask Dr. Rhein if I understood him to say that in a diabetic patient he would not consider operative procedure as being wise, or that it had been known to even be fatal?

Dr. Rhein: Correct. I said diabetes not under control.

Dr. Fisher: I am not thoroughly convinced that a dental operation is precluded in any patient—diabetic or otherwise—who is able to visit your office and go about his business. I believe, of course, in the medical treatment, but I certainly think that there is absolutely no shock, such as that experienced in a major operation while treating these patients. In pyorrhea I use the several solutions of iodin. Dr. Talbot spoke of gum massage with the brush. Do you mean the hand or engine brush?

Dr. Talbot: The hand brush.

Dr. Fisher: I was afraid that possibly you meant the engine brush. In polishing teeth we want to get away from anything that will in any manner injure or tear the tissues, and I have devised a simple little mandril of one piece of steel. I use French tubing of different sizes to fit; and make my polishing powder, mixing in with that iodin. As this mandril revolves in the engine, the French tubing will flare out on the surface and coax up the gum, whether receded or not, and polish the surface beneath the gingiva. In the interproximal spaces select a smaller piece of tubing, and it is possible to get a polished surface there. With that method you get a massaging of the gum which the patient cannot possibly give it. You are massaging the gum at the same time that you are polishing the neck of the tooth where it has been scaled.

Dr. W. A. Price, Cleveland: Two decades find us almost exactly where we were when I started to practice dentistry twenty-three years ago. We cannot come together and express a common idea relative to the etiology of pyorrhea and be united in supporting and substantiating it. We have made practically no study whatever of protein absorption, which takes place around these pyorrheal infections. A large number of nervous lesions of the body have apparently been traced directly to dental infections and to pyorrhea. The medical profession must bring these patients back to us for treatment, and we cannot even give the A, B, C of the infection in pyorrhea. We do not know the nature or the morphology of 50 per cent. of the bacteria that grow in pyorrhea pockets. They have not been grown artificially. What is the solution? If I were to ask Dr. Talbot how he got his information that has been the great cornerstone for a large part of this work he would say, "Hours and hours, and days and days, and years and years of hard work." How many men are devoting a worthy effort to this work? We are called on to redouble our efforts to answer with some degree of intelligence this great question of the etiology of pyorrhea, which today we know almost nothing about.

Dr. Hollis E. Potter, Chicago: I can see now that the pockets we are showing with the Roentgen rays represent more absorption of bone than any such slight detachment as you have been talking about. I should think that in cases where we are showing Roentgen ray findings of absorption around a tooth, when we are talking about a pocket, it is a very gross condition as compared with the small and limited pockets that the controversy is about this afternoon.

Dr. Alexander W. Lescohier, Detroit: As Dr. Price said, it is possible that there are many good things we do not know about the bacteriology of pyorrhea, but there is one fact which I do believe has been established, namely, the preponderance of streptococcic infection. I do not mean to imply that the streptococcus is the cause of pyorrhea, bacterial infection being apparently a secondary element, characteristic of the pustular stage and not of the initial condition. But, in view of its potential virulence and the persistency with which the streptococcus is found, it is indicated that certain strains have a peculiar affinity for the peridental tissues. Also that as far as the sequelae of pyorrheal infection are concerned, particularly the arthritic, the streptococcus overshadows in importance other micro-organisms.

Dr. H. A. Potts, Chicago: May I ask if it has been determined whether or not this streptococcus which he finds in pyorrhea is an aerobic or an anaerobic one; whether hemolytic or the *Streptococcus viridans*, and what connection there is between the effects of these streptococci of pyorrheal infection and those found in chronic abscess?

Dr. Lescohier: I cannot answer definitely the questions raised. The work of Hartzell and others has indicated that the *Streptococcus viridans* is found much more frequently than any other type, but hemolytic streptococci are also observed in some cases. I would not undertake to answer the question as to the relationship between streptococci elsewhere and those in pyorrhea and alveolar abscess.

Dr. Meyer L. Rhein, New York: I do not want to let the inference go that I am oblivious to the fact that it is necessary to have an attacking organism when we come to this stage of infection. There seems to be a strong elective affinity of certain micro-organisms to attack the gingival tissue dependent on certain malnutritional predisposing causes. There is a type of pyorrhea due to certain kinds of malnutritional causes where the attacking organism is a protozoon. I have cured three distinct cases of pyorrhea in the last two years with emetin, and I failed in numerous other cases. Now, why should this be? It simply carries out in the ultimate analysis what Dr. Lescohier's paper has shown us, that there is no one specific organism in pyorrhea. The three patients I cured all seemed to have the same kind of malnutritional predisposing causes; they were all cases of intense inflammation and infective conditions in the larger colon. They were cases that had shown symptoms that very closely resembled epidemic forms of dysentery. Now, is it illogical, is it surprising, that in a condition of that kind, where we know the endameba plays the rôle of attacking force, that when by reason of this predisposing cause the mouth shows the evidence of pyorrhea we should find the same organism again the attacking force? The place to find pyorrhea is not among the patients who come to the office of the dentist. You will find pyorrhea almost everywhere. About 85 per cent. of the cases that the average dentist treats as pyorrhea are nothing more than some focal infection that has been diagnosed improperly and in which a roentgenogram would demonstrate the error of the diagnosis. In chronic alveolar abscess, with its sinus opening out into the mouth, sooner or later symptoms appear that approach and grossly deceive the careless diagnostician, and there is no reason why you cannot get an alveolar abscess with a pyorrhea complication, if you want to call it such, that is dependent entirely on the apical infection. I have found such a condition in a considerable number of cases. On careful differential diagnosis I could put my hands on the point of focal infection. That is especially true in cases where there seem to be one or two teeth only subject to pyorrhea. When an individual comes with a pyorrhea in one or two teeth, the diagnosis is open to grave suspicion. I have found the focal infection of a pyorrhea showing in an upper incisor, away back in the roots of a second molar, and I recall quite well the difficulty of making a diagnosis in that particular case. I was a little surprised at Dr. Fisher's question as though I was in doubt as to whether operative interference was to be avoided in diabetics where the diabetes was not under control. It is not a question of a major operation that makes a surgical condition a most dangerous proposition under such conditions. I know of no surgeon who would not seriously hesitate to do the most minor surgical operation on a patient showing a large percentage of sugar. It is true that under certain conditions, when it becomes a question of life or death, the surgeon will take chances. He knows the patient is going to die from septic causes, and he is going to give that patient the benefit of that chance. The deaths from teeth extraction in diabetics would fill a very large chapter if they could be brought together.

Dr. Fisher: Does that mean from the anesthetic?

Dr. Rhein: No. I am simply stating what is an abstract fact that is settled in the minds of surgeons, pathologists and bacteriologists at the present time. In regard to research work: We have had to have recourse to animal experimentation to a large extent, and I am convinced that all the dental research work on animals in the past is replete with error, because the mouth flora of the dog is so different from the mouth flora of the human that it cannot consistently be taken as the same in any experimental work on animals. This is a very important factor, and it is far better for dental research work to proceed slowly and get results that are not going to be questioned in the future than to make comparisons and arrive at conclusions that cannot be verified.

Dr. Eugene S. Talbot, Chicago: If you will examine the dental journals, and some of the medical journals, you will find that a large percentage of the pictures that have been shown are represented as abscesses. Dr. Potter has shown us that there are a great many different shades or conditions of the alveolar process which are not abscesses, and the reason for that is that we have a condition of absorption called halisteresis, and not lacunar absorption in the alveolar process, which may be or is due to the irritation that has taken place from the pulp chamber. The degree of absorption will depend on the amount of irritation. In regard to focal infection, the dental profession can hardly be blamed for abscesses at the roots of the teeth after the canals have been treated and filled. Up to within the last two or three years, when an abscess formed on the root of a tooth and the face swelled or a fistula had formed, the only means of knowing that the abscess was supposed to be cured was that the face became reduced to a normal state and remained so; the fistula healed and did not return. These were the only symptoms available when the tooth remained quiet without pain or swelling which led the operator to believe that the abscess was cured. With the modern methods of diagnosis, the Roentgen ray, we have learned that these signs are not for a moment to be considered. The Roentgen ray demonstrates that very few abscesses are destroyed and healed, but that they remain cold or blind abscesses, discharging pus into the tissues for an indefinite length of time. I recall one instance in which an abscess remained on the root of a left superior first molar for fifty-two years.

Characteristics of the Chinese.—It seems that the Chinese typically has a higher threshold of stimulation than the occidental. It takes a larger summation of stimuli or a greater single stimulus in the first place to rise into consciousness, and in the second place to cause reflex activity. So we see him impervious to noises, odors and sights which western nerves bear but poorly. We see him existing with no complaint and no idea of betterment, in squalor, misery and poverty which western personality would find at once unendurable. We see him exercise a fatalistic indifference to the immediate or remote future, because no clear picture has arisen in his consciousness of any condition or time different from his own immediate present. When the summation or single stimulus is sufficiently great, however, for sensation to appear in consciousness, there is but a norrow margin of normal response before the reaction becomes pathological. Hence it is that all the psychoses and neuroses are so easily aroused, since the zone of normal response is narrowed by the high threshold of stimulation. Thus we see the superficial anomaly of sluggishness, inertia and indifference associated with a high and poorly controlled emotional nature which involves and easily goes over into hysteria and various emotional crises.—Dr. Alfred C. Reed, *Scientific Monthly*, January, 1917.

AN ANALYSIS OF FIFTY CASES OF SCIATICA *

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The purpose of analyzing a series of cases of sciatica and presenting it before this section is to discuss whether there is such a condition or clinical entity that is called essential or idiopathic sciatica. Also I wish to discuss in relation to teaching, what should be taught, and in what department of the medical school should it be made the subject of teaching. There is no question but that it is firmly fixed in the layman's mind that sciatica is a disease in itself, a distinct entity, and I am sure that the profession at large also is satisfied that it is an entity, although realizing that at times it may be a symptom of a lesion elsewhere. If we appreciate that there is a definite cause in every case and that cause can be demonstrated as a physical fact, then much of the uncertainty will be changed and the treatment will become more rational and exact.

What is the necessity for discussing this subject? That it is an indefinite and undecided condition is very well shown by any textbook on internal medicine or nervous diseases. Either what the orthopedist believes to be true, and I suppose my experience as brought out in these fifty cases will correspond with yours, is entirely wrong, or else the various authorities on which we have to depend are giving a wrong conception of this condition.

Let me quote from one of the authorities as to treatment:

> Certain remedies are of service in sciatica. Prolonged baths give excellent results. The patient must remain in his bath for several hours. Antipyrin may be prescribed in doses of from 15 to 45 grains. Injections of morphin and inunction of an ointment of methyl salicylate may give relief. Blister, the actual cautery, injections of sterilized water, injections of air, and epidural injections by the sacrococcygeal route have their indications. Bleeding leeches and cuppings are useful.

I am familiar with the teaching of two medical schools and as far as I know sciatica is not definitely taught as a part of the curriculum in either one. I received no instruction as a student and supposed that it was a pure nerve lesion. I rather believe that it is not considered of very great importance, and therefore falls between the departments of medicine, neurology and orthopedics. Therefore we had to gather our knowledge from the textbooks and current literature, and enough has been said to show the confusion that exists, and this is the reason for presenting these facts.

It may be argued that this is a rather selected group of cases, because I would be more likely to see cases with joint symptoms. There is a certain element of truth to such a statement, but many of these cases had been definitely treated for sciatica by other men, with the idea that there was an inflammatory lesion of the nerve trunk. I am sure that this series of cases represents what is commonly called sciatica. Fifteen years ago there were reported from the nerve department of the Massachusetts General Hospital of Boston a large number of cases of sciatica, as shown in the annual report. The other day I went over the records of this same department for the last six months and found

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three cases that were diagnosed sciatica. One of the staff of that department analyzed these three records, and he could find no evidence of an essential sciatica. In other words, they have no record of such a condition in the last six months.

I was interested in discussing this question of essential sciatica with one of the older orthopedic men, and he said that most sciaticas were certainly due to joint lesion, but he supposed there must be real sciaticas. But the point is that he never has seen one. Several medical men of good standing have informed me that they have never recognized a case of so-called idiopathic sciatica. Now, where certain groups of men recognize sciatica as a distinct disease, a perineuritis of the sciatic nerve, and that is the commonly accepted pathology, and another group are not sure that there is such a condition, it means either that our older teaching and the larger part of what the textbooks teach are wrong. or that I have not seen the type of cases that they describe. I believe such a fact as here presented in regard to the records of the nerve department of the Massachusetts General Hospital show that we are all dealing with the same type of case, but from a different point of view.

As the analysis of this series will show that the lesion is located at the origin of the sciatic nerve, and not along the course of the nerve as is commonly taught, and as it is the contention that the most common cause is a joint lesion with a secondary effect on the nerve which is anatomically in close apposition to the joints which make up the lower part of the spine, it will be necessary first to consider the various points in the physical examination of any case of sciatica which indicate a joint lesion.

To study the physical examination of such a well-known condition as sciatica would seem to be unnecessary, but certain features seem to me to be overemphasized and are always explained on the basis of a nerve lesion. It is quite easy to demonstrate that an acute attack of sciatica has a definite joint basis, but it is more difficult to explain the cases that show a milder degree of pain and that are more chronic in character, because the symptoms referable to a joint are less marked than the resulting nerve pain.

The evidences of a lesion of any joint, whether due to disease or to trauma, is definite and clear cut. They are pain referred to a joint, tenderness to touch, limitation of motion, deformity resulting from muscular spasm or from a permanent lesion, and changes in the joint as shown by the Roentgen-ray.

It is very common in sciatica to have the pain referred to the lower portion of the spine, starting from that region and extending down the course of the nerve. Often the patient will put one finger directly over the sacro-iliac joint or the lumbosacral joint and locate the pain definitely at the joint.

In the acute cases, those that are due to an acute joint trouble, there may be definite tenderness to touch over one of the articulations, and sometimes this may cause pain down the sciatic nerve. Of course, it is impossible to cause direct pressure on the nerve by pressing on the posterior surface of the joint, so the effect must be through a sensitive joint and thus to the nerve which lies anterior to the joint.

Limitation of motion of a joint does not need any explanation as an indication of a joint lesion, except to explain how it is detected in lesions about the lower portion of the spine. It may be observed while the patient is standing, and then it will be noticed that forward, lateral or backward bending will either be definitely restricted or will cause pain. A more delicate test is to have the patient, while lying on the back and with the knee held straight, flex the leg on the abdomen. This is the Kernig test and has always been explained as causing pain because it stretched the sciatic nerve. It seems to me that the true explanation is that there is a direct leverage applied to the sacro-iliac joint, because with the leg held straight, the ham-string muscles running from the ischium to the head of the tibia pull directly on the joint. I have never been able to convince myself that anatomically the nerve is stretched by this procedure, and I believe it to be a fallacy handed down from one book to another. In the severe cases it often is not possible to raise the leg in this position 6 inches from the table and this cannot actually stretch the nerve, while it will pull on a sensitive joint. With the patient lying face downward, hyperextension of the thigh, which pulls on the sacro-iliac joint in the opposite direction, will often cause sciatic pain, and this certainly cannot pull on the nerve.

These two tests, this so-called straight leg raising and the hyperextension of the thighs, are the two most delicate tests that affect the motions of the sacro-iliac joint. It has long been recognized that in cases of sciatica Kernig's test is very apt to be positive, but the interpretation has always been referred to the effect on the nerve and very little mention has been made of its action in causing motion of any joint.

One of the chief symptoms of a lesion about a joint is deformity which arises whenever the lesion is of any intensity. In the knee-joint the deformity is flexion and in the hip-joint it is flexion and adduction, as a rule. So that when we see deformity we naturally look for a joint lesion. In sciatica it is very common to notice a change from the normal position of the lower portion of the spine. This listing or deviation from the normal position is due to either muscular spasm or joint spasm, in the acute cases, or to permanent changes in the joint, in the more chronic cases. It is simply what happens in the course of any joint trouble and is commonly seen in the more severe or acute cases. If the listing persists we have what is commonly called sciatic scoliosis, that is, simply a deviation or a deformity of the spine due to some joint lesion.

Much has been written, especially in the German language, about sciatic scoliosis, but it seems to me that it is simply a symptom and not a distinct condition by itself. For the purposes of this paper I shall not go farther into this symptom, but simply draw attention to the fact that it is indicative of joint lesion.

The Roentgen-ray should be used in the examination of many cases of sciatica, the same as would be done in any joint case, to show whether there is any bone lesion that is the cause of the symptoms. Tuberculosis of the fifth lumbar vertebra is often treated for sciatica for months, because we are content to consider the latter as a disease. Hypertrophic arthritis, or ostearthritis of the spine, often has sciatic pain as its chief symptom. Also a careful Roentgen-ray study may show why the joints of the lower spine are subject to chronic strains, because we find that the fifth lumbar vertebra is very apt to show certain changes from the normal, such as extra long transverse processes.

It is not the purpose of this paper to deal with any minute point in the etiology, or to go into detail in regard to any case, but I shall try to show in the analysis of these cases that a joint in the physical examination shows a lesion and the treatment is based on this fact. Also I shall not discuss whether in any individual case there may be a dislocation or subluxation of the sacro-iliac joint, which has lately been under discussion, but shall call those cases in which this diagnosis might be possible acute joint strain, a term which is broad enough to cover the subject. Nor shall I try to differentiate whether the lesion may be of the sacro-iliac joint or of the lower lumbar joints, because a disturbance of any of these may cause sciatic pain.

Of this series of fifty cases of so-called sciatica, forty-nine showed a definite evidence of a lesion of one of the joints of the lower spine, which include the lumbar articulations, the lumbosacral joint and the sacro-iliac joints. Also there is definite evidence that the lesion of the spine has a direct connection with the pain in the sciatic nerve, as is shown by an increase in the pain when there is an attempt at motion of the joint involved. One case out of fifty showed no evidence of a spinal lesion, but presented the characteristic evidence of carcinoma of the prostate. This case is included and helps to emphasize the point that there is always a definite cause at the origin of the nerve and not a perineuritis along the course of the nerve.

There are seventeen cases out of fifty which I have classified as acute strain of the lower spine. Most of these represent an acute lesion of one of the sacro-iliac joints, the sciatic symptoms sometimes coming on acutely secondarily to a chronic or recurrent strain of this joint. Two of these patients were first examined after having had severe sciatic pain for over a month, when they presented a sacro-iliac joint so sensitive that the slightest pressure caused intense sciatic as well as joint pain. And yet the patients told me that this was the first time that any one had ever examined the back. This is so because we have been taught to accept the term sciatica as a clinical entity, and that there was no need of examining further.

There were twenty-one cases out of fifty that are classified as chronic strain of the lower portion of the spine. It is more difficult in this group to connect the sciatic pain with the spinal condition, because the history is often misleading and sometimes shows no direct connection. But in every one of these cases there was definite evidence of a joint lesion, as shown by loss of motion and pain on motion, and it was possible to demonstrate an increase of sciatic pain when the affected joint was moved. It is in this group that we see the so-called sciatic scoliosis, which is perfect evidence of a joint lesion. It is not rational to explain the scoliosis as secondary to the sciatica when they are both symptoms of a joint lesion.

The third group is classified as hypertrophic arthritis, the diagnosis being based on the fact that the Roentgen-ray shows definite overgrowth of bone in the region of the lower lumbar spine, which corresponds to the facts as shown on physical examination. In this group there were eight cases out of fifty. It is not necessary to discuss this group, because all the textbooks recognize that definite spinal lesions may cause sciatic pain.

The last group, four out of fifty cases, were proved cases of tuberculosis of the lower spine in adults. It is of interest to note that two of these four patients were treated for a year for idiopathic sciatica, and the diagnosis was mistaken because some one was satisfied with the accepted theories. It would have been easy to detect a joint lesion as soon as the sciatic pain commenced in these cases, even if it were not possible to diagnose the character of the bone lesion, because there must have been evidences of joint trouble previous to the involvement of the nerve.

It is not the presumption that the only cause of sciatic pain is a joint lesion, but on the basis of these cases it is evident that the joint lesion is very frequently overlooked and its importance not recognized. Of course, it is perfectly irrational to treat the resulting pain, which is advocated in numerous textbooks and current literature, when the trouble lies in the spine. Nobody would think of treating the sciatic pain after he recognizes a tuberculosis of the spine, and therefore the sciatica should not be treated as such when there is definite evidence of a joint strain, which can certainly cause sciatic pain.

The conclusions from this study are two:

First, there is no clinical entity which is commonly called idiopathic sciatica. The evidence is very strong that the accepted theory of a perineuritis due to some inflammatory condition of the nerve sheath is not proved, and that there is always a definite cause at the origin of the nerve. The most common cause of sciatic pain is a definite joint lesion.

Second, if we have to use the term sciatica, and we undoubtedly will, then it should be a part of the orthopedic teaching. One of the chief reasons why there is so much confusion is because it is not well taught, and our knowledge is gathered chiefly from textbooks. It should be in the orthopedic textbooks.

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ABSTRACT OF DISCUSSION

Dr. Leonard W. Ely, San Francisco: I teach my students that there is no such disease entity as sciatica. Sciatica means pain in the sciatic nerve, a symptom, not a disease. Then they go to other departments, and find that it is treated as a clinical entity, by means of electricity, massage and drugs. In almost every case, however, a cause for the pain can be found. When we cannot find a cause, we acknowledge our ignorance, and do not attempt to hide it by calling a symptom a disease. It is high time that sciatica and intercostal neuralgia followed "belly-ache" and "acute bilious attacks" as diagnoses into the scrap heap.

Dr. Melvin S. Henderson, Rochester, Minn.: I heartily agree with what Dr. Rogers said, and partly with what Dr. Ely said. I believe, however, that there is a definite group of cases in which you cannot find any cause for so-called sciatica. What are you going to do with these cases? I try to locate the cause, but sometimes cannot do it, and should like to know whether any one else can do so always. Occasionally I have found that the injection of saline solution cured a small percentage. I try it in that particular group just mentioned, after I have tried out all other methods. The occasional cure secured seems to me to justify the procedure, as it is devoid of danger if carried out according to the method of Patrick.

Dr. Joel E. Goldthwait, Boston: It might be a matter of interest from the point of view of history to know that at the Massachusetts General Hospital, a number of years ago, these patients were sent to the orthopedic department, not at the request of the orthopedic surgeon but of the neurologist, who said that eight out of ten of these patients belonged to the orthopedic department, and it was not worth while for them to be sent to the neurologic department first, only to be referred elsewhere. He thought it better for the orthopedic department to have to send two patients to the neurologic department than for the neurologic department to have to refer eight to the orthopedic. That was the attitude of the neurologist years ago. These requests came from the neurologists themselves; and I am under the impression that a smaller proportion of the total number of these patients would now be claimed by the neurologists than at that time.

Dr. Roland Meisenbach, Buffalo: I must agree with Dr. Rogers. I was very glad to hear him speak of sciatica as a symptom. I am willing to acknowledge that there is such a condition as sciatica, but I wish to emphasize that it is rare, that when we have sciatica in any way present, it is usually present as a symptom, due to some other cause than sciatic nerve inflammation. One of the best illustrations of this is the sciatica in cases of hypertrophic arthritis, in which the lumen through which the sacral nerves pass gradually became smaller due to the hypertrophic pressure. Loose pelvic joints are frequently the cause. Sacro-lumbar, or even lumbro-lumbar joints may have a direct bearing on the symptoms of sciatica. We must not forget our anatomy and the relation of the lumbar plexus to the sciatic nerve and to the spine. I do not believe that the injection of saline into the sciatic nerve would permanently relieve cases in which the sciatica may be the chief symptom, but in which there are other conditions, as a loose sacro-iliac or a disturbed sacro-lumbar joint present. However, the injection of novocain may temporarily relieve the patient, but the symptoms will recur. Whenever we see a case of sciatica, it is our duty to search for the cause, and not treat the symptom.

Dr. John Ridlon, Chicago: I have had the pleasure of having to be a month in bed for this kind of pain at least ten times. I have not had Pott's disease, or ostearthritis of the lumbar spine, or a slipped sacro-iliac joint; so the pain was not due to any of these. I think that this shifting of the name of sciatica to a strained sacro-iliac joint is not by any means clearing up the question of painful backs.

Dr. John Prentiss Lord, Omaha: I agree with the majority here that mechanical causes are back of a large proportion of these cases, but I have found that we must consider the patients as individuals the same as we consider those who have pains elsewhere. Some of these pains are toxic. The mechanical condition is not the only one present. The patients are frequently anemic. Some do not eliminate properly. In one notable case in Omaha, the patient had tried all methods of cure; liquid paraffin relieved his intestinal stasis, and as soon as elimination was properly established, his pain disappeared. I think that we must not forget that we are not merely manipulators, but are still doctors. We must recognize the fact that some patients need treatment besides the particular treatment that comes under our specialty. I believe that in some cases in which the pain is inexplicable and you cannot find a cause for it, if you treat the patient in a sensible way recovery may be expected.

Dr. Frederick C. Test, Chicago: I differ with Dr. Rogers only in regard to the percentages of the causes that he stated for this pain. In my experience, which comprises approximately fifty cases of distinct pain referred to the lumbosacral region, I have not been satisfied that I have had many loose sacral joints. I found that I had to look for the cause higher up, and have almost always discovered an elongated transverse process of the fifth lumbar vertebra. Sometimes this is present on only one side, but very frequently on both, perhaps associated with tilting of the lower spine and generally with stiffness, with pain usually shooting down one sciatic nerve or the other. In such cases, I occasionally find that there will be relief obtained by manipulation, either intentional or, as in two or three cases, the result of some movement on the part of the patient that seemed to free the transverse process and so relieve the pressure—temporarily, at any rate; and sometimes permanently—on the nerve roots. I remember a case in which there was pain in the lower back and extending down the right leg, and in which the roentgenogram showed a decidedly elongated transverse process on each side of the fifth lumbar vertebra. Operation was declined for the time being; and afterward, while lifting a pail of water from the floor, the patient felt a twist on the right side of the back, and the pain immediately left the right sciatic nerve, and temporarily went to the left. It has since gone from the left sciatic nerve, and she is now free from pain. Regarding the other causes that cannot be traced to a bony lesion, I personally feel that there is something, at any rate, in the matter of a toxemic neuritis from a focus of infection somewhere in the body. I remember one case in which I was particularly interested in which pain in the sciatic nerve came on three days after a nose operation. After the nose condition cleared up, the sciatica gradually disappeared, but has a tendency to return whenever there is a coryza.

Dr. J. D. Griffith, Kansas City, Mo.: I am treating now two patients in whom there is a marked sciatica recurring every now and then. I think that there are other causes for sciatica, in addition to the one that Dr. Rogers pointed out, in a number of cases. My cases belong distinctly to the type of enteroptosis. There was an enormously dilated and enlarged sigmoid; and the paresthesia, etc., followed whenever it was loaded. I have found relief by instituting hyperextension, prone hanging and the corset.

Dr. Frank E. Peckham, Providence, R. I.: I think Dr. Rogers' idea was to trace the sciatica to the sacro-iliac joint. Of course the joint is affected by trouble in still other regions; and you may get a toxic case, as described by Dr. Lord, with a real subluxation, as Dr. Ryerson probably has just described. I had two such cases; one was reduced under ether, presumably a subluxation, and the patient was well afterward and remained so. The other case was one of pain in the groin, which I have seen in quite a few cases. One manipulation without ether practically cured him; but these are unusual cases. As Dr. Lord says, we must study the patient. Although he has local symptoms, his trouble may be quite general. Another patient after many trials was cured by arch supports. There was a static strain, which is a condition we must consider. There are times when the ligaments require toning up and stimulating, which I do by various physicotherapeutic measures. I know of one case in a doctor who had recurrent attacks. By doing gymnastics morning and night, and hyperextending himself in bed, he has been clear of an attack for some time. I think that Dr. Rogers is correct in tracing the pain to the sacro-iliac joint, but this joint itself is affected by various infections, and we should look for, and treat these.

Dr. James T. Watkins, San Francisco: Dr. Lord said that occasionally sciatica is of toxic origin. In confirmation of this contention, I should like to report a case I saw. The gentleman, an athletic person, had had recurrent attacks of sciatica for a long time. For four years he had been going the rounds of the physicians. In his youth he had had gonorrhea and was now obsessed with the idea that this was the cause of his trouble, despite the fact that the best genito-urinary men had found nothing wrong. I pointed out to him that nothing could be gained by duplicating the work which had been done by the exceedingly competent men who had preceded me in his case. We therefore undertook a new departure and had his mouth roentgenographed. My dentist friends advise me that there is no such thing as a healthy adult mouth. This man had pyorrhea and alveolar abscesses. I sent him to Dr. T. Sidney Smith. Dr. Smith advised certain work and that one tooth be extracted. This displeased the patient, so he consulted a dentist who had been recommended to him at his club. This man failed to relieve him. He ultimately returned to me and I sent him back to Dr. Smith. Then he had the tooth extracted. Prior to this he had attacks of sciatica every two or three weeks. Since removing the tooth and having his mouth treated efficiently an interval of some months has elapsed during which he has had no sciatica at all.

Dr. Albert H. Freiberg, Cincinnati: We must remember that a man has two sciatic nerves, and also many other nerves. Therefore, there is to be explained why a man happens to have a pain in one sciatic nerve. However much there may be a constitutional cause, either in the shape of infection or some constitutional disease, such as diabetes, it is only reasonable to suppose that there is a localizing factor to be found, if we only know where to look for it. Since we have been able, by modern methods and investigations, to study better the conditions of the spine, and the pelvic joints, and since we know the relationships of sacrolumbar cord and sacrolumbar plexuses, we have eliminated a large percentage of the unexplained cases. We are called on in every case to tell why the individual has the pain in his right or left sacro-iliac region or his right or left sciatic nerve. I do not mean to say that I am always able to tell, any more than any one else. I can give the case a careful analysis by means of the Roentgen ray and other diagnostic helps; but I think that even in those cases in which we are unable to find the localizing factor, we must, nevertheless, assume that there is one that we should probably find with increase of knowledge. We must strive to explain, in every case that comes to us, why the individual has a pain in the sciatic nerve, and not somewhere else.

Dr. Reginald H. Sayre, New York: We have been over almost all parts of the body, looking for the cause of pain in the sciatic nerve, but no one has mentioned the necessity of looking for fissures in the rectum, for carcinomas, for retroverted uteri, for prolapsed ovaries and dilated colons. Anything resting on the sciatic nerve and hurting it or the sacral plexus may cause this pain.

Dr. Arthur Lawrence Fisher, San Francisco: I should like to emphasize a point in regard to the mechanism of the pain. We are taught that it is due to pressure. Unquestionably, in some cases, it is due to pressure on the nerve; but in others, there is a reflex from the joint, just as the pain in hip-joint disease is referred to the knee. The nerve which enervates the joint comes from the same segments of the cord as the nerve along which the pain is referred, which in this instance is in the sciatic nerve.

Dr. Mark Homer Rogers, Boston: The chief point to which I wish to call attention is that the lesion is somewhere near the origin of the nerve, and not along the course of the nerve, as is commonly taught. I did not intend to lay stress on the importance of any one joint, namely the sacro-iliac. It is not any one joint but any part of the lower spine from which the nerve arises that is the primary cause. If you will examine the spine you will find a spinal lesion in a majority of cases. The strongest point that I have made is the fact that the neurologic department of the Massachusetts General Hospital has no record of a true case of sciatica in the last six months, whereas formerly they had many hundreds.

Disease Not a Respecter of States' Rights.—The greatest asset which our country can have is the healthy American citizen, and, valuable as it may be to increase the health of live stock and vegetation, it is of far greater importance that we throw every possible safeguard about the health of the man who is responsible for that live stock and vegetation. The argument has been advanced that since the States at the time of their entry into the Union reserved to themselves their police powers and since the administration of health is one of the police powers, that the states should themselves grapple with their own health problems and conquer them, and that it is therefore improper for the federal government to make appropriations the application of which will react to the health of states. This argument is fallacious in the extreme. As I have previously pointed out, this problem is not a purely intrastate problem. Milk which is produced under insanitary conditions in New Jersey may produce an epidemic in New York. Butter or cheese which is made under insanitary conditions or from polluted milk in Wisconsin or Illinois may produce disease in Virginia or the District of Columbia. Lettuce or watercress which is grown in soil which is polluted with human excrement may be shipped in refrigerator cars to a distant point and there produce an epidemic of typhoid fever. The man who contracts typhoid fever on a farm in Texas may become a chronic typhoid bacillus carrier and distribute the disease wherever he goes no matter what the state or what the city. Disease has absolutely no regard for state lines whatsoever. Disease is equally uninterested in states' rights. Sewage poured into a river in one state is easily carried by that stream to another state. So I say to you that the problem of rural sanitation is not a local problem but one which concerns the health and the physical integrity of our entire nation.—Senator Joseph E. Ransdell, of Louisiana, in the U. S. Senate, July 14, 1916.

A REPORT ON THE TREATMENT OF PERNICIOUS ANEMIA BY TRANSFUSION AND SPLENECTOMY *

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It is difficult to appreciate the fact that pernicious anemia is at present an incurable and fatal disease which in some respects is more to be dreaded than cancer. Its relapses, remissions, and merciless progressive course impress on us the necessity for a universal study of its manifestations. A thorough trial of splenectomy in the treatment of pernicious anemia is therefore warranted, though a consideration of the results is at present necessarily confused by fallacies and insufficient data. There is so far no evidence that splenectomy has cured pernicious anemia, but there are definite indications of consistent temporary improvement in a majority of instances.

Our early experience with splenectomy for pernicious anemia was discouraging. During the past two years, however, it has become evident that a marked reaction and a consistent temporary gain, at least for a period of months, follows splenectomy in selected cases, and surgical treatment has been more frequently suggested after a frank explanation to the patients concerning the course of the disease, the inadequacy of present methods of treatment, and the experimental nature of the procedure.

In February, 1910, the spleen was removed from a patient (A7040) who suffered from severe attacks of epistaxis and had a very large spleen, an icteroid tinge, and a blood picture of pernicious anemia including the presence of megaloblasts. Splenectomy was advised not with the specific idea of applying that treatment to pernicious anemia but largely because of the great size of the spleen and the somewhat indefinite characteristics of the blood picture. The patient did not report himself as improved, and died three years after operation with pneumonia.

Experience may show that cases of this type, in which there is a very large spleen, a hemolytic type of anemia, and a blood picture of pernicious anemia would better be grouped separately, as suggested by Moffitt,[1] but they cannot at present be omitted from consideration in a study of this character.

The remaining patients of this series were operated on between Aug. 1, 1914, and April 1, 1916. The records extended up to June 1, 1916, from twenty-three months to three months following operation; most of them, however, were for periods of less than one year.

Preoperative Transfusion.—Preoperative transfusion has been done in nineteen cases, from one to four transfusions having been given in each instance. A marked gain followed transfusion in eight cases. Very rapid and decided gains were seen in two patients. In one the hemoglobin rose from 10 to 40 per cent., with a gain of 2,000,000 red cells in one month; in the other the hemoglobin rose from 16 to 59 per cent., with a gain of 1,500,000 red cells in one month. Each of these patients received two transfusions. In six there were gains of only a few points, and in four there was no definite improvement. In one the hemoglobin percentage and erythrocyte count fell, but later, after splenectomy, improvement occurred.

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* From the Mayo Clinic.

* Presented before the Association of American Physicians, May 10, 1916, Washington, D. C.

[1] Moffitt, H. C.: Studies in Pernicious Anemia, Am. Jour. Med. Sc., 1914, **148**, 817.

In general, preoperative transfusions have proved valuable in improving the general condition of the patient and in favorably affecting the blood picture. The hemoglobin percentage and the red cell count have been moderately raised and the characteristics of the blood count favorably affected. Our knowledge of the hemopoietic system indicates that a consistently low leukocyte count with relative and absolute reduction in polymorphonuclear cells is to be interpreted as the result of severe injury to the bone marrow. Transfusion is usually followed by a gradual slight rise in the leukocyte count and an increase in the absolute number of polymorphonuclear cells. This reaction is not, however, to be compared in degree with that following splenectomy, which, on the other hand, must be considered in the light of postoperative leukocytosis in general.

TABLE 1.—SPLENECTOMY FOR PERNICIOUS ANEMIA

	Cases
Total (April 1, 1916)	31
Operative deaths (9.7%)	3
Recovered from operation	28
Marked and continuous gain after splenectomy during the first 3 mo. period	22
Number of cases recorded during second 3 mo. period	16
Number of cases maintaining gain during second 3 mo. period	11
Relapse	3
Postoperative deaths	5

Splenectomy.—That definite benefit for a period of months follows splenectomy in a high percentage of cases seems to be clearly indicated by a study of this series. Of twenty-eight patients recovering from operation, there was a gain during the first period of three months in twenty-two (78 per cent.). During the second period of three months, eleven (68 per cent.) of sixteen patients then living maintained their gain. This gain represents a satisfactory, and in several instances, a remarkable, improvement in the blood picture and the general condition. It has, however, little relationship to spinal cord symptoms or signs. Two living patients have maintained a satisfactory condition for one year, three for nine months and three for six months (Tables 1 and 2).

In the course of pernicious anemia, splenectomy seems to cause a more profound immediate reaction than any other form of treatment. This is demonstrated by our observations chiefly in three ways: (1) by an improvement in the blood picture and a change in its characteristics; (2) by a gain in the general condition, and (3) by a fall in the values of the blood-derived pigments in the duodenal contents.

1. *The Blood Picture*.—The very prompt occurrence of leukocytosis with a corresponding increase in the relative and absolute polymorphonuclear neutrophil count, together with showers of normoblasts, is indicative of a very marked reaction after splenectomy. The average leukocyte count in these cases within a few days of operation was 11,531. A very high polymorphonuclear count was almost constant. This leukocytosis persisted at least for a period of months. One month after operation it averaged 11,473. In cases of which we have record, from three to six months following splenectomy it averaged 10,283. The leukocytosis following splenectomy for pernicious anemia differs from the leukocytosis following operations in general both in degree and in persistence. The polymorphonuclear cells, it is agreed, have their origin in the bone marrow, and their increase may be either the result of bone marrow stimulation or of decreased blood destruction. No similar reaction is seen following transfusion.

Large numbers of normoblasts were found in the blood smears in twenty-five cases. The average was fifty-six in a count of 300 leukocytes. This is exclusive of one case in which 536 were recorded.

The gain in hemoglobin was gradual in most cases. The average gain in twenty patients, who showed satisfactory improvement, was from 38 per cent. just preceding splenectomy to 72 per cent. at periods varying from one month to six months following operation. In three patients it reached 90 per cent. or more.

The increase in the erythrocyte count ran parallel to the rise in hemoglobin. The average erythrocyte count in the twenty-two cases showing a gain was 2,000,000 just preceding splenectomy and 3,490,000 at periods varying from one month to six months after operation. In one patient it reached 5,200,000 cells; in seven it rose to over 4,000,000. This improvement was independent of preoperative transfusion, as is evidenced by the fact that nine patients in whom preoperative transfusion was not given showed an average gain of from 1,900,000 to 3,700,000. On the other hand, the greatest average gain was seen in thirteen patients as a result of combined preoperative transfusion and splenectomy — an average gain from 1,200,000 to 3,500,000. Postoperative transfusion has been given only in relapses, and not as a routine procedure.

TABLE 2.—SPLENECTOMY FOR PERNICIOUS ANEMIA: CONDITION OF PATIENTS IN THREE MONTH PERIODS AFTER OPERATION WITH RESPECT TO BLOOD AND GENERAL CONDITION*

Case and No.			Date of Operation	Operative Death	Months				
					3	6	9	12	15
1	7040	E. P. F.	2/10/10	..	—	?	..	..	D†
2	112160	D. M.	8/11/14	..	+	+	—D		
3	98744	M. S.	12/ 2/14	..	—D				
4	122468	J. B. M.	1/23/15	..	—D				
5	124257	M. S.	3/10/15	..	+	+	—R	+	—R
6	127677	C. H.	4/17/15	D					
7	129678	O. D. B.	6/ 4/15	..	+	+	+	+	
8	128367	J. H. D.	6/ 5/15	..	+	+	+	+	
9	131876	E. S.	6/24/15	..	+	+	—R	D	
10	131901	R. C.	7/ 3/15	D					
11	136882	M. J. F.	8/ 2/15	..	+	+	+		
12	134484	W. G.	8/31/15	..	+	—R	+		
13	139695	F. L.	9/ 8/15	..	+	—R	+		
14	140045	G. L.	9/30/15	..	+	+	+		
15	142349	E. O.	10/ 1/15	..	+	+	+		
16	141771	H. F.	10/12/15	..	+	+			
17	142587	H. W. L.	10/15/15	..	—	—			
18	140970	W. A. S.	10/19/15	..	+	+			
19	133078	C. A.	10/25/15	D					
20	134232	J. M.	10/26/15	..	—	—			
21	147503	E. F.	12/31/15	..	+	+			
22	150807	W. E. B.	2/ 2/16	..	+				
23	151088	M. R.	2/14/16	..	+				
24	150229	E. S.	2/23/16	..	+				
25	151665	F. W. N.	2/24/16	..	+				
26	152922	W. H.	3/10/16	..	+				
27	152671	H. L.	3/15/16	..	+				
28	136512	C. G. T.	3/17/16	..	—				
29	154493	D. D. H.	2/25/16	..	+				
30	153395	L. C. H.	3/29/16	..	+				
31	151646	B. N.	3/29/16	..	+				

* In this table, + indicates gain, — loss, R relapse, and D death.
† Death 3 years.

It seems to be clear, therefore, that the blood picture is more decidedly and consistently influenced by splenectomy than by any other method of treatment. It has not yet been shown that this improvement is more than temporary. A polymorphonuclear increase which persists for months, great numbers of normoblasts, and a gradual rise in the hemoglobin and the red cell count are most prominent.

2. *The General Condition.*—An improvement in appetite and in general strength has been noted during the early weeks following splenectomy. This has been recorded even before any decided improvement in the blood has taken place. The patients seemed to be less toxic. All but two promptly lost their icteroid tinge. Elimination or partial elimination of some product of altered metabolism or hemolysis would explain the change in the general condition. The psychic effect of surgical treatment has been minimized by a previous explanation of our incomplete knowledge concerning the results.

3. *The Fall in the Values of the Blood-Derived Pigments in the Duodenal Contents.*—The increase of urobilin in stools of patients suffering with hemolytic types of anemia and its marked decrease after splenectomy have been demonstrated by Eppinger[2] and his co-workers. The clinical importance of the estimation of urobilin in the excretions in various types of anemia is shown by the work of Wilbur and Addis.[3] The quantitative estimation of urobilin and urobilinogen spectroscopically in Wilbur and Addis units has been successfully applied to the duodenal contents by Schneider.[4] We have estimated the values of the blood-derived pigments in the duodenal contents of thirty-four patients, and our findings in general corroborate those of Schneider. The only results I report at this time were obtained in nine cases of this series. The very striking fall in the values of the blood-derived pigments after splenectomy would seem to indicate a favorable effect with respect to the hemolytic factor. The values frequently run parallel to the degree of icterus (Table 3). In one case the total estimation of urobilin and urobilinogen fell from 6,000 units before operation to 800, twenty-one days afterward; in another from 5,000 units to 200 units. That this marked reduction in bilirubin, urobilin and urobilinogen in the duodenal contents will prove constant is likely; that it will obtain at a later period, after splenectomy, we have yet no indication.

Can we formulate what might be termed a balance between the hemolytic and myelotoxic factors in a given case? Between blood destruction and blood production? The values for the blood-derived pigments, it would seem, should in some measure be an index of hemolysis; on the other hand, the characteristics of the blood picture, if we can properly interpret them, are doubtless expressive of the condition of the bone marrow. Decided fluctuations in the leukocyte count and in the characteristics of the differential count are seen in many cases of this series, both before and after transfusion, and before and after splenectomy. There is considerable evidence to indicate, however, that a consistently low leukocyte count with a reduction of the polymorphonuclear neutrophils is indicative of severe bone marrow insufficiency. Certainly a constant complete inversion of polymorphonuclear and lymphocyte percentages, that is, a very low polymorphonuclear percentage with a high lymphocyte percentage is an unfavorable indication, though it does not mean that a subsequent remission may not occur. If a patient with high hemolytic values is able, in spite of active hemolysis, to maintain a blood picture with favorable characteristics and only moderate anemia, there should be present an active bone marrow, and the case would appear to be a more favorable one for splenectomy. Irrespective of high or low hemolytic values, if the leukocyte count is consistently low with an inversion of the differential count, and the anemia extreme, showing no reaction after transfusion or medicinal treatment, the case would seem to be an unfavorable one because of probable advanced pathologic change in the bone marrow.

Age.—The largest number of patients (twelve) were between 40 and 50 years of age. One was in the second decade, three in the third, five in the fourth, eight in the sixth, and two in the seventh.

The progress of the patient in its relationship to age cannot at present be ascertained from a study of these cases. In general, the older patients presented less evidence of active hemolysis and more evidence of marrow damage. The patients of middle age were of both the hemolytic and myelotoxic types, while in younger patients hemolysis was usually active. The severity of the disease varied with the individual case irrespective of age, save that the oldest patients were prone to a chronic form with less definite remissions. While the younger patients probably are capable of more benefit as a result of bone marrow stimulation and an amelioration of the hemolytic factor, many patients of the fourth and fifth decades have shown remarkable gains.

TABLE 3.—ESTIMATION OF HEMOGLOBIN-DERIVED PIGMENTS IN DUODENAL CONTENTS, WILBUR AND ADDIS UNITS (SCHNEIDER TEST)

Case and No.	Time Before and After Splenectomy	Color	Bilirubin	Urobilin	Urobilinogen	Total
5 124257 M. S.	12 months after	....	+	400	0	400
22 150807 W. E. B.	37 days after....	Yellow	++	700	0	700
24 150229 E. S.	30 days after....	Yellow	+	1,700	0	1,700
25 151665 F. W. N.	34 days after....	Yellow	....	600	0	600
26 152922 W. H. ...	7 days before...	....	+++	2,000	600	2,600
	21 days after....	Yellow	+	1,400	0	1,400
27 152671 H. L.	20 days before...	Dark brown	....	6,000	4,000	10,000
	14 days before...	Dark brown	....	5,000	1,000	6,000
	21 days after....	....	....	800	0	800
29 154493 D. D. H.	9 days before...	Dark brown	+	3,000	2,000	5,000
	17 days after....	Yellow	....	200	0	200
30 153395 L. C. H.	9 days before...	Dark brown	+++	3,500	Trace	3,500
	24 days after....	Yellow	Trace	200	?	200
28 136512 C. G. T. .	15 days before...	Dark brown	+++	2,200	600	2,800

Weight of Spleen.—The average weight of the spleens removed in this series was 422 gm., exclusive of two very large spleens weighing, respectively, 1,120 and 1,600 gm. In only two cases did the spleen weigh less than 175 gm. The very small spleen is usually present in the late stages of pernicious anemia, and a moderately enlarged spleen is generally found when hemolytic activity is marked. Splenectomy influences chiefly the hemolytic factor of the disease, and one might argue that the presence of a moderately enlarged spleen is a point of evidence in favor of splenectomy.

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[2] Eppinger, H.: Zur Pathologie der Milzfunktion, Berl. klin. Wchnschr., 1913, **50**, 1509, 1572, 2409. Eppinger, H., and Ranzi, E.: Ueber Splenektomie bei Bluterkrankungen, Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, **27**, 796.

[3] Wilbur, R. L., and Addis, T.: Urobilin: Its Clinical Significance, Arch. Int. Med., February, 1914, p. 235.

[4] Schneider, J. P.: Splenic Pathology of Pernicious Anemia and Allied Conditions: A Duodenal Method of Estimating Hemolysis, Arch. Int. Med., January, 1916, p. 32.

Operative Mortality.—In this group of thirty-one cases there were three operative deaths, giving an operative mortality of 9.7 per cent.[5] There is no apparent reason why the operative mortality of splenectomy for pernicious anemia should not be low when a proper operative selection has been made. The spleen is relatively small, adhesions usually insignificant, and the technical procedures not difficult. The risk of surgical treatment is decidedly increased in patients with severe anemia, and every endeavor should be made to improve the hemoglobin to 35 or 40 per cent., and the erythrocyte count to 1,500,000 or 2,000,000 cells.

A consideration of the features presented by the three patients who died following operation reveals that one of them was distinctly not a case for surgical treatment. The hemoglobin was 19 per cent., even after two transfusions, and a consistently low leukocyte count was present. The other two operative deaths were similar in character, and presented unusually striking features. The patients died, on the third and fourth days, respectively, after having suddenly developed fever as high as 106 F. and delirium, in one case associated with hyperpnea and pulmonary edema, and in the other persistent vomiting with ultimate coma.

Postmortem examination in both instances failed to show a sufficient cause for death. These fatal attacks may have been the result of operation at a time of recrudescence or impending crisis; in one instance acidosis is a probability. Neither of these patients was in a weakened condition before operation, but both of them for two weeks previous to operation showed a falling hemoglobin, a decrease in the red blood cell count, and a low and falling leukocyte count, all of which would at the present time be regarded as points in evidence against a recommendation for surgery.

Postoperative Deaths. — Five patients: In two patients the downward course was not averted by splenectomy, and death occurred at home within three months. In one of these patients there was a slight gain in the condition of the blood, but a double femoral thrombophlebitis developed, and the patient died with septic manifestations. In the second patient there was no reaction either in the general condition or the blood, and a steady decline occurred. The spleen in this instance was very much above the average size for pernicious anemia, weighing 1,120 gm. A third patient died at nine months after decided improvement which was maintained for approximately six months. A fourth patient died at twelve months after gaining to 90 per cent. hemoglobin and 4,000,000 red cells and maintaining a good condition for seven months. The fifth patient died three years after splenectomy; his postoperative course was never determined.

Relapses.—Three living patients have had relapses, two within six months following operation after an improvement during the first period of three months, and one at fourteen months after recovery from a previous relapse at nine months. Two of these who were treated by transfusions at the time of relapse have again had remissions. Three additional patients have never shown evidence of definite gain since splenectomy.

SUMMARY

1. There is no evidence that splenectomy has cured pernicious anemia.

2. A review of thirty-one cases of splenectomy for pernicious anemia demonstrates a definite gain in the blood, the weight, and the general condition during the first three months of the postoperative period in 78 per cent. of the cases; during the second three months' period, 68 per cent. of living patients maintained their gain.

3. A consideration of the advisability of splenectomy would seem to be warranted at present chiefly in young and middle-aged patients of good general resistance, who show evidence of active hemolysis and in whom the spleen is moderately enlarged.

4. The estimation of the blood-derived pigments in the duodenal contents is valuable in determining the degree of hemolytic activity present at a given time. A comparison of the degree of hemolysis with the severity of the anemia would seem to be indicative of the productive power of the bone marrow.

5. Preoperative treatment, especially transfusions, should be employed to influence the general condition of the patients and to improve the characteristics of the blood picture. The operative risk is increased when the hemoglobin is below 35 per cent. and the erythrocyte count less than 1,500,000 cells.

6. Postoperative transfusions have not been given as a routine procedure, but transfusions have been successfully employed in postoperative relapse.[6]

THE PHYSICOCHEMISTRY OF THE GONOCOCCUS

IN RELATION TO IMMUNITY AND THERAPEUSIS *

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In an earlier paper[1] before this section there were submitted arguments, based on experiments, tending to support the conclusion that all forms of serums and vaccines hitherto employed against gonorrhea were without definite dependable value, and apparent reasons for their failure were emphasized. Work of the past year tends to confirm these opinions and leads to further generalizations.

Starting from the fact that a true and lasting immunity against gonococcus infections is found in all animals and, as a rule, in all tissues of man, save only in certain special tissues, we pass on to observe that unquestionably these receptive tissues in man are occasionally proof against infection, and appear to depend for their immunity, not so much on the presence of antibody, as on the existence of certain physical states within themselves and their fluids. But in the present state of our knowledge we cannot hope to obtain an artificial immunity by any biologic method of treatment greater than that afforded by an attack of the disease itself, which, unfortunately, is negligible. This statement is true in general of all infectious diseases, diphtheria being a type of exception, but those caused by members of the family of *Coccaceae* are especially apt to be recurrent. It is strikingly apparent that an immunity such as may be induced against the *B. typhosus* group, for instance, is unknown against the coccus group. Unquestionably the reaction between germs and body fluids in the latter is of a somewhat different nature.

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[5] Forty-seven splenectomies for pernicious anemia have been done up to Sept. 1, 1916, with three operative deaths, an operative mortality of 6.4 per cent. There have been no deaths in the last twenty-nine cases.

[6] In addition to the references already given, the following will be found of interest:
Archibald, A.: Transfusicn in the Treatment of Pernicious Anemia, St. Paul Med. Jour., 1916, **18.**
Balfour, D. C.: Indications for Splenectomy in Certain Chronic Blood Disorders: The Technic of the Operation, The Journal A. M. A., Sept. 9, 1916, p. 790; The Spleen in Its Relationship to Pernicious Anemia, Splenic Anemia and Hemolytic Jaundice, Canad. Med. and Surg. Jour., 1916, **40,** 47.
Krumbhaar, E. B.: Late Results of Splenectomy in Pernicious Anemia: A Statistical and Critical Review, The Journal A. M. A., Sept. 2, 1916, p. 723.
Lee, R. I.; Minot, G. R., and Vincent, B.: Splenectomy in Pernicious Anemia: Studies on Bone Marrow Stimulation, The Journal A. M. A., Sept. 2, 1916, p. 719.
McClure, R. D.: Pernicious Anemia Treated by Splenectomy and Systematic, Often-Repeated Transfusion of Blood: Transfusion in Benzol Poisoning, The Journal A. M. A., Sept. 9, 1916, p. 793.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Warden, C. C.: Vaccine Treatment of Gonorrhea, Thr Journal A. M. A., Dec. 11, 1915, p. 2080.

I wish here to summarize my observations on the chemicophysical relations of the gonococcus to fluids in the laboratory and within the body, all of which are concerned as factors in the life of the cocci.

The gonococcus is regarded as a cell composed of substances in a colloid state, having an extremely soft, delicate body and limiting surface extraordinarily sensitive to changes of osmotic pressure and surface tension. When directly observed microscopically during active growth on artificial medium the cocci never have the appearance observed in smears of gonorrheal exudate, or in smears made after the removal of a colony from the medium, but their contours strongly suggest an ameboid state. This deformity in contour is due, however, not to inherent ameboid power of the cocci, but rather to the influence of surroundings. The conditions are strikingly similar to those existing in an oil-in-water system, that is, a heavy emulsion of oil in water, where the droplets of oil in dispersion are so closely packed as to assume polyhedral shapes. Indeed, the gonococcus is quite comparable to an oily globule. The microscope shows also the distortion of contour exerted by the "pull" of such substances as oil, glycerol and sugar solutions.

I have shown[2] the gonococcus to contain various chemical substances which constitute an entity comparable to other cells of the animal type. There is little or no unsaponifiable matter, like phytosterol or other higher alcohols, such as are found in large amounts in some other micro-organisms, notably in the tubercle bacillus. We may regard the gonococcus as a cell the content of which is soluble in and homogeneous with the surface membrane or limiting layer, even though the latter may preponderate in fatty constituents, which may, in turn, be soluble in and miscible with external agents, such as fats, soaps and fat solvents. The surface membrane or layer is semipermeable, that is, permeable to water under certain conditions, and probably some crystalloids, but probably impermeable to most colloids, including its own. Throughout my reports there has been made use of the comprehensive, or at all events, collective term "fats" for want of a better one. This word is intended to include an order of chemical substances and compounds comprising those known as oils, containing fatty acid radicals in their structure, the acids and their salts, and those of more complex character, also, built about the fatty acids, called "lipoids," a term which, says Leathes, is a cloak for ignorance and an indefinable limbo into which any one can thrust anything of which he knows little or nothing, including what is often not a compound of a fatty acid at all. These fats form a group separate, and almost without exception, distinct from those other classes of compounds, the carbohydrates and proteins, all of which collectively make up the living plasma. The fats peculiar to the gonococcus have been, in part, described earlier.

The protoplasm of the interior of the cell probably consists of a colloidal aggregate dispersed in a watery external or continuous phase, while the behavior of the limiting layer strongly suggests the reverse type in which water is the disperse phase in an external fat-protein phase. This condition is comparable to the physical systems of water-oil mixtures. In the interior of the cell is the oil-in-water emulsion, in the limiting layer the water-in-oil emulsion. A nice illustration is offered by Clowes, in which the former state is like a group of islands surrounded by water, and the latter like a cluster of lakes surrounded by land. In the first the permeability to water is free, in the second it is conditioned. The conditions which regulate the permeability are for the most part due to the influence of electrolytes, to surface tension changes, and to what Loeb calls the driving force of osmotic pressure. On these depend the life or death of the cell.

A suspension of gonococci in water constitutes a suspension colloid (suspensoid) and the cocci are anions, that is, they carry an electronegative charge. From such a dispersed state or phase the cocci may be flocculated (agglutinated) and undergo electrical change by cations, the flocculating power of which increases directly with the valence, i. e., hydrogen, calcium and aluminum. The agglutinating property of so-called immune serum is exceedingly variable and unreliable. It is equaled and even surpassed by various normal serums. Gonococci suspended in solutions of various electrolytes behave in manner comparable to cells of animal tissues to electrolytes. The electrolytes functionate in the two divisions as made by Osterhaut. Anions, such as hydrogen dioxid, sodium hydroxid and potassium hydroxid, increase the permeability of the cell. Sodium chlorid acts as an anion, since the chlorin ion is more readily adsorbed than the sodium ion. These anions, let us observe, promote the formation of emulsions of oil in water, such as we conceive to exist in the interior of the gonococcus cell, and their action on the cell is destructive. On the other hand, cations, such as calcium, decrease the permeability of the cell, tend to promote the formation of water-in-oil emulsions, such as we believe to exist in the surface film of the cell, and may be protective. Gonococci, in the presence of solutions containing antagonistic electrolytes, such as sodium hydroxid, and sodium chlorid or sodium hydroxid and calcium chlorid, tend to become agglutinated and in a degree protected, or undergo autolysis and destruction in proportion to the concentration of calcium and hydroxid ions. Isotonic mixtures, such as Locke-Ringer solution, particularly if containing a little protective colloid, such as gelatin or agar, exert no immediate change in permeability and tend to preserve the cocci. I was so impressed with this fact years ago that I advocated such a mixture as a culture medium. Anesthetics, such as alcohol, ether and chloroform, exert solvent power for fat in higher concentrations; in low concentrations they act like calcium ions, producing agglutinative, protective effects. Gonococcus grows well in the presence of small quantities of alcohol.

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[2] Warden, C. C.: Jour. Infect. Dis., May, 1915.

In all fluids in which water in excess is available, that is, in which the surface tension is high in the external phase, the cocci undergo autolysis and disintegration, primarily by reason of the semipermeable membrane. Rupture of the cell due to distention by water depends in part on the weakness of the outer envelope. If once excess of water gains entrance to the cell, electrolytically dissociated salts of protein may be formed by hydrogen or hydroxid ions of water, or by acid or alkali, and there is induced further swelling of the cell, due to the affinity for water of the protein ion. In addition, some of the volatile fats of the cell are soluble or miscible with water and create a state tending to promote disintegration. It is probable that the proteolytic ferments of the cell do not participate in the destruction to any extent during the life of the coccus.

If the membrane is permeable to a solute of the outer phase, yet impermeable to its own cell contents, the ultimate state will be as if the outer fluid were water alone, since the concentration of the diffusible solute is soon equal on both sides of the membrane, whereon water is absorbed freely. Hence suspensions of gonococcus in physiologic salt and various weak solutions behave similarly to suspensions in water. With reference to the influence of osmotic pressure and surface tension on the gonococcus, it is interesting to observe the behavior of the latter under varying conditions of these forces. Within the leukocytes, as in smears from gonorrheal exudate, the osmotic pressure of the white cell exceeds that of the coccus, the latter loses water and its surface tension is higher than in the surrounding medium. In the presence of cations in solution, and of all fluids in which the cocci assume and maintain an approximately spherical contour, the surface tension is greater than that of the external fluid at the interface between the two. On the contrary, the high surface tension of pure water and weak salt solutions and the greater osmotic pressure within the cocci cause their lysis and disintegration.

On suitable culture mediums, and undoubtedly in the fluids of the body, the surface tension and osmotic pressure of the coccal cells are low, but about equal to those of the environment. Through slight variation in the surface tension and osmotic pressures of the culture medium it is possible to study the reaction of the cocci through nice gradations from one extreme, at which all cocci autolyze and no growth occurs, through stages wherein colonies attain a certain size before all individuals composing them undergo lysis, giving the appearance of having "exploded," to the other extreme of optimum development.

It is important to note the reaction of the gonococci to fats. Neutral fats exert a protective influence. The fatty acids in high concentration cause flocculation similarly to that produced by other acids and hydrogen ions. In low concentrations, as 1 to 10,000, the agglutinative power is in abeyance and the surface tension at the interface between coccus membrane and water is lowered. In addition there appears to be an adsorption of the acid by the coccus, together with solution of the former in the cell surface, or, in other words, a combination is formed whereby the permeability of the membrane is increased and the cell subsequently destroyed by imbibition of water. The same applies to the salts and esters of the fatty acids in varying degrees. The sodium and potassium salts of oleic acid are fatal to gonococcus through lysis in dilutions of 1 to 5,000, and the same effect is produced by salts of linoleic acid in concentration of 1 to 7,500. In this connection it is noted also that the fatty acids and alkali salts of the fatty acids composing the gonococcus exert even a greater effect, which may be taken to indicate a higher degree of solubility in the surface film.

In general it may be said that the observations of Bancroft on the effects of the soaps on oil and water mixtures apply to the gonococcus. Sodium soaps raise the surface tension of the oil, lower that of the water and tend to produce emulsion of oil in water. Applied to the gonococcus, whose surface area we regard to be in the form of an emulsion of water in oil, sodium soaps tend to reverse the type, thus increasing the permeability of the membrane. Calcium soaps, on the other hand, tend to produce emulsions of water in oil comparable to that existing at the surface of the gonococcus, and are thereby protective in their action. The reversibility of colloidal states is a very important factor in the life of all cells.

A suspension of gonococcus in serum or plasma, in vitro or in the body fluids in disease, constitutes the disperse phase of a suspensoid within another suspensoid (colloid). Each colloid may, and under proper conditions does, react on the other, leading to certain changes in the physical state of both. Some of the changes are in a measure "specific" for the gonococcus; others may be produced as well by inert substances, such as starch, agar, kaolin and charcoal. Let us examine a little closer the relation of the gonococcus to serum and body fluids. The bodies of the cocci are in contact with a fluid of complex nature. The surfaces of the cocci have become the disperse phase in a water suspensoid containing isosmotic values about equal to that of sodium and calcium salts, protein in a highly disperse state, sugar in solution, fats, fatty acids and soaps. Laboratory observations indicate that the influences which operate on the gonococcus in water and various salt solutions also obtain with suspensions in serum. Increase in water content of the external phase (serum) and corresponding decrease in concentration of salts and other matter produce effects approaching those caused by water, whereas increase in ionic fat or soap content exerts influences comparable to what are felt on addition of these substances to water.

Through the phenomenon of adsorption the gonococcus membrane may in such colloidal solutions become more impermeable to water, leading to the checking of autolysis in laboratory experiment and tending to prolong or insure the life of the coccus in the body fluids. On the other hand, the fact that there appears to be only very slight diminution of lysis of gonococcus in suspension in normal serum leads one to conclude that the adsorbed substances, partly of a fatty nature, may not materially decrease the permeability of the surface membrane or protect the cocci. Theoretically the adsorbed fats, being more or less readily soluble in the gonococcus membrane, would tend to increase the permeability, and show that the fats may serve, at any rate in part, as a protection to the body. In this connection it is not without interest to bear in mind the well-known clinical effects of fat solvents, such as alcohol, on the course of gonorrhea and other infectious diseases, and the laboratory effects, as shown in the disappearance of complement fixation reactions.

The gonococcus is able to survive and propagate in a nutrient colloidal medium in which the balance of surface tension, osmotic pressure, density and other physical conditions in both is properly maintained. The balance is a nice one and slight variations in the physical state of the medium may destroy this balance and kill the organisms. Experiment indicates that on suspension of gonococci in fresh normal serum the germ bodies adsorb from the serum certain substances in part of a fatty nature, but that these fatty substances are of a different character from the fats of the cocci. The serum which has been subjected to the suspension of cocci in it becomes toxic, and kills the animal from which it was drawn, the homologous animal, in anaphylaxis. There is every reason to infer that a like though less severe phenomenon may occur within the body during the course of gonorrhea.

The gonococcus undergoes lysis to a greater or less extent in serum in laboratory experiments, and unquestionably the same is true at certain stages in the course of the infection within the body fluids. The serum therefore gains, besides protein and other substances not necessarily toxic, fats from the cocci. The protein constituents of the gonococcus appear to exert a negligible so-called antigenic effect on the body. The fats, on the other hand, produce considerable influence, though probably of a different kind. I have shown previously that the gonococcus fats serve as antigen in the complement-fixation. It is inferred that this phenomenon is due to the influence of these fats on the body fluids. It is apparent that this influence is not only brief, but is also not continuous, or rather that the gonococci undergo periods or waves of increased lysis and that these periods are synchronous with periods of positive complement fixation and with clinical signs of increased activity of the cocci, as shown by increased discharge and the numbers of them in the smears. Observations lead me to infer that an interrelationship exists between aggravated first-stage symptoms, lysis and excess of gonococcus fats in the body, and positive complement fixation on the one hand, and the following amelioration of symptoms, negative complement fixation and disappearance of the cocci and their fats on the other.

That the presence of excess of gonococcus fats in the body fluids is in relation to clinical improvement and even destruction of all cocci present may be explained by the fact that the substances that easily obtain entrance into the cell are in part, aside from water, just those that are soluble in fats or miscible with them. The fats of the gonococcus themselves are naturally most soluble and miscible of all, and if the surrounding fluids or serum contain sufficient of them, or excess over the ordinary fats of the serum, it becomes possible for the permeability of the cell membrane to be increased and destruction of the cell by water or other agents to ensue. In this connection it should not be forgotten that the solubility referred to may be only a more or less relative term to designate a surface tension and adsorption effect leading to modifications in the colloidal state of the membranes.

I stated in a previous paper before this section that excellent clinical results had followed in my hands the administration of the gonococcus fats in an oil menstruum. It is believed the foregoing conclusions may afford a working hypothesis for the fact. As control on the action of various fats following inoculation I have found that apparently no therapeutic effect is exerted by such neutral fats as olive, cottonseed, cocoanut, cod liver and linseed oils, or by the administration of such unsaturated fatty acids as oleic and linoleic in doses of 0.1 gm. dissolved in oil. One fact learned from these experiments controlled by similar injections into laboratory animals is that parenteral injection of oils and fatty acids result in a partial local conversion of the free acids into the corresponding sodium salts.

Complement Fixation: The antigen composed of the gonococcus fats dissolved in alcohol has now been tested in over 1,900 cases. The work has been delayed partly by the difficulty of making sufficient of the antigen, the process requiring immense quantities of culture material, and partly because I was not satisfied with it. As was said a year ago, the question whether the fats as employed might not contain traces of protein did not then concern us, but later the question demanded an answer. Accordingly the presence of a protein rest was eliminated by converting the fats into the sodium salts of the fatty acids and purifying them repeatedly from alcohol. These salts, dissolved in alcohol, were found to possess much better antigenic power than the original. This antigen therefore has been used as control in our work and has substantiated the conclusions we formed a year ago. The expense and labor incident to the preparation of the antigen was the next difficulty to be overcome. This was done in the following manner: A study of the gonococcus fats showed them to possess certain physicochemical characters, acid values, molecular weights, melting and solidifying points, iodin values, etc., and indicated their relative proportions in combination. From these data it was possible to combine fats with identical values in the proper proportions. After some practice with tests alongside the control antigen this synthetic or artificial antigen was found to check perfectly and has since been employed in several hundred tests. As with the control, it was found also that alcoholic solution of the sodium salts of the fats composing the artificial antigen gave better results. A review of the cases tested with these antigens will form the material of a paper by Dr. J. B. Kelly and myself.

The foregoing facts lead to the question of the treatment of gonorrhea by the fats. Since my last paper no systematic work has been done, owing to the difficulties already mentioned and the necessity for centralizing effort on the study outlined. From our past experience and from the theoretical considerations arrived at I am convinced that the method of treatment warrants a fair and extended trial. The plan contemplates treatment with the gonococcus fats so far as is practicable and with the artificial combination in particular, since the latter affords less chance for variation in product and more accurate combination by weight. There is also indicated treatment with the salts of the artificial fats, preferably intravenously, as experiment has shown that in therapeutic doses so administered these salts, easily emulsified in salt solution or water, are harmless to animals.

With regard to theoretical and practical considerations of the phenomena concerned in the response of the body to gonococcus infection, in complement fixation and in therapeutics, I am convinced that hard and fast ideas of the so-called antigen-antibody combinations, amboceptors, etc., should be modified, or perhaps better, abandoned altogether. The problems are bound up with those physicochemical phenomena of surface tension, osmotic pressures, permeability and solubility and the interaction of colloidal solutions in general, including anaphylaxis. In respect to anaphylaxis it should be borne in mind that recent experiments indicate there is probably no difference between specific anaphylaxis, namely, that produced by the same substance as the inducing substance, and the ordinary nonspecific anaphylaxis induced by almost any substance leading to change in the physical state of the body fluids. In practice I have frequently observed in patients the symptoms of anaphylaxis as evidenced by chill, fever and urticaria following inoculations of gonococcus substance in various forms subcutaneously and intravenously. These symptoms have been regarded as manifestations of nonspecific anaphylaxis, since they were produced by control intravenous injections of distilled water and the shock itself unattended by appreciable modification of the infection. This ordinary shock is identical with that induced by water, agar or kaolin injections in laboratory animals, and that frequently recorded in recent years following intravenous injections of various serums and certain other therapeutic agents. The contention of Gay and others that beneficial effect in such cases is due to results of this shock of ordinary type seems to lack sufficient support.

The physicochemical entity of the gonococcus reacts with the serum complex in a definite manner, inducing certain changes in each, which operate, on the one hand, to viability of the germs, on the other, to their extinction, depending on a shift of balance between forces in which the fats undoubtedly play an important rôle. Into this view is admitted the specificity of antigen, but I am inclined to dispute the antigen-antibody idea as ordinarily understood. The solution of the problem is found in less vague processes.

It is perhaps not inadmissible at this time to state that the ideas expressed here with reference to the gonococus may be found serviceable in work on other bacteria, particularly on other members of the *Coccaceae* group, but also on organisms rich in fats, which produce such changes in the serum in disease as to lead to complement fixation with fat antigens. Only recently we have produced in the laboratory an artificial syphilitic antigen for use in the Wassermann reaction. This antigen has been tested and made to agree with two standard antigens, consisting of alcoholic extracts of human heart, which had been shown to agree with each other. From the facts noted there is drawn the tentative inference that the fixation of complement in gonorrhea and syphilis is due to the influence of fats alone.

ABSTRACT OF DISCUSSION

Dr. Louis E. Schmidt, Chicago: Warden reiterates "that all forms of serums and vaccines hitherto employed against gonorrhea were without definite dependable value." I need not enumerate the various agents included in this category — as I include them all — and wish to emphasize that any and all have not come up to expectations in clinical work. Whether or not Warden's exhaustive and painstaking work is sufficient to explain the reasons thereof yet, I believe it points out the error of our ways, when it comes to the promiscuous use of serums and vaccines in gonorrheal diseases. He must give still more evidence in regard to the "fat" of the gonococcus before it can be regarded as a specific in treatment. As to the antigen, I must admit that it has shown itself superior to other antigens and for this reason the "fat agents" may also be proportionately better than the serums and vaccines used previously. Certainly, the theoretical and practical bearing of the problems of chemicophysics on immunity deserves the most careful consideration. There can be no question that the finding of the specific antibody in the blood gave rise to the theoretical basis of vaccine treatment. For this reason all the serums and vaccines whenever used have been to some extent controlled with gonorrheal complement tests. To some extent symptoms and signs are in accord with this view. It was noticed that following injections of certain agents, a rise in temperature was not uncommon. Many cutaneous reactions occurred, local reactions became more pronounced and then lessened in severity. Yet with all this evidence there has always been a belief that many satisfactory results have not been based on the action of specific antibodies and much experimental and clinical work has been done to show that certain albumins have given favorable results and in most instances that following the injection thereof the rise in temperature has been noticed and that the changes thus produced were the cause of the improvement. In my opinion there is no question that vaccines and serums of all types that have been used in gonorrhea and its complications have not come up to our expectations.

Dr. Edward L. Keyes, Jr., New York: I have been guilty of expressing in print great confidence in various kinds of vaccines and serums. At the present moment I do not feel any confidence in vaccines or serums. I have arrived at the same conclusion as Dr. Warden and Dr. Schmidt.

Dr. Benjamin Gruskin, Chicago: I have used Warden's antigen in connection with other gonorrheal antigens. In fifteen cases, nine that were negative or faintly positive with other antigens showed a sharper reaction with Dr. Warden's antigen. Other cases that I would have thought negative I have been able to report as positive, and the clinical history, as the doctors reported to me afterward, proved that the patients had had gonorrhea a year or so before. I find it the best antigen I have ever used.

Dr. Theodore Baker, Pittsburgh: I have had some apparent success with vaccines, and, using the same technic, have had failures. On reviewing the histories of the cases that had been a success and those that had been failures I found one significant fact. In those that had been a success the vaccines produced a marked local and a marked general reaction. In those that had been failures there was the very slightest reaction with large doses of the vaccine, or no reaction at all. I found also that by keeping the vaccines on ice they lost their potency. I think that specific vaccines are still worth trying. We should be cautious in using other nonspecific proteins and giving up the general use of specific vaccines, as has recently been attempted.

Dr. John R. Brown, Tacoma, Wash.: We have tried autogenous vaccines, stock vaccines, simple vaccines and mixed vaccines, and I am satisfied that they have not made good. Occasionally I have seen a case where they seemed to do some good, and those are the cases, as mentioned by Dr. Baker, that gave an intense reaction. Therefore, if we are going to expect any good at all we must use larger doses than those advised, or at least large enough to cause not only a local but a constitutional reaction. I also think it does not make much difference what organism you use, just so you get the reaction, because perhaps it is true, as pointed out recently, that it is a protein poison that causes leukocytosis and that the only virtue vaccines possess is that of stimulation to leukocytosis. I was very much interested in the changes in morphology in the gonococcus when treated with various solutions. We have noticed the same occurrence in our own work. For two years or more we have been experimenting in a comparatively large number of cases with heated sounds treatment of gonorrhea. In the hands of a man who will make a diagnosis and locate the disease this treatment is of immense value, especially in the acute cases and even in the chronic cases. Many cases of chronic prostatitis and seminal vesiculitis, when treated through the rectum through a suitable rubber bag heated by water running through it at 135 degrees, are favorably influenced. It was after these treatments that we noted the morphologic changes Dr. Warden mentioned.

Dr. Edwin Beer, New York: The remark made by the last speaker and the previous speaker should be challenged, that if there is a reaction possibly we get good results. With a very varied experience not only in genito-urinary but in general surgery, treating staphylococcus, streptococcus, gonococcus, tuberculous and other infections, I have come to the conclusion which Dr. Schmidt expressed that there is nothing absolutely reliable in the vaccine treatment. During the last year and a half we have been following a series of cases, mostly genito-urinary cases due to tuberculosis, with the Rosenbach tuberculin, which has been very much vaunted abroad and which is a vaccine treatment, and the general conclusion which we have reached in treating fistula after nephrectomies and due to tuberculous epididymitis is that the Rosenbach tuberculin is of practically no value. The second vaccine with which we worked was the Nicolle vaccine for gonococcus infections, and although once in a while we saw remarkable results, the totality of results were no better than from any other treatment. So in general I would say that Nicolle vaccine has not been satisfactory. When it comes to treating cases with colon vaccine I think everybody is reminded that there may be something in the treatment, although experience, on the whole, is opposed to the view that it is specific. For instance, take pyelonephritis due to the colon bacillus. All of us have treated protracted cases with high temperature with vaccine, and every once in a while we see a remarkable result, but when that result is exceptional, when it does not follow with regularity in colon pyelonephritis cases, both in the acute and chronic stages, one cannot help but doubt that the success in one case was accidental rather than the result of the vaccine treatment. So that I would be inclined to go on record in stating that up to date, the results from vaccines have been very unsatisfactory. I am now beginning to treat a series of cases with sensitized vaccines following Beredka, but owing to the difficulty in procuring autogenous sensitized vaccines, we are compelled to make use of the stock preparations prepared by Mulford.

Dr. W. Jones Wallace, Oklahoma City: I have used vaccines a good deal, and to my mind they should be used in selected cases or in complications. In acute cases I never use them, but when it comes to the chronic cases or when there is an epididymitis or an arthritis or some other complication, vaccines can be used with advantage. The great trouble is that we do not use vaccine in large enough doses. I often use a stock vaccine, but I do not follow the directions given in the circulars. I repeat the dose each succeeding day until I get some reaction.

Dr. Martin Krotoszyner, San Francisco: The efficacy of vaccine therapy, which is undoubtedly an important addition to our armamentarium against gonorrhea, is jeopardized by its frequent uncritical application in the past. Like other therapeutic measures, vaccine therapy was in the beginning of its use praised to the skies, and is of late, because it has not yielded the expected results, meeting with a great deal of adverse and unmerited criticism, which more justly should be applied to the unscientific use of this therapeutic agent. The indiscriminate use of stock vaccines for all forms and stages of gonorrhea should be discouraged. It is well known that the various vaccine strains of the gonococcus differ widely in endotoxins and that it is, therefore, impossible to bring into one vaccine all strains required for the formation of antibodies. Thus divergent results in vaccine-reactions and therapeutic efficacy in apparently identical clinical lesions find their explanation. The solution of the problem in getting more uniform results is dependent, in my opinion, on the application of carefully prepared autogenous vaccines. Vaccine therapy, under these conditions, should always be conducted clinically, and good results may be expected by carefully conducted vaccine therapy at hospitals, equipped with scientific laboratory facilities for these purposes.

Dr. E. G. Crabtree, Boston: I cannot leave unemphasized one point that Dr. Warden has brought out which I think is probably the key to vaccine treatment. We have been accustomed to give vaccines without carefully studying bacterial life in the way that Dr. Warden has studied the gonococcus.

It is undoubtedly true that most bacteria in their acute stage produce antibodies which persist for varying lengths of time, the exact duration of which we do not know, and in many cases we are not concerned with it. Bacteria which are quiescent or which occupy some remote part of the body apparently do not produce antibodies, but diagnoses are made because of that antibody production which occurred during the acute infection. It has already been established by clinical use of vaccines that recurrences are often prevented, and in the great majority of cases symptoms relieved. That is particularly borne out in the vaccine treatment of colon pyelonephritis. You can feel sure that recurrence will not take place. As a curative agent, however, the colon vaccine has proved a failure. We have nothing to indicate that the products elaborated in the blood reach the urine as such, and unless the process is acute our vaccine treatment is probably not effective. Undoubtedly a more careful study of the cell content of the various bacteria and a more careful study of blood manifestations, particularly in the acute stage of infection, will lead us to a better working basis in vaccine therapy.

Dr. Victor G. Vecki, San Francisco: While I have more than one patient who swears by me because I cured him with autogenous and other vaccines, I must say that I have abandoned this treatment. I have come back to the conclusion I cited several years ago that the results obtained in vaccine and serum treatment are probably due to the circumstance that the urethra having previously been overtreated is under the vaccine treatment given some rest at the expense of the patient's "hide."

Dr. Louis E. Schmidt, Chicago: I had reference chiefly to gonorrhea and its treatment with vaccines and serums made from the gonococcus. I do not doubt that there are many cases that have been improved and possibly cured by the various vaccines and serums and combinations that have been used. The question is whether or not it is by specific antibodies. There has been an enormous amount of work done in connection with the injection of so-called harmless remedies or agents, for instance, milk. Milk is being injected in 5 or 10 c.c. doses into the glutei, and exactly the same reactions occur and the same astounding results have been shown. Now, how is the result obtained? Sometimes there is a high rise of temperature, and then possibly by-products have been produced by injecting these agents. Whether or not they are specific, that is the question. For that reason, I am still in doubt as to whether it is necessary, or whether the agents that have been produced in the gonococcus are absolutely essential. For that reason I am inclined to believe that some of the artificial products that Dr. Warden has taken up will probably prove as successful, if not more so, than those that have been in use up to the present time.

Dr. Carl C. Warden, Ann Arbor, Mich.: One further word about these fat antigens and how they work. If we were to regard the gonococcus alone, from which a fatty antigen has been obtained for complement fixation, it would require considerable temerity to assign all antigenic properties to fats alone, but only lately we have been able to do the same thing with the Wassermann, that is, we have made an artificial fat antigen that concurs with two other antigens which have been standardized and which agree among themselves. Many substances of a fatty nature put into a solution will immediately lower the surface tension of that fluid a great deal, and any substance that lowers tension is bound to appear at the interface between two systems and these fats are found at the interfaces of the substances composing the solution. In consequence, they must act in some such way in complement fixation in order to allow or prevent the hemolysis. The ideas as to antibodies will gradually undergo a change and we may come to view the antibody not as a definite substance, but rather as a condition or a state of the body fluids. Recent experiments have shown that normal serum removed from the body becomes toxic under certain conditions. Its toxicity will wear off in a short time, and it will undergo fluctuations of toxicity and nontoxicity. During the toxic stage the complement disappears. Whether that is a definite substance we are beginning to doubt. It looks as though the complement itself might be a highly dispersed state or condition in the serum itself or in the body fluids. We know that in living tissues in health fat is not commonly seen in the cells, but once a foreign substance like a fat solvent is applied, some of these cells will show fat globules. These cells do not contain any more fat than they did before, but the colloidal state has undergone such a change that the fat globules have been allowed to coalesce. So I think that in some of these forms of disease caused by the *Coccaceae* we will come to believe that the antibody itself is a very slight factor, that more depends on the state of the body fluids or the state of the serum, and that certain conditions may arise where the germs can exist no longer, and other conditions may exist where the germs may be able to multiply and grow. I believe the time is coming soon when we shall be able to cure an attack of gonorrhea, but it will have to be done only by careful study of the condition or state of the body fluids of the patient at the time. I believe there is a relationship between this complement fixation and the state of the blood whereby the life of the gonococcus is extremely precarious, and that we shall be able by some means, possibly by these fat remedies which I have suggested, to shift the balance of the surface tension just sufficient to cause the death of the coccus forms that are there. It will not produce an immunity; it will not be fool proof under any circumstances, but it will probably be sufficient. It will not be able to dispose of all the gonococci that can exist in a saprophytic condition on the mucous membrane, but it will kill the gonococci inside the cells or tissues. As Dr. Crabtree says in relation to the colon bacillus, the vaccine will relieve the inflammation in colon bacillus infections, but it will not get rid of the colon bacillus.

SPASMODIC ASTHMA

REPORT OF CASES ILLUSTRATING ITS ANAPHYLACTIC NATURE AND THE DIFFICULTIES IN THE WAY OF SUCCESSFUL TREATMENT

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CHICAGO

In a previous paper,[1] special consideration was given to the nature and treatment of bronchial asthma. Since then a number of cases have been treated in accordance with the views therein set down, and a good many inquiries have been received relative to the subject; therefore I have decided to make the following reports in the hope of assisting other workers in the solution of the problems confronting them.

With increased experience, the conviction expressed in the paper referred to has been strengthened, and in particular it has been demonstrated that no pains must be spared in searching for and removing every diseased process which may serve as a focus for protein absorption. Furthermore, in many cases more than one such focus exists, and it would seem as if sensitization to protein from one source renders the individual peculiarly liable to sensitization to other proteins and to proteins absorbed from different situations within his body. This is especially well shown in persons suffering from so-called hay-fever or hay-asthma. And here it may be stated that, with one exception, the cases herein reported are instances of typical spasmodic asthma independent of the summer and autumnal disease generally caused by sensitization to some plant or animal protein. The foreign protein at work was furnished within their own bodies, and not from sources situated without their own economy.

As will be seen, the focus or foci may generally be found in the nares or accessory parts, as ethmoid or sinuses, but diseased tonsils and suppurative processes about the gums or tooth roots may prove a very fruitful source of mischief. In cases of long standing with frequent repetition of asthmatic seizures, chronic bronchitis often supervenes and then may furnish the bacterial protein after all other foci have been removed by operation. That a focus of infection outside the respiratory tract may be responsible for the asthma is quite possible, as was shown by the case mentioned in my previous article of freedom from asthma so long as the infected gallbladder was permitted to drain freely, and of return of the paroxysmal dyspnea when drainage ceased.

It should be stated, moreover, that further acquaintance with this class of sufferers suggests that some additional factor as yet unsolved may underlie or be associated with their sensitization to a foreign protein. That spasmodic asthma is not a nervous affection, as assumed by early writers, and, indeed, is not due to the effect of the poison on the central nervous system is proved by the occurrence of the phenomena even after all connection between the bronchioles and spinal cord was destroyed in the guinea-pigs experimented on by Auer and Lewis. Nevertheless, one cannot see much of these sufferers without getting the impression that some sort of connection does exist between the asthmatic condition and the nervous make-up of the individual. Whether there is some peculiarity or susceptibility of bronchial muscles predisposing certain persons to this particular manifestation of anaphylaxis, or whether the instability of the nervous system seen in them is a result or effect of the asthma is difficult to determine. Certainly the question is suggested, Why do some persons manifest asthma when others with an identical focus of infection and the same organisms in cultures from the material of the foci do not show asthma? Dogs and guinea-pigs react differently to the same protein, but these animals are of different species. What, then, is it in human animals of the same species which causes a different reaction to apparently the same protein? It would seem as if some additional and as yet unknown factor still has to be discovered.

Case 1.—Mrs. N. H. B., aged 55, was seen, Sept. 1, 1914, because of severe attacks of spasmodic dyspnea from which she had suffered for the better part of a year. The family history was negative, and the personal facts, briefly stated, were tonsillitis and appendicitis ten years before, and in September, 1913, an acute coryza which at length resulted in bronchitis for which she spent the winter in the South. Returning North in the early spring she became so much worse en route as to necessitate stopping in Atlanta, Ga., for medical care. When the patient recovered from the illness, which, as seems likely, was a bronchopneumonia, her dyspnea took on the character of typical spasmodic asthma. After spending the following summer in Colorado under competent medical care without benefit, she returned to her Chicago home and consulted me.

It was learned that she had for months been having recurrences of spasmodic dyspnea quite regularly every four hours which yielded only imperfectly to subcutaneous injections of a solution of epinephrin, from 4 to 8 minims of a 1:1,000 solution. She also thought she obtained slight relief from her difficult, harassing cough from 4-grain doses of potassium iodid three times daily. Examination of the chest disclosed hyperresonance with characteristic prolongation of expiration and copious sibilant rhonchi. In the left lower back, however, was a small area in which slight dulness could be detected and medium sized mucous râles could be heard, signs thought to have resulted from the patient's acute illness in Atlanta. The heart was negative in all respects, as were blood pressure, temperature, blood count and urine. A competent rhinologist and laryngologist reported the nose and throat free from any abnormality responsible for the asthma. Films were then made of the teeth and disclosed a small alveolar abscess for the cure of which one tooth was extracted, but without appreciable effect on the asthma. A roentgenogram of the lungs revealed what appeared to be a small area of thickening in the posterior base of the left lung where it was thought a patch of bronchopneumonia had existed.

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[1] Babcock, R. H.: The Nature and Treatment of Bronchial Asthma, The Journal A. M. A., June 26, 1915, p. 2115.

During the two weeks required for this study of the case, asthmatic paroxysms were of daily and nightly occurrence, necessitating frequent resort to epinephrin. A vaccine was now prepared from the sputum, and consisted of *Micrococcus catarrhalis* and was administered carefully with appreciable lessening of the bronchitis, though slight influence over the asthma. A week later culture of the sputum yielded *M. catarrhalis* but in addition the pneumococcus, an anaerobic fusiform bacillus and *Streptococcus viridans.* A second vaccine was therefore prepared and carefully administered until toward the end of October. Some improvement was shown for a time, but a relapse occurring, a third vaccine was made, since now the culture from sputum yielded a preponderating number of the fusiform bacillus. In November, asthma was less frequent, but cough was more troublesome with less stringy, more fluid mucus.

The course of the disease was henceforth most checkered with periods of improvement interspersed with others of aggravated dyspnea, more troublesome cough, and an increased number of wheezing and mucous râles, so that not only were repeated changes made in the vaccines, but also recourse was had to various expectorant remedies, including aspidospermin, which seemed to afford the greatest relief. In March, 1915, after a short period of encouraging improvement, the patient contracted a sharp rise of temperature with greatly aggravated cough and dyspnea, though not of the paroxysmal type previously observed. At this time, culture of the sputum showed typical pneumococcus and practical disappearance of the organisms previously obtained. Nevertheless, with subsidence of temperature and disappearance of pneumococci the asthma recurred in full force. At length in the summer of 1915 the asthmatic condition mended appreciably, and we were all encouraged, only again to be disappointed by return of the asthma in full vigor by September. During all these months everything had been done that could be devised with no greater result than to rid the lungs of most of the bronchitis save in the left lower back, where evidently some permanent change in lung structure had taken place.

At times when this patient's asthmatic symptoms were least apparent a frequent racking cough still persisted and caused considerable feeling of stuffiness, as she expressed it. Finally in October she decided to change physicians, and I was dismissed. What afterward was done is known only through hearsay; but it is known that a number of new vaccines were prepared and administered without, however, entirely relieving the asthma. Finally, completely discouraged, this poor sufferer ended it all by voluntary and tragic death.

Case 2.—Mrs. D., aged 44, seen March 23, 1915, had suffered from bronchial asthma since the early fall preceding. She was found to have small but diseased tonsils, an alveolar abscess, chronic bronchitis and a pyosalpinx. The alveolar abscess was removed by extraction of the diseased teeth, and anaerobic and aerobic cultures of the pus on blood agar and ascitic bouillon showed *Streptococcus mucosus* and pneumococcus-like diplococcus. From this pus no vaccine was prepared, as the evacuation of the abscess cavity was thought sufficient to remove protein absorption from that focus. As the patient had chronic bronchitis with sputum, a culture of this was next made, after careful washing, and it showed anaerobically and aerobically *Micrococcus catarrhalis, Diplococcus mucosus,* and a very few influenza-like bacilli. Owing to the absence of fusiform bacilli, no vaccine was prepared until toward the end of April, when a few anaerobic fusiform bacilli were found in addition to *Micrococcus catarrhalis* and *Diplococcus mucosus.* In June another vaccine was prepared of the same organisms, except that the fusiform bacilli were more numerous. On regular, cautious employment of this vaccine, together with a cough mixture containing lobelia, improvement proceeded gradually, though not uninterruptedly, until by July she declared herself free from asthma.

In October following she contracted a coryza coincidently with menstruation, and soon thereafter experienced a recurrence of her old enemy in severe form. Completely discouraged she not long afterward left Chicago, and has been heard from but once since, when severe asthma was reported. During her asthma-free interval, the tonsils were extirpated, but despite the advice to have the pyosalpinx removed, this was not done. How much influence could be attached to this focus of infection could not be determined, but it was considered a mistake to leave it unoperated, especially as it was uncertain whether the relapse in October was due to the coryza or to absorption from the pyosalpinx coincident with the appearance of the menses.

Case 3.—Mrs. B., aged 29, examined Aug. 11, 1915, had suffered from asthma since the age of 6. She was found to have chronic ethmoiditis with polypi, badly infected tonsils, and alveolar abscess with chronic bronchitis. Culture of the pus from the jaw showed no fusiform bacilli, but *Diplococcus mucosus, Streptococcus viridans,* staphylococcus and the diphtheroid bacillus. No vaccine was prepared because of the belief that the anaerobic fusiform bacillus is the organism having most influence over the asthma, and that without it vaccines would be inert. In addition to extraction of the diseased teeth, a tonsillectomy and removal of the nasal polyps, as much work was done on the ethmoid as was possible at the time. August 16, a vaccine was prepared from the tenacious, slightly purulent sputum, and contained a large number of the fusiform bacillus.

After completion of all the operative work, the patient returned home and continued the use of the autogenous vaccine until December, when another specimen of sputum showed on culture the fusiform bacillus as well as several other organisms. Treatment was continued along the same line during the succeeding winter, but without as decided improvement as was hoped. At length, early in the past summer this patient reappeared in Chicago in consequence of exacerbation of her asthma, although it was not so distressing as a year previous. Examination disclosed retention of nasal secretion in consequence of a hypertrophied turbinate, and in addition considerable bronchitis. Proper treatment of the nose was at once instituted, and a vaccine was prepared from the sputum, the culture showing as before the anaerobic fusiform bacillus. At present writing, August 24, she is receiving this vaccine and is fairly comfortable, though not wholly free from some asthmatic stuffiness.

Case 4.—Mrs. S., aged 32, sought advice, Feb. 17, 1915, because of asthma. There was a history of appendicitis fifteen years before, and a curettage two years ago, but no other definite illnesses. She was found to have chronic ethmoiditis with polypi, pyorrhea, diseased tooth roots and extensive bronchitis in both lungs. There was also a systolic murmur in both mitral and tricuspid areas. The nasal and mouth conditions required much operative work, and this being impossible for financial and other reasons, among the latter being daily asthmatic seizures, treatment dragged along for many months. Meanwhile attempts were made to lessen the bronchitis and cough by means of various expectorant and sedative remedies as well as by vaccines made from the sputum. This in June, 1915, contained *Micrococcus catarrhalis* and *Diplococcus mucosus.* July 25, 10 minims of this vaccine were followed by severe reaction, fever, increased cough and asthma. August 7, the patient reported the extraction of some of the teeth, and was feeling somewhat better. August 30, the asthma was less and a slight gain in weight was recorded. September 8, more asthma was reported after the last injection, but the lungs yielded no râles except in the lower right back. September 15, a second vaccine made from sputum contained *Micrococcus catarrhalis, Diplococcus mucosus,* staphylococcus and a few fusiform bacilli. From this date my records are wanting, as the patient has not come at all regularly for the vaccine injection. She has submitted from time to time to palliative but not radical operations on the nose, since her reduced physical state was such that the rhinologist dared not subject her to any severe operative procedure. She is, therefore, after eighteen months still suffering from her old enemy. It is considered unfortunate that this patient's circumstances have not permitted prolonged hospital treatment with a view to establishing sufficient resistance to enable her to bear whatever operations might be necessary to remove all foci of infection in the ethmoid and elsewhere.

Case 5.—Mr. L., attorney, aged 41, examined July 19, 1915, had suffered from asthmatic attacks since May, 1914, the seizures being most frequent at night. Family history was negative, but in personal anamnesis there were frequent attacks of grip, an appendicectomy a year before, and alcohol to excess some years earlier. Careful physical examination disclosed no disease of the heart, kidneys and other viscera, but a few fine mucous râles in the lower back on both sides. The turbinates were fairly large and the septum posteriorly was deflected to the left, but these conditions did not interfere with free drainage. The tonsils were large, submerged and showed open crypts without retained secretions. The gums and teeth appeared to be in good condition, but as the leukocytes numbered 13,200, roentgenograms of the teeth were made, which disclosed two abscesses at the roots of the right upper bicuspid and adjacent incisor. These two teeth were extracted and the abscesses were cleaned out. Ten days later cultures of the sputum were made and disclosed *Diplococcus mucosus,* an influenza-like bacillus, and the fusiform bacillus. A vaccine was prepared and administered for a month, at which time the asthma had vanished, although cough and a few râles still persisted. Thereupon, August 25, another culture of the sputum was made and a vaccine was prepared which now contained *Diplococcus mucosus,* 40 per cent., *Micrococcus catarrhalis,* 50 per cent., and a small number of the streptothrix and bacillus mucosus capsulatus. This second vaccine caused prompt disappearance of all signs of bronchitis, and by the first of September the patient felt so well that he insisted on returning to his home to take part in a stormy political campaign. Consent was accorded, provided he would take along the vaccine and have it administered, but as the sequel showed this was a mistake. Either because of the reaction following a too large dose of the vaccine, or because of his strenuous duties, his asthma soon reappeared and necessitated recourse to epinephrin. Nevertheless in a letter just received he states that with exception of the three attacks which occurred soon after his return to his home, he has experienced no paroxysms, but that after lying down in bed at night he sometimes notices a little wheezing. On the whole, however, he considers himself well, but is not certain whether this is due to the treatment received in Chicago or whether, as assured by some of his medical friends, he would in time have grown out of the asthma at home. In my opinion, formed from observation of asthma cases, he would still be suffering with unabated intensity, had he not got rid of his mouth and bronchial foci of infection. This reflection leads to the conjecture that the wheezing still noticed by this patient may find its explanation in the fact of some persisting bronchitis which the vaccine did not wholly clear up.

Case 6.—Miss L., aged 48, examined Oct. 7, 1915, had suffered from nightly attacks of asthma for a year and a half, although her initial seizure occurred four years before, after what she called a cold. She was found to have badly diseased tonsils, and abscesses at the roots of three teeth. There was no evidence of chronic bronchitis. The tonsils were removed, the diseased teeth extracted, and a vaccine prepared from the pus of the alveolar abscess. This vaccine contained a variety of organisms, and among these the fusiform bacillus. She has been seen within the past few weeks, August, 1916, and declares she has had no asthma since recovering from the tonsillectomy. She thinks the vaccine was not necessary, although it was employed for a few weeks.

Case 7.—Mrs. B. L., aged 36, had suffered from asthma since early childhood, but had not developed secondary bronchitis. She was first seen by me in 1900, at which time she was having hemoptysis believed to be due to left apex tuberculosis. From this she recovered, but since then has suffered from her asthma frequently, especially in bad, foggy weather. She had chronic ethmoiditis, a sinus infection and infected tonsils. The nasal and sinus disease was treated from time to time, but not radically until last spring, at which time the tonsils also were removed. She was entirely free from asthma until the onset of hay-fever toward the end of August, 1916. As it is, her dyspnea lacks the intense paroxysmal character of true bronchial asthma, but necessitates recourse to injections of epinephrin.

Case 8.—A man, aged 22, who is now undergoing treatment, has been greatly relieved, although he still declares he is not wholly free. He had suffered from asthma since childhood, and showed signs of chronic bronchitis in addition to a greatly deflected septum at its posterior part which completely prevented free drainage. This condition was fully corrected by a difficult but successful operation, and he now is receiving a vaccine prepared from his sputum and containing the anaerobic fusiform bacillus among other frequently associated organisms. As this patient still resorts to some drug—morphin or cocain—his statements are considered unreliable as to the intensity of his nocturnal dyspnea and the necessity of resorting to his drug and his asthma powders.

CONCLUSIONS

1. As illustrated by Case 1, it is believed that cases of bronchial asthma exhibiting evidence of secondary bronchitis with perhaps areas of atelectasis or bronchiectasis are the ones most refractory to treatment.

2. If no secondary focus of infection exists in the lungs, the discovery and radical removal of foci elsewhere is likely to relieve the patient.

3. If the focus responsible for the protein absorption was in the upper respiratory tract, a coryza or any other condition which occludes the nasal passages and prevents drainage of secretions may occasion a return of asthma, since the individuals are hypersensitive to foreign proteins.

4. Autogenous vaccines prepared from the sputum are of much aid in management, but are a two edged sword, and must be employed with great care, and the patient should be given to understand that treatment will be long and perhaps uncertain.

5. Vaccines can do no good so long as some other focus of infection than that in the lungs is left unremoved by operation.

6. The anaerobic fusiform bacillus has seemed to be the bacterium which exerts special influence in the production of asthma, but this is merely an impression, since only when this organism has been obtained from the sputum and incorporated in the vaccine has the administration of a vaccine been beneficial.

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REFLEX RETENTION OF URINE *

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That the muscles of the bladder may be acted on reflexly so as to prevent the normal act of urination is a common observation. This occurs particularly after gynecologic operations, and after operations on the rectum, anus, testicle and even more remote regions. That the explanation of some of these retentions is not a reflex nerve action but an actual injury to the nervous mechanism, or the urethra or bladder wall is an undoubted fact.

Stoeckel and Ruge,[1] in studying puerperal ischuria, almost invariably found an edematous ring about the internal sphincter. Steuernagel[2] thought that some of the cases of retention of urine following labor were due to an increased bladder capacity. Thus he found that while the normal bladder would hold only between 450 and 550 c.c., the puerperal one could be made to contain under pressure as much as from 1,500 to 2,500 c.c. And Taussig,[3] in a study of the bladder function after confinement and gynecologic operations, came to the conclusion that the important features in postoperative urinary retention are interference with the blood supply of the bladder; direct or indirect pressure around the sphincter urethrae; excision of the nerve supply of the bladder, and interference with the control of the central nervous system through anesthetics, drugs or mental processes.

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[1] Stoeckel and Ruge: Zystoskopie des Gynäkologen, 1904.

[2] Steuernagel: Ztschr. f. Gynäk., Urol., 3, 295.

All of these factors undoubtedly play a part in postoperative retentions of urine, but aside from these cases there is a group of acute retentions which are undoubtedly dependent on reflex phenomena. Inasmuch as the large majority of these cases are transitory, very little attention has been given to them, and it is true that most of the cases of urinary retention demanding treatment on account of retention are undoubtedly due to a real mechanical obstruction or to a definite organic nerve disease.

In looking over the literature many of the cases of obscure retention were found to give a history of syphilis. It is now a well recognized fact that spinal syphilis may manifest itself in the early stages only by vesical disturbances, and it is probable that many of the formerly obscure cases of retention of urine were really early cases of cerebrospinal syphilis.

Excluding all of these types of chronic retentions, however, there is still another type which I have chosen for the subject of this paper, and that is, a condition of recurrent attacks of retention with at first intervals of entire freedom from vesical disturbances which are dependent on chronic irritation acting in a reflex manner. It is believed that such cases exist without the presence of mechanical obstruction in the sense of an occluding obstruction, without demonstrable nerve lesions and whose mechanism is essentially the same as is seen so commonly following surgical procedures on the nearby structures to the bladder, and that the condition is primarily not necessarily dependent on pathologic changes in the sphincter muscle of the bladder, but is excited reflexly through the spinal cord center.

The experiments of Roussy and Rossi[4] have conclusively demonstrated that the center presiding over the bladder function is situated in the conus terminalis. They showed that destruction of the conus terminalis resulted in complete loss of sphincter control and bladder function, and that section of the spinal cord above the conus terminalis did not destroy the bladder function, inasmuch as animals in which this had been done very quickly resumed control of the urine so that urine was retained in the bladder for definite intervals and expelled in a normal manner. In the adult man this lower spinal center is presided over by the cerebral one so that the act of urination is initiated by a mental process.

Retention of urine, or inability to urinate, depending on disturbances of the cerebral control of urination, are very common, and such must be the explanation of the cases of inability to urinate in the presence of another person or in one situation or another.

Of these disturbances of urination dependent on the cerebral control there are perhaps many different types, some of which are of the same origin as hysteria, as manifested in other ways, a dissociation; others are only temporary inabilities to carry out the mental process to initiate the urinary act.

Frankl-Hochwart[5] mentions an interesting case of the hysterical type in a woman, aged 19, whom for a year and a half it was necessary to catheterize in a hospital, on account of constant retention of urine. Examination showed a completely normal condition. Finally one of the attendants remarked that an operation would have to be performed, and she immediately recovered.

Aldrich[6] has mentioned numerous cases of disturbances of urination dependent on derangements of the higher urinary center. In one instance, a physician was never able to urinate in the presence of another person. In another instance, the person could not use a public urinal. One person could not urinate in a darkened room. One could not urinate unless in a darkened room. A child found it necessary to count in order to urinate, and so on indefinitely.

It is evident that these are not retentions dependent on reflex phenomena acting through the lower urinary center. These are truly cases for psychic suggestion, and it matters little whether this suggestion be carried out by local treatments in the region of the bladder or by well recognized treatments for various hysterical conditions, so long as this group of cases of retention of urine is recognized and is definitely treated as such.

The conception of a reflex chronic retention of urine, excited by some external irritant is by no means a new one. Thus Eugene Fuller,[7] in writing on chronic contraction of the vesical neck, speaks of acute spasms of the vesical sphincter excited by pathologic states in the sexual apparatus, the rectum, etc. He believes that these acute spasms might become a condition of chronic contraction as a result of some settled disorder of the sexual apparatus or adjoining structures where this reflex spasm had existed as a prominent symptom for a long period of time. He found, as he believed, evidences in his cases of a preexisting reflex cause, and likened a chronic contraction of the vesical neck to a chronic torticollis.

Swinburne[8] has reported cases of chronic retention of urine which he attributed to a diseased condition of the verumontanum, and thought that the cases of chronic retention which he had studied were closely associated with the cases of acute retention which one sees in acute posterior urethritis.

Other cases of retention attributed to irritations in the posterior urethra have been mentioned by Rothschild,[9] Cohn[10] and others.

Emodi[11] mentions the case of a man in whom the expulsion of a lumbricoid worm stopped the retention crises, and although the neurologic examination in this case was negative, it is open to question, inasmuch as this patient had previously had syphilis.

Reflex spasm with the retention of urine have been attributed to congenital anomalies, phimosis, atresia of the meatus, strictures, foreign bodies, prolonged dilatation of the bladder, inflammation of the kidney (but these may be secondary to cystitis), cystitis, chronic prostatitis, chronic seminal vesiculitis, etc.

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[3] **Taussig:** Surg., Gynec. and Obst., **21**, 416.

[4] **Roussy and Rossi:** Troubles de la micturition et de la défécation consécutifs aux lesions expérimentales du cone terminal ou de la queue du cheval, Compt. rend., Cong. internat. de med., Budapest (1909) 1910, Section **XI**, neuropatologie, p. 438.

[5] Frankl-Hochwart, quoted by Cohn, J.: Ueber nervöse Retentio Urinae, Berl. klin. Wehnschr., 1915, **52**, 208.

[6] Aldrich, C. J.: Am. Med., 1903, **5**, 489.

[7] Fuller, Eugene: Am. Jour. Med. Sc., **104**, 440.

[8] Swinburne: Am. Jour. Urol., June, 1910.

[9] Rothschild: Ueber Retention ohne Localhinderniss, Cong. Assn. internat. d'urol., Paris, 1908, **1**, 350.

[10] Cohn: Footnote 5.

[11] Emodi: Ueber einen seltenen Fall von reflectorischer Harnverhaitung, Pester med.-chir. Presse, 1904, **40**, 1029.

REPORT OF CASES

The following cases are reported as examples of reflex retention of urine:

Case 1.—A woman, married, aged 48, was referred to me for urologic examination by Dr. William Monroe Lewis of Los Angeles, Aug. 12, 1914. She complained of being unable to urinate. This difficulty in urinating commenced two years previously when she would have a desire to urinate but would have to strain for some time before being able to pass urine, and a fair amount would then be passed. Hot cloths were used to relieve the straining, which seemed to be at the neck of the bladder. These attacks of difficulty in urinating would come off and on and then disappear. This continued for fifteen months, or nine months before she was seen by me, when she had complete retention and had to be catheterized. She was then able to void until three days before admission, when it was again necessary to catheterize her. At the same time she noticed a fulness in the left side of the abdomen. My examination showed a colon bacillus infection of the urine, a marked acute cystitis, no mechanical obstruction at the neck of the bladder, no trabeculation of the bladder, a complete duplication of the left renal pelvis and ureter, with an infected hydronephrotic sac at the caudal pole. This entire left kidney mass was removed by Dr. Lewis two days later. Following the removal of this sac the patient did not immediately regain the power to urinate, but had to be catheterized for about two weeks, when all retention disappeared entirely and she has been voiding in a normal manner ever since, which has been almost two years. In this case it is evident that the retention of urine was directly associated with the hydronephrotic sac, although it is difficult to say as to what part the inflammation of the bladder might have played in bringing about the retention. In either case the retention was of a reflex origin.

Case 2.—A man, aged 40, extremely well nourished, was first seen by me, July 17, 1915, complaining of spasms at the neck of the bladder, attacks of great difficulty in passing urine, and occasionally having to be catheterized. When 19 years of age he had had gonorrhea complicated by a double epididymitis, and since then two attacks of urethritis at the ages of 27 and 35 years, respectively. The latter two attacks of urethritis followed periods of drinking, lasted for only about ten days, and no gonococci were found in the discharge. The patient denied syphilis. The urinary stream, except when he had periods of retention, was of good size and force. Ejaculation was somewhat premature; the sexual power otherwise was negative. The present illness began about four years previous to admission, when he felt as if he wanted to void but could not until his bowels had moved, at which time he voided freely. At the same time he noticed that on arising in the morning he frequently had a sharp pain running from the prostate to the head of the penis. This pain was relieved by urination. These attacks of pain were accompanied by marked frequency of urination, but it was often necessary for him to go to stool in order to pass urine. There was marked hesitancy, but after the attacks passed off the stream would be of normal size and force. About four months later he had an attack of acute retention and had to be catheterized. He was diagnosed at this time as having a urethral stricture and later as having contracture of the vesical neck. A punch operation was done, but this did not help him. The patient then took a complete rest at one of the springs, and had no bladder disturbances whatever for several months. When first seen by me he had complete retention, but the bladder was not markedly distended. He complained of violent pain at the neck of the bladder, a spasm, as he himself called it. Hot tubs did not relieve him. A catheter was somewhat difficult to pass through the internal sphincter, which was definitely in a spasm. About 300 c.c. of urine were withdrawn. It was then necessary to catheterize him three times within the next twenty-four hours, although there were urinations in which he passed urine with perfect freedom. The urine was negative.

Briefly, then, the history of this case is one of attacks of complete retention occurring in a healthy man, aged 40, associated with spasmodic pain at the neck of the bladder, radiating to the head of the penis. In the intervals between the spasmodic attacks of pain, urination would be perfectly normal, and there would be months of entire freedom from any vesical disturbances. Following hard mental work, a sudden complete, spasmodic, painful retention would occur. The Wassermann test of both the blood and spinal fluid was negative. Roentgenoscopy of the vertebral column was negative. Neurologic examination by a competent neurologist was negative. Urologic findings showed prostate of normal size with slight induration of both lobes. The prostate was not enlarged, nor was it smaller than normal when examined by rectum. The right seminal vesicle was indurated and adherent externally. The left seminal vesicle was also indurated. There was a perivesicular induration and an induration extending between the two seminal vesicles. The prostatic secretion showed 10 per cent. pus. On cystoscopic examination, the patient having complete retention, the bladder capacity was difficult to determine. The bladder wall was not trabeculated. The trigon seemed hypertrophied, the posterior margin quite prominent. There was a slight elevation of the posterior portion of the internal urethral orifice, and a slight rounding of this orifice anteriorly.

The question arose in this as to the possibility of a contracture of the vesical neck. The history is against this. He had not progressively grown worse; in fact, for six months previous to the time when I saw him, he had not had any frequency of urination or any difficulty whatever in passing urine. There would be months of entire freedom from any vesical disturbances, and then following hard work, or things which tended to make him run down, he would have attacks of violent spasm at the neck of the bladder with acute retention. The very next urination would at times be perfectly normal. The spasm of the internal sphincter was so great as to interfere with catheterization. The very violence of the attacks of retention is against a long standing constantly acting mechanical obstruction. It is believed that this is a case not dependent on any definite organic obstruction but on a spasm of the internal sphincter muscle probably reflexly excited by a seminal vesiculitis.

Case 3.—A man, aged 28, married for six years, was first seen by me, March 31, 1915. He complained of periods in which he was unable to urinate, and at these times it was necessary for him to use a catheter. Until the age of 20 he was a healthy man, did not have to get up at night to urinate, and had no difficulty in passing urine. About eight years before admission he started getting up at night to urinate, about once, early in the morning. He was married two years later, and about a year after marriage he commenced to notice burning on urination. Four years before admission he was taken with complete retention and had to be catheterized. He would then have periods in which he would urinate in a normal manner and others in which it would be necessary for him to catheterize himself. In July, 1912, he was studied by a urologist, and in 1913, a suprapubic cystotomy was done. Apparently nothing was found. The bladder was sewed up and quickly healed. For four months then he got along very well, voiding urine without catheterization. He then commenced to have spasmodic pain on voiding. He was again studied and told that the verumontanum was greatly enlarged. This was cauterized with some relief from pain, which seemed to be in that region; but during 1914 it was occasionally necessary for him to catheterize himself, on account of retention of urine. For three weeks previous to admission he used a catheter practically every time the bladder felt full. The history of this catheterization is rather peculiar. At times it was only necessary to pass a catheter a very short distance into the urethra, when he was able to urinate; at others it was necessary to pass the catheter all the way into the bladder, but not necessary to leave it there, for the catheter could sometimes be withdrawn and he would continue to empty the bladder through the urethra with a large size stream.

The course of events in his retention he described as follows: On attempting to urinate, an intense burning at the neck of the bladder occurred, and the muscle then seemed to go into a spasm and shut off the urine. At times some would be passed, and then the bladder seemed to shut off with a grating sensation, and he was unable to relax it. There was no history of syphilis. He denied gonorrhea. Examination showed a fairly well nourished young man, with normal reflexes. The Wassermann test of the blood and spinal fluid was negative. Roentgenoscopy of the vertebral column was negative. Rectal examination revealed a prostate of about normal size. The prostate showed marked induration along the left outer border, and slight induration of the right lobe. The left seminal vesicle was greatly indurated, and stood out like the finger of a glove. The right seminal vesicle was thickened, but not as much so as the left. The prostatic secretion showed 50 per cent. white blood cells. In spite of the numerous times which the patient had catheterized himself, the urine was not infected and was otherwise negative. Just before cystoscopic examination was done the patient had catheterized himself, and when cystoscopy was performed, 50 c.c. of urine were found in the bladder. The bladder capacity was 160 c.c. The bladder wall was not trabeculated, but the interureteric band was greatly hypertrophied and stood up as a ridge across the bladder. As the cystoscope was withdrawn into the urethra, no posterior bar was seen, and all of the prostatic views were concave. Anteriorly the scar of the operation spoken of above was seen. The urethra was very carefully studied with an endoscope with negative findings. This patient was treated by prostatic massage and massage of the seminal vesicles. Following this treatment extending over a period of three months he was able to dispense with his catheter, improved greatly in general health, and the spasms at the neck of the bladder ceased. It is thought that this case is an example of a spasmodic retention of urine depending on inflammation of the seminal vesicles. It was cured by attention being given to these diseased organs.

MECHANISM OF RETENTION

What is the mechanism of reflex retention of urine? Is it an inhibition of the detrusor muscle of the bladder, is it a spasm of the sphincter muscles of the bladder, or is it an inability to inhibit the normally contracted sphincter muscle?

In regard to the first possibility, an inhibition of the detrusor muscle of the bladder, Albarran and Nogués[12] have regarded this as the most likely possibility in functional retention of urine extending over a long period of time. While they did not doubt the occurrence of spasms of the muscles occasionally being responsible for the retention of urine, they regarded it as rather unusual. To quote from them:

> We think that the sphincter troubles capable to determine prolonged retention of urine are especially produced when the normal faculty of inhibition, reflex or voluntary, is lost. We also think that most often these disturbances of inhibition have not to do with the sphincter apparatus for their exclusive seat, but that they act also on the contractibility of the bladder.

In this connection the various theories as to the mechanism of cardiospasm are of interest. In this condition there can be no question as to the absence of organic obstruction, and yet the obstruction is most complete.

Morrell Mackenzie[13] believed that it was due to the general weakness of musculature of the esophagus. Mikulicz[14] believed that the spasm of the cardia was responsible for it, and Hertz[15] and Rolleston,[16] from the fact that the muscle at the cardiac orifice is practically never found to be hypertrophied, regarded the condition as due to the inability to relax or inhibit the normally contracted cardiac orifice — an acalasia.

Hertz,[17] however, found one case in which there was a definite spasm at the cardiac sphincter and Mathieu and Roux[18] described a case in which it was impossible to withdraw an esophageal sound until the patient had been anesthetized with chloroform, so that it will be seen that the same views are held in connection with cardiospasm as have been held responsible for functional retention of urine. That the functional retention of urine is not due to an inhibition of the detrusor muscle, as was supposed by Albarran, would seem to be true in the cases which I have cited. When the catheter was passed into the bladder, urine was forced out with considerable force. Moreover, the retention of urine was quite painful and was spasmodic. The condition is not due to a spasm of the external sphincter muscle, nor is this muscle necessarily associated with the retention.

The work of Volcker and Lichtenberg,[19] Leedham-Green,[20] Barringer and MacKee,[21] and Uhl and MacKinney[22] has conclusively demonstrated that urine is retained in the bladder under normal conditions by the internal sphincter muscle. It is commonly supposed that the external sphincter muscle works constantly in unison with the internal sphincter muscle, which is by no means the case. Ejaculation may take place with the bladder full of urine without urine escaping, in which case it is evident that the internal sphincter muscle must be contracted and the external sphincter muscle relaxed. If the prostate be massaged with the bladder full of urine, prostatic secretion can be expressed from the urethra without urine escaping.

In the cases of spasmodic retention of urine cited above, it was definitely determined that the retention took place at the internal sphincter muscle. As to the two remaining possibilities, as to whether this type of retention is due to a spasmodic condition of the internal sphincter or an inability to inhibit a normally contracted muscle, it would seem that both of these conditions might be a possibility; but in the cases which I have observed, some urine would usually be passed, when the muscle would seem to be thrown into a spasm.

TREATMENT

In regard to the treatment of this condition, an attempt should be made to find the exciting cause. In Case 1, the removal of the hydronephrotic sac resulted in a cure of the disturbances of the normal mechanism of urination which had extended over a period of almost two years. In Case 3, massage of the seminal vesicles resulted in a cure, whereas a catheter had been necessary for most of the time over a period of four years. It is a question as to whether this condition could become a settled one and produce permanent changes in the sphincter muscle such as Fuller has described. If this occurs, it is probable that section or division of the internal sphincter muscle would be required for relief of the condition, and in the persistent cases this method of treatment would possibly be advisable.

This condition must be differentiated from contracture of the vesical neck due to fibrous tissue changes.

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[12] Albarran, J., and Nogués, P.: Retentions d'urine sans obstacle mécanique et en dehors des affections du système nerveux, Cong. Assn. internat. d'urol., Paris, 1908, **1**, 299.

[13] Mackenzie, Morrell: Diseases of the Throat and Nose, London, 1884, **2**, 115.

[14] Mikulicz: Deutsch. med. Wchnschr., 1904, **30**, 17, 50.

[15] Hertz: Quart. Jour. Med., **8**, 302.

[16] Rolleston, H. D.: Tr. Path. Soc. London, 1896, **47**, 37.

[17] Hertz: Quart. Jour. Med., **8**, 300.

[18] Mathieu, A., and Roux, J. C.: Pathologie gastro-intestinale, 1909, **1**, 78.

[19] Volcker and Lichtenberg: Die Gestalt der menschlichen Harnblase im Röntgenbilde, München. med. Wchnschr., 1905; Cystographie und Pyelographie, Beitr. z. klin. Chir., 1906-1907, **52**.

[20] Leedham-Green: Brit. Med. Jour., 1906, **2**, 297.

[21] Barringer and MacKee: Radiographs of the Bladder and Bladder Neck, Tr. Am. Urol. Assn., 1912, p. 408.

[22] Uhl and MacKinney: Observations upon the Mechanism of Urination, Urol. and Cutan. Rev. (Tech. Sup.), July, 1913.

OBSERVATIONS ON CERTAIN OBSTRUCTIONS AT THE VESICAL ORIFICE *

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The subject of obstructions at the vesical orifice with attendant distressing symptoms has occupied the attention of surgeons for many generations. Interest in this particular field of urology has been much stimulated recently by the fact that cystoscopic examinations have become a routine procedure in cases of patients who are suffering from urinary disturbances.

In urology as in other fields of medical science the progressive surgeon is alert to discover early pathologic conditions in order that relief may be prompt and effective, thereby eliminating much suffering and repairing damaging conditions.

In this discussion it seems advisable to consider vesical orifice obstructions other than those caused by enlargement of the prostate gland proper which is believed to be a subject apart.

The older writers recognized several types of vesical orifice obstructions. Sir E. Home[1] described what we now know to be hypertrophy of the subcervical group of Albarran as the normal middle lobe of the prostate. His view was much and justly criticized by his contemporaries, and in fact the condition was correctly described by writers much before his time. Morgagni[2] in 1761 referred to this condition as a morbid growth causing retention of urine. He considered it to be of the same nature as the prostate gland and contiguous with it. Valsalva, Pohlius, Santorini,[3] Thomas Bartholin of Padua, and Valisneri described similar growths, and were quoted by Morgagni and Bonetus[4] as early as 1700 to the effect that excrescences grew out in the very middle of the internal and upper circumference of the gland, posteriorly, in some old men. Lieutaud, a contemporary of Morgagni, considered an eminence at the neck of the bladder to be not a morbid growth, but a small part quite natural and common to all bodies. He called it the "uvula vesicae." John Hunter[5] agreed with the opinion of Lieutaud. J. Cruveilhier[6] and Langenbeck considered a protuberance in this region to be pathologic and that there was no definite middle lobe but a middle portion.

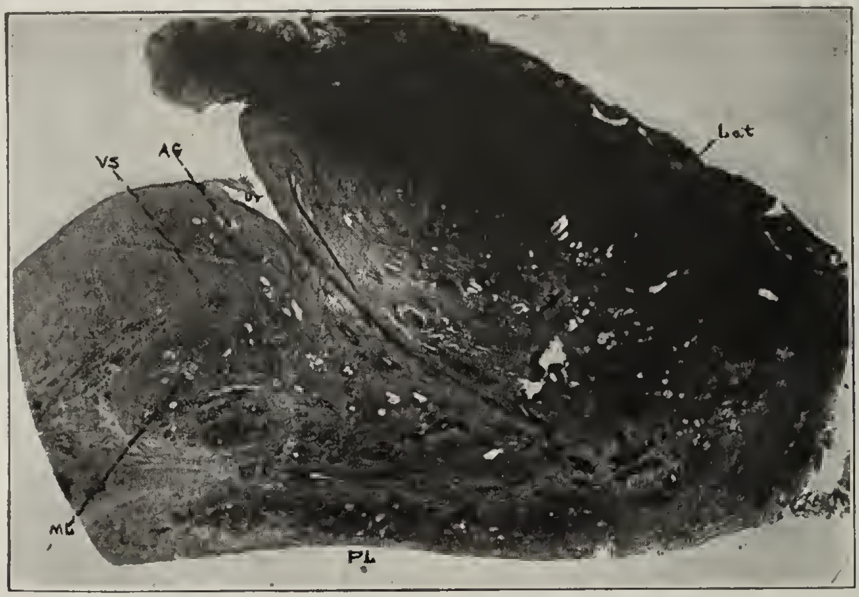

Fig. 1.—Oblique section through the prostate and trigonal region of a man aged 76: *Ur,* urethra; *AG,* subcervical gland tubules; *VS,* vesical sphincter; *ML,* middle lobe tubules; *EJD,* ejaculatory ducts and muscular envelope; *PL,* posterior lobe tubules; *Lat,* lateral lobe tubules.

Valpeau[7] mentioned fibrous prostatic tumors, "which develop in the direction of the vesical cavity, which become absolutely pedunculated precisely as do the fibrous polypi of the uterus, and become enveloped by the vesical mucous membrane." Rokitansky[8] considered such tumors and their relation to the prostate to be analogous to tumors of the thyroid gland and outlying formations similar in structure to it. Sir J. Paget[9] agreed with this view, as did also Sir W. Fergusson,[10] Mr. Shaw[11] and Sir Henry Thompson.[12]

Mr. J. G. Guthrie in 1830 lectured on prostatic and nonprostatic obstructions at the vesical orifice. He concluded that (1) an elastic structure exists at the neck of the bladder and may be diseased without any necessary connection with the prostate gland; (2) the prostate gland may be diseased without any necessary connection with the elastic structure. Mr. Guthrie first used the term "bar at the neck of the bladder," and distinguished between it and the obstruction caused by the large median portion of the prostate proper. Civiale[13] describes the "vesico-urethral barrier" as formed in some cases by "a simple fold of membrane, smooth and thin, and almost transparent, extending from one lobe of the prostate to the opposite" and others by fold, thicker, in the form of a rounded cord which contains some fibrous or muscular tissue. He also mentions that obstruction in the region of the vesical orifice may be due to spasmodic muscular contractions, rheumatism, etc. Mercier[14] does not entirely agree with the views of Guthrie, but describes a "semiannular eminence." He recognizes two distinct kinds, one produced by repeated spasm of the muscular fibers which close the neck of the bladder, becoming a permanent bar, the other a result of hypertrophy of the median portion of the prostate.

Sir Charles Bell[15] believed that hypertrophy of the middle lobe was caused by the pull exerted on it by the muscle bands of the trigonum vesicae in irritative conditions of the bladder. The work of G. V. Ellis[16] on the anatomy of this region proved that the muscles of the trigon are attached to the longitudinal muscular coat of the urethra and hence do not react in the manner described by Bell.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Home, E.: An Account of a Small Lobe of the Human Prostate Gland Which Has Not Been Taken Notice of by Anatomists, Phil. Tr., 1806; Practical Observation on the Treatment of Diseases of the Prostate Gland, London, 1818, **2**.
2. Morgagni, J. B.: De Sedibus et causis Morberum per Anatomen Indagatis, Venice, 1761, Letter 41, Article 18.
3. Santorini, G. D.: Observations Anatomical, Venice, 1724, Chap. 10, p. 201.
4. Bonetus, Theophilus: The Sepulchretum sive anatomia Practica, Lyons, 1700, Book III, Sections 24 and 25.
5. Hunter, John: A Treatise on the Venereal Disease, Ed. 2, London, 1788.
6. Cruveilhier: Anatomie pathologique du corps humain, Book 17, p. 3, Paris, 1835; Traité d'anatomie pathology générale, **3**, 46, Paris, 1856.
7. Valpeau: Leçons orales de clinique chirurgie, Paris, 1841, p. 478.
8. Rokitansky, Carl: Zur Anatomie des Kepfes, Vienna, 1849, p. 10.
9. Paget, Sir James: Lectures on Surgical Pathology, London, 1853, **2**, 8.
10. Fergusson: Proc. Path. Soc. London, Feb. 19, 1849, p. 83.
11. Shaw: Proc. Path. Soc. London, May 7, 1849, p. 83.
12. Thompson: Tr. Path. Soc., 1855, **7**, 254.
13. Civiale: Traité pratique, **2**, 244.
14. Mercier: Recherches sur le traitement des maladies des organes urinaires, Paris, 1856.
15. Bell: An Account of the Muscles of the Ureters and Their Effects in Irritable States of the Bladder, Tr. Med. and Chir. Soc., 1812, **3**.
16. Ellis: An Account of the Arrangement of the Muscular Substance in the Urinary and Certain of the Generative Organs of the Body, Med.-Chir. Tr., **39**, 327.

Albarran[17] describes in detail a group of glands at the vesical orifice which open into the urethra and whose tubules lie between the mucosa and the musculature. He calls this the subcervical glandular group and states that it varies greatly in different individuals and may be entirely lacking in some. Cuthbert S. Wallace[18] states that in a certain number of cases while circular muscle fiber is still well marked and forming a very definite barrier between the gland tissue behind and the urethra in front, there can be seen lying close under the mucous membrane prostatic glandular alveoli which may give rise to the small adenomatous tumors situated just within the internal meatus in some cases.

Dittel[19] maintains that the hypertrophic middle lobe does not project behind the sphincter into the lumen of the bladder, but originates from the "portia intermedia" in front of the sphincter and encroaches during the growth between the mucous membrane of the urethra and posterior half ring of the sphincter, by which procedure the sphincter comes to lie behind as a tumor functionating like a valve. Jores states that valvelike tumors of the orifice take their origin not from the prostate gland itself, but from the glandular tissue, which is already normally present, "in most individuals above the colliculus seminalis" just below the mucous membrane of the urethra and orificium, respectively, at any rate, in front of the sphincter. Ciechanowski[20] agrees with the view expressed by Jores.

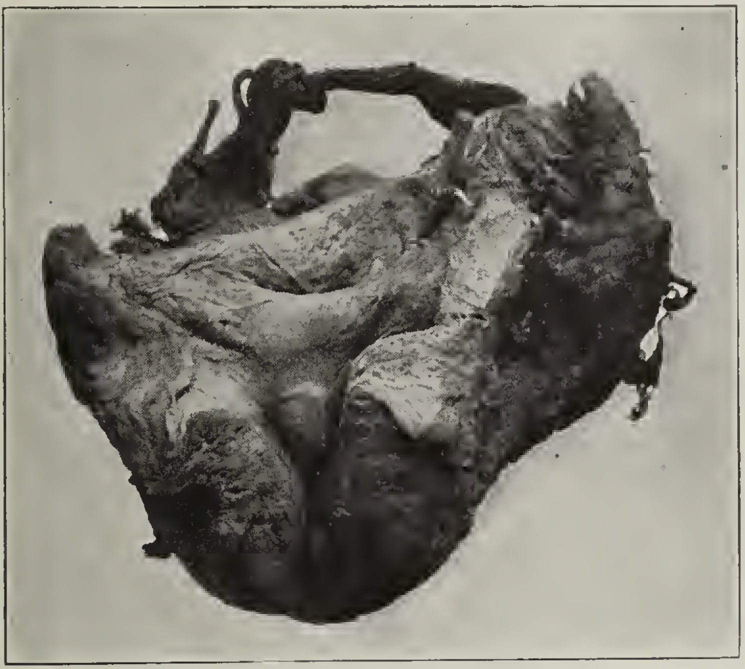
Fig. 2.—Moderate unilobular hypertrophy of subcervical group with a raised contracted trigonum vesicae and a moderately deep bas fond. Bladder shows signs of obstruction.

Anatomic conditions at the vesical orifice have been extensively studied by the author.[21] The small group of subcervical tubules which seem to have attracted so many writers has proved to be most interesting. These tubules begin to develop at the fourth intra-uterine month and are found in every specimen older than that. They are not particularly numerous up to the time of birth, as there are never more than eleven. After birth they increase greatly so that in one specimen there are as many as forty-three. The average number for all specimens is twenty-five. Structurally they differ from prostatic tubules in a number of important details. There is not a differentiated layer of muscular and connective tissue fibers around them, although in disease the fibrous tissue develops an encircling sheath in many instances. The mucosa is composed of two or three layers of low columnar or cuboidal epithelial cells, chiefly the latter, placed on a feltlike basement membrane. The nuclei are usually in the center of these cells and almost never occur near their bases as they do in the cylindric cells of prostatic mucosa. Many of these nuclei are oval in contour. The lumina are small and usually circular or oval in shape and rarely have an irregular outline with fingerlike projections as do the prostatic tubules. These tubules in an adult resemble the tubules of an embryonic prostate gland to a considerable degree.

The subcervical group of tubules located, as its name signifies, at the vesical orifice, chiefly in the mucosa of its floor, is subjected to many influences which tend to make the occurrence of pathologic conditions rather frequent. In fact, a careful study of some 350 prostates collected from routine necropsies shows an enlargement of this group in about 25 per cent. of patients over 30 years of age. In practically all cases of adenomatous hypertrophy of the prostate there is an accompanying enlargement of the subcervical group of considerable degree. Therefore it is assumed that the same factor which causes an adenomatous hypertrophy of the prostate also stimulates an overgrowth of the subcervical group of tubules, and furthermore it is believed that the latter structure responds to this stimulating influence before the prostate itself does.

The enlargement of the subcervical group of tubules occurs in several forms. The most frequent is the small single tumor which occurs in the midline at the vesical orifice and usually projects through the internal meatus into the bladder. This structure was observed by the older writers and apparently occurred with great frequency in 1700, as it was described at that time by the venerable French writer Lieutaud, who considered it a normal structure and called it the "uvula vesicae." Next in frequency of occurrence are the medium sized single tumors. Very many cases of extensive adenomatous hypertrophy of the prostate are accompanied by an intravesical intrusion of the subcervical group of tubules, and this tumor is frequently mistaken for an enlargement of the middle lobe which is, as a matter of fact, usually adenomatous in type but rarely protrudes into the bladder, although it often lifts the lower portion of the trigonum vesicae. In almost every instance careful examination of the adenomatous prostate removed intact shows a groove where the vesical sphincter has compressed the enlarged subcervical group which projects into the bladder, and which is removed with the prostate in the suprapubic operation.

In addition to the single tumors of various sizes there are a number of enlargements of this group which are partially divided. This division seems to be caused by a rather strong development of the bundles of muscle and connective tissue which extend from each ureter to the musculature of the posterior urethra, the so-called "Bell's muscles." These structures in some instances are more unyielding than in others, and hence cause a lack of development at their strongest points, thus dividing partially or completely the group into several parts, usually three. Sometimes the division is so complete that the entire

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17. Albarran: Maladies de la prostate, 1902, p. 526.
18. Wallace, Cuthbert S.: Prostatic Enlargement, London, 1907, p. 20.
19. Dittel: Beiträge zur Lehre der Hypertrophie der Prostata, Wien. med. Jahrb., 1867, p. 142.
20. Ciechanowski: Anatomical Researches on the So-Called Prostatic Hypertrophy (translated by Dr. Robert H. Greene), 1903, p. 79.
21. Lowsley, O. S.: Am. Jour. Anat., 1912, **3**, No. 3; The Human Prostate Gland at Birth, The Journal A. M. A., Jan. 11, 1913, p. 110.

group is composed of three practically pedunculated masses which just exactly fit in the vesical orifice, and on attempted urination are forced into the internal meatus, entirely closing it.

One other type of subcervical tumor occurs, namely, the horseshoe shaped tumor. This type is generally fairly large and usually encompasses the lower half of the circumference of the internal meatus. Obstruction to urination occurs in this type, and may be complete, but is ordinarily partial. The act of micturition in this instance may be and usually is accompanied by considerable pain. In one interesting case in my practice the patient had been operated on for an adenomatous prostate by Young's perineal method, after which his complete retention became partial, there being 12 ounces of residual urine after his micturition, which occurred as a very painful dribbling. Cystoscopic examination showed a horseshoe shaped enlargement of the subcervical group of tubules which was a little more extensive on the left than on the right. The tumor was removed by Young's punch with thorough relief of pain, a good strong stream of urine and less than 1 ounce of residual urine.

Hypertrophic changes in the trigonal musculature come next in frequency as a cause of the obstruction at the vesical orifice to urinary outflow. In a series of cases recently reported, seventeen cases with sufficient hypertrophy to cause considerable obstruction to urinary outflow were found which made up 7.6 per cent. of the entire number observed. This condition almost never occurs before the fortieth year. It is accompanied by a very deep posttrigonal pouch or bas fond.

The subtrigonal group of tubules which is found in all specimens between the middle of the trigonum vesicae and the vesical orifice is frequently the seat of pathologic change. The most frequent lesion is ulceration, but sometimes there are found tumors which are a source of obstruction. These tumors are of three kinds. The most common is the low mound shaped mass which sometimes does and again does not cause obstruction. Rarely if ever does this type not cause complete retention. Next in frequency is the pedunculated mass which is an outgrowth from this group of tubules, and, situated as it is just above the vesical orifice, often acts as a ball valve and may cause complete retention of urine. Dr. Hugh H. Young of Baltimore reports several such cases, and I have observed a number of others through the cystoscope. Villous papillomas occur in this region occasionally and may even be found just at the vesical orifice, as Joseph F. McCarthy has observed.

Fibrous stricture of the vesical orifice is not an infrequent source of obstruction to urinary outflow. This is usually a result of chronic inflammatory process, but may follow operative procedure in this region.

A specimen showing marked stricture of the vesical orifice was sectioned and cut both longitudinally and laterally and stained according to van Gieson's method and also with hematoxylin and eosin. A brief description follows: The mucosa of the apex of the trigonum and the vesical orifice is composed of several layers of epithelial cells transitional in type. The smooth muscle bundles of the trigonum vesicae are well shown as fine fibrils superimposed on the rather coarser bundles forming the vesical wall proper. At the apex of the trigon these muscle bundles seem to be firmly and closely matted together. Numerous blood vessels of moderate size are found throughout this region. They are, in fact, much more numerous here than at any other portion of the structure. Proliferation of the connective tissue cells has taken place, and there is marked small round cell infiltration. This increase in fibrous tissue is most marked in the layer which is continuous with the trigonum vesicae and above and toward the bladder lumen from the subcervical group of tubules. Extending downward from the trigonal region at several points are observed quite marked bundles of tissue which insinuate themselves between the fibers composing the wall of the bladder proper, and these serve to bind the two structures together quite firmly. The subcervical tubules of Albarran are considerably atrophied in appearance. The mucous membrane lining the tubules is composed of cuboidal shaped cells, usually one layer in thickness placed on a feltwork base. There is considerable infiltration of small round cells in the region of these tubules and also about the muscle bundles of the sphincter which lie just beneath them. The entire picture gives one the impression of fibrosis due to long continued low grade inflammation.

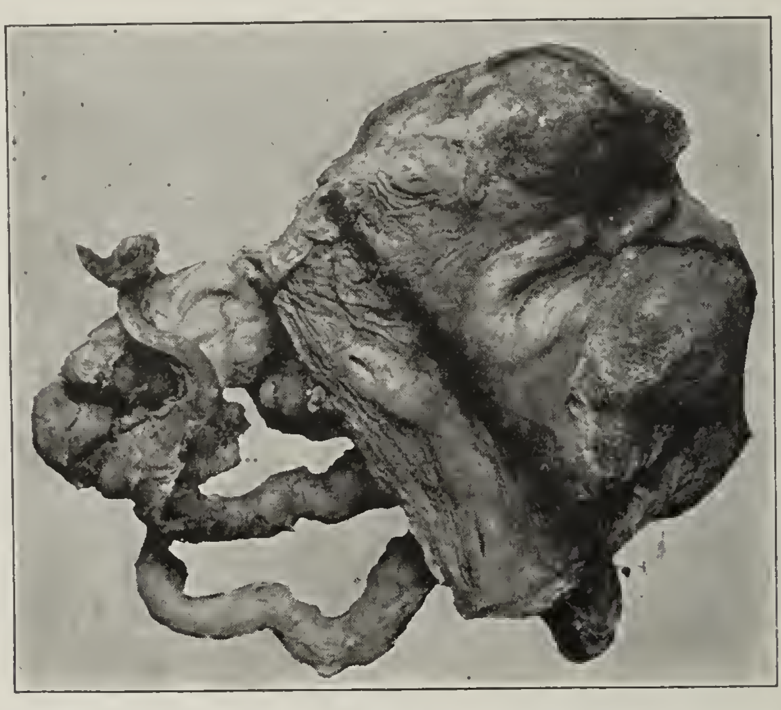
Fig. 3.—Enlargement of subcervical group in the shape of a very thick letter U extending from the upper end of the verumontanum within the sphincter and into the bladder, which shows signs of obstruction.

Cysts at the vesical orifice are occasionally met with, and in some instances are the cause of grave obstruction. They usually occur just within the vesical sphincter and probably arise from the subcervical tubules. Rarely, however, they may spring from the subtrigonal group. One which occurred in my series gave rise to very marked obstruction with retention of urine and trabeculation of the fundus of the bladder.

DIAGNOSIS

The diagnosis of the above conditions is based on the following findings: There is often a certain amount of pain, even in the earlier stages. Sometimes it becomes exceedingly acute and in other instances may be merely a feeling of uneasiness when the bladder becomes full or is being emptied. Very often the patient has a feeling that he is not able to completely empty his bladder. In the worst cases the symptoms may resemble those of the prostatic. There is always residual urine. Often in early cases this will not exceed an ounce. In a case of moderate degree it usually amounts to 4 or 5 ounces, and in the more advanced cases complete retention results.

The passage of bougies and sounds reveals to the careful manipulator the fact that stricture is not the cause of the patient's trouble, and just as the instrument passes into the bladder the sense of riding over an obstructive mass at the vesical orifice is transmitted. Catheterization reveals the amount of residual urine.

On rectal examination the prostate will usually be found to show evidence of chronic irritation. It frequently is indurated and nodular, and usually there are numerous bandlike adhesions extending from the lateral surfaces and between the base and the seminal vesicles. These vary in their firmness. The most important thing to be learned from the examination of the prostate in these cases is that it does not show marked enlargement. With an instrument in the urethra and the finger in the rectum changes of the collarlike vesical sphincter are readily appreciated.

Cystoscopic examination, preferably with the McCarthy straight instrument or the Buerger urethroscope, is the most important examination to be made in arriving at a diagnosis in these cases. There is usually hypertrophy of the musculature of the bladder wall so that trabeculation in the fundus is quite marked, cellules occurring frequently, sometimes being quite deep.

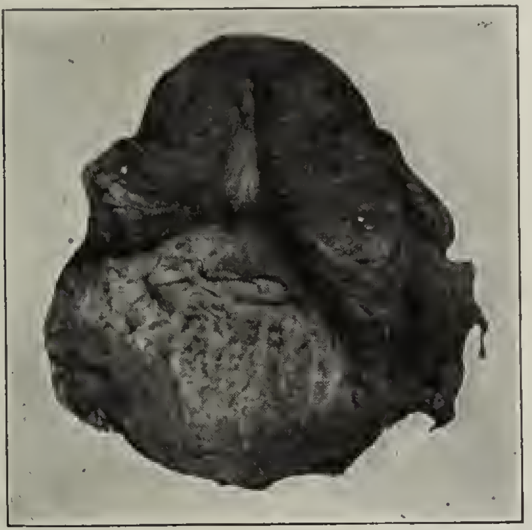
Fig. 4.—Trilobe enlargement of subcervical group with marked signs of obstruction.

The trigonum vesicae is in most instances somewhat hypertrophied, particularly in the interureteric region, thus forming a rather deep posttrigonal pouch. The ureteral orifices are situated on quite marked ridges owing to the trigonal hypertrophy and are not necessarily changed, although they may be dilated from back pressure in aggravated cases.

The vesical orifice is of course the most interesting part of the picture. Tumor masses arising from the subtrigonal group are easily recognized, as are those which originate from the subcervical tubules. It is sometimes necessary in the case of the latter to depress the eyepiece of the cystoscope considerably in order to throw the vesical orifice into the field more satisfactorily. Very early tumors on the floor of the internal meatus are recognized by the change from the normal concave border to a convex mass which projects itself into the field. Multiple, cystic, pedunculated and horeshoe shaped tumors are distinguished by careful observation.

Fibrous strictures of the vesical orifice present slightly greater difficulties in the matter of diagnosis. Often in these cases there may be some slight difficulty in introducing the instrument, and frequently there is considerable pain. The vesical orifice presents concave borders over its entire circumference. Observation of the apex of the trigonum vesicae shows a very steep proclivity, so that if it is to be observed closely the eyepiece of the instrument must be very much elevated. Also in observing that portion of the urethra between the vesical orifice and the upper end of the verumontanum a marked declivity is noted and the eyepiece of the instrument must be considerably lowered.

An early diagnosis of these interesting conditions at the vesical orifice is extremely important, just as is an early diagnosis in tuberculosis, carcinoma or any other serious condition. Although obstruction to urination is not such an emergency affair as appendicitis, it is most important that immediate measures be adopted to relieve the obstruction. The harmful results of residual urine with the possibility of back pressure in ureters and kidneys, of easy infection, the formation of stone, etc., are too well known to require a lengthy description in this article.

TREATMENT

In very early cases of enlargement of the subcervical group of tubules there are usually few if any symptoms. As the condition becomes more aggravated there may develop a burning pain on micturition, a disturbance in the force and character of the stream, and a sense of fulness in the perineum and various referred pains down the insides of the thigh, in the small of the back, etc. The patient may also have a sensation that he is not completely emptying the bladder. Catheterization shows a small amount of residual urine. In very early cases only 20 or 30 c.c. may remain after micturition.

In these early cases the administration of hexamethylenamin with acid sodium phosphate or sodium benzoate will render the urine antiseptic, and as there is usually a considerable amount of inflammatory tissue in and around these tumors, the burning and referred pains are frequently relieved by instillations of arygrol, or weak solutions of silver nitrate. The passage of sounds with occasional massage of the regions of the vesical orifice by rectum on the collarlike mass which is felt with the sound in place will sometimes give relief. These and various other palliative measures give temporary relief, but as the fundamental cause of the symptoms is the hypertrophy of the subcervical group and not the inflammation accompanying it, in the end the symptoms become more pronounced and recur as the tumor enlarges.

Occupying, as these tumors do, an extremely strategic position within the sphincter on the floor of the vesical orifice, it is found that as the size increases the obstruction with accompanying evils likewise increases markedly, and steps for removal should be taken.

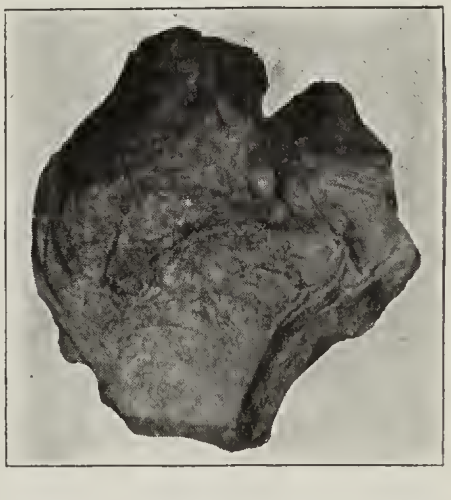
Fig. 5.—Hypertrophy of subcervical group in three distinct portions which practically block the urethra.

A great many procedures have been recommended. I have found that Young's punch operation is decidedly the best method employed in removing these intrasphincteric masses, be they small, large, unilobular, or trilobular. The instrument is introduced so that the fenestrum is in the posterior urethra. The obturator is withdrawn and the instrument inserted still further until the tumor at the vesical orifice rises into the fenestrum, completely filling it. The cutting inner tube is then introduced and quickly pushed into position, punching out the entire portion of the tumor in the fenestrum. The instrument is then turned obliquely to the right and then to the left, where the same procedure is repeated. The instrument is then withdrawn and a catheter with a large fenestrum introduced. It is wise to keep a small amount of fluid in the bladder continually, but the former practice of keeping up continuous irrigations has been given up as it seems to delay the clotting of the blood at the cut surfaces and hence delays the healing. As a rule the bleeding stops after a few hours, and the catheter can often be removed after twenty-four or thirty-six hours.

An enlargement of the subcervical group is of such frequent occurrence that digital examination should always be made when a patient is operated on for enlargement of the prostate by the perineal route.

This particular case typifies many others that have come under my observation, and teaches that no prostatectomy is well done unless one searches for a subcervical glandular enlargement at the time of operation.

The suprapubic prostatectomy as practiced by Squier will remove the subcervical group of glands in the natural course of the operation.

The same influences which cause the subcervical gland to enlarge apparently cause prostatic hypertrophy later on, so the punch operation may be followed years after by a prostatectomy. It seems advisable, however, to do this operation in every case which presents symptoms and has any considerable amount of residual urine.

These tumors have been treated by Stevens and others by the high frequency current with splendid results in some instances. When treated in this manner the patients should be kept under close observation for several days as the procedure is sometimes followed in three or four days by terrific hemorrhage due to separation of a slough. As pointed out by McCarthy, occasionally application of the high frequency current has been followed by severe infection. Chetwood's[22] modification of Bottini's[23] operation is also preferred by some operators. The reason why the Young's punch operation seems to be the one of choice in this condition is that the entire tumor is removed at one time without injury to the internal sphincter and without requiring the use of a general anesthetic.

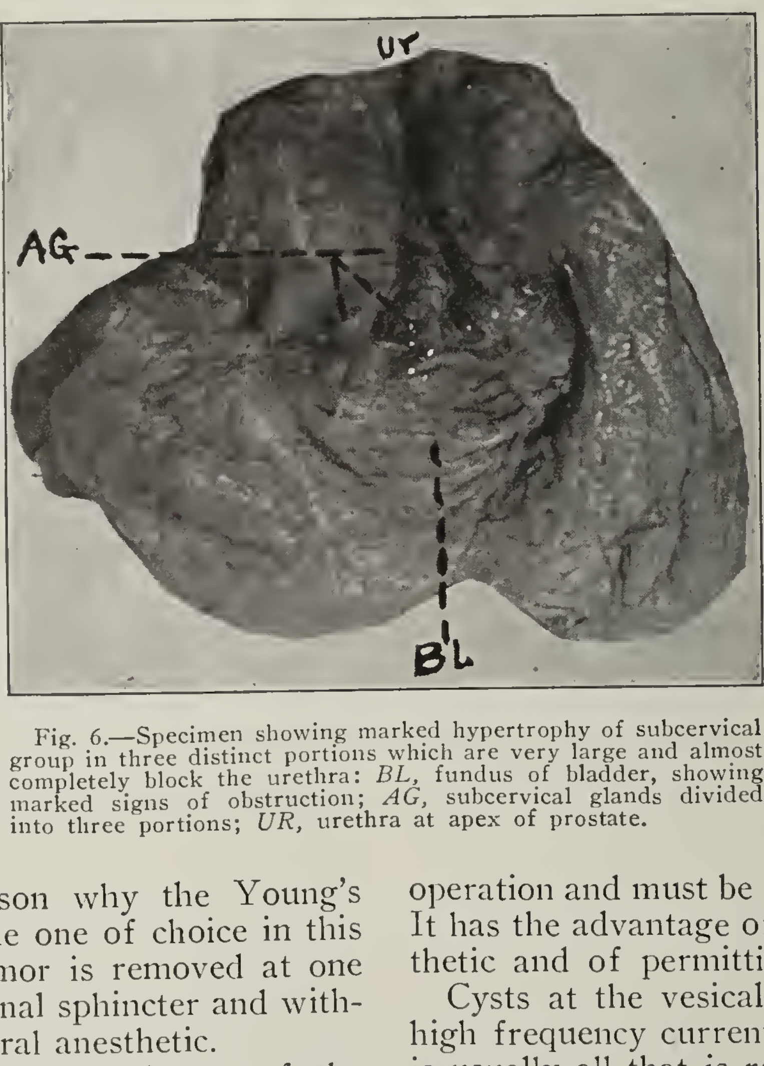

Fig. 6.—Specimen showing marked hypertrophy of subcervical group in three distinct portions which are very large and almost completely block the urethra: *BL*, fundus of bladder, showing marked signs of obstruction; *AG*, subcervical glands divided into three portions; *UR*, urethra at apex of prostate.

Hypertrophic changes in the musculature of the trigonum vesicae, as it passes over the floor of the vesical orifice, is best treated by Young's punch operation or Chetwood's electrocautery procedure. The high frequency current is of very doubtful benefit, as the resulting scar would be nearly as hard to deal with as the original condition. In some of these cases a course of dilatation with sounds will sometimes give relief. The reason for this is twofold. In the first place the hypertrophy often occurs because of stricture of the urethra, and the passage of sounds relieves the causative element. In the second place, there is a great amount of inflammatory tissue present as a rule which is largely dispelled by the passage of sounds. Often the action can be hastened by digital massage by rectum in the region of the vesical orifice with the sound in the urethra.

Tumors of the subtrigonal group, if not too large, may be removed by Young's intravesical rongeur, which is an exceedingly valuable instrument but must be used with care and intelligence as it is so powerful that if used recklessly there is a possibility of lacerating the vesical wall. It has the advantage of sufficient strength and size to enable the operator to excise a large sized tumor without the use of a general anesthetic. Buerger's operating cystoscope may be utilized if the tumor is very small. The high frequency current has a distinct value in some of these cases, especially if the tumor is pedunculated. If the growth is large and sessile it is sometimes necessary, as it was in one case that I saw in Young's clinic, to do a cystotomy and excise the mass with a scalpel.

Cases of fibrous stricture of the vesical orifice are treated best by Chetwood's electrocautery and Young's punch. Were it not for the fact that an anesthetic is required for the former procedure, it would be decidedly the operation of choice. I have in my series a case treated by Chetwood's method with a perfect result. The criticism that there is danger of burning into the rectum is not justified, since the distance from the vesical orifice through the prostate to its posterior surface is in all my specimens an inch or more. This operation burns through the internal sphincter, and in healing apparently does not permit that structure to resume its physiologic action. Incontinence does not occur, however, if the external sphincter is not injured in performing the external urethrotomy to introduce the instrument. Young's punch is used in these cases, but is not quite so radical as the Chetwood operation and must be followed by sounds occasionally. It has the advantage of not requiring the general anesthetic and of permitting a more rapid convalescence.

Cysts at the vesical orifice are best treated by the high frequency current. One application of the spark is usually all that is required to eradicate the delicate wall. The Buerger operating instrument in a McCarthy's cysto-urethroscope can also be used successfully in this condition. Often cysts in this region arise from a portion of the subcervical group, in which case the remainder of the enlargement must be treated as well, although the cystic portion is usually found to be the major portion of the obstructing mass.

SUMMARY

Most writers express the opinion that the majority of tumors at the vesical orifice are composed of prostatic glandular tissue. My work on the anatomy of this region has shown that glandular tissue extending into the bladder from the floor of the orifice can only be composed of tubules of the subcervical group because the vesical sphincter which is quite thick on its posterior aspect is interposed between these tubules and those of the middle lobe of the prostate. Normally the tubules of this group have small lumina. The mucous membrane is made up of two or three layers of low columnar or cuboidal epithelial cells with the nuclei in the center. These cells are disposed on a feltlike basement membrane. There is never a differentiated muscular layer around the tubules, but rarely there is a fibrous tissue envelope.

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[22] Chetwood: Tr. Am. Assn. Gen.-Urin. Surg., 1901.

[23] Bottini: Di un nuova cauterized incisore termo galvanico, Randall, 1874.

Structurally they resemble in the adult, when normal, the embryonic prostatic gland tubules. In pathologic specimens the tubules are increased in number and size. The lumina are somewhat larger. The mucous membrane retains its usual appearance, except that occasionally tonguelike projections of slight degree extend into the lumina. The cells usually retain their cuboidal shape with the nuclei in the center, although rarely there are found some cells which approach the cylindric type. There is usually a fibrous tissue development around the tubules, but it is easily differentiated from smooth muscle by the use of Van Gieson's stain. The small size of the tubules, the mucosa made up of several layers of cells, and the lack of differentiated tissue around the tubules have led to the mistaken impression that these tubules are composed of atrophied prostatic tissue, while as a matter of fact they belong to an entirely different group.

Alexander Randall[24] of Philadelphia, in a recent exhaustive study of the literature on this subject, has collected the various prevailing views of the pathology of this region, and I shall quote from his article extensively.

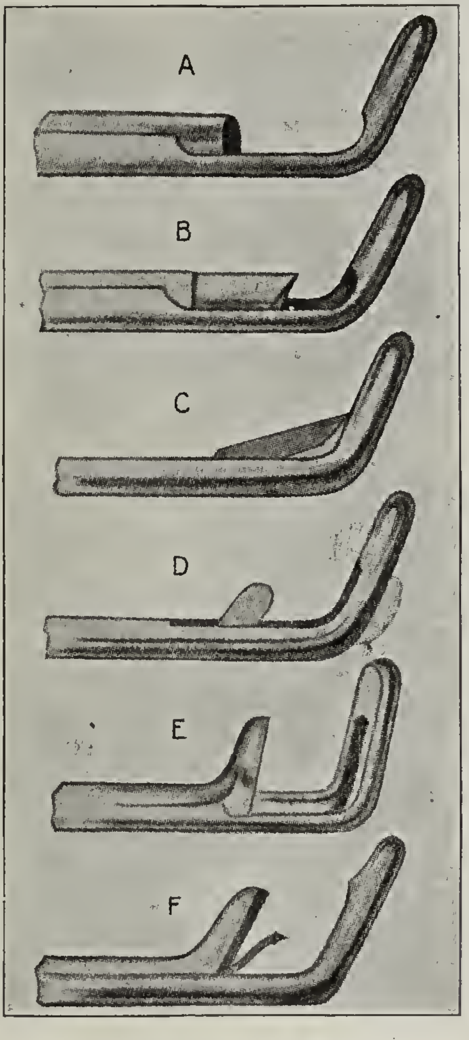

Fig. 7.—Mercier's instruments: *A*, excisor, 1839; *B*, excisor and incisor, 1841; *C*, incisor, 1844; *D*, incisor, 1847; *E*, excisor, 1850; *F*, excisor, 1852 (Randall).

> The German urologists, since the writings of Englisch in 1901, have firmly sustained the view that in the majority of cases the primary change consisted of an atrophic shrinkage of the prostate gland, and that the obstruction to the vesical orifice was due to a secondary distortion from such changes, plus a concomitant sclerosis of the internal sphincter (Englisch, Barth, Groslick, Datyner, Kummell, Posner, Steiner, Burckhardt, Caesar, Dubs, et al.). This conception they have been able to prove by their investigations, and then have shown, as first pointed out by Civiale, that when true bar formations exist at the orifice, there is at the same time a diminution in the size of the prostate. The valve formation of the older writers, consisting of a simple fold of mucous membrane, is not of this type, nor is it of frequent occurrence. Likewise small middle lobe obstruction due to localized glandular hypertrophy forms another type apart from the bar formation due to prostatic atrophy, though with similar obstructive symptoms.
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> In 1913, the first comprehensive study of the actual obstructive tissue at the orifice was published by Young, comprising the conclusions drawn from over 100 cases in which he had excised the obstruction by means of a special instrument, and subjected the tissue removed to a microscopic study. This work is of immense value, not only as being the sole investigation of so large a group of cases, but especially because it embraces the study of the actual obstructive tissue as it occurs at the vesical orifice. Since the publication of this work covering such a large group of cases, the previous obscure field of the pathologic histology of this condition, aside from its cause, has become more clear. That the cases did not fall into one category was to be expected from the previous work on this subject.

"Prostatic bar" is not a good name for the obstructive tumors at the vesical orifice. It seems to me much better to refer to the condition by using a term more in keeping with the anatomic lesion present. In the cases that I have studied, eighty-eight in number, I have found sixty-eight, or 77 per cent., due to a hypertrophy of the subcervical group of tubules. Ten, or 12.5 per cent., were due to changes in the musculature of the apex of the trigonum vesicae. Four, or 4.5 per cent., tumors of the subtrigonal group were found. Three, or 3.5 per cent., were cases of fibrous stricture of the vesical orifice accompanied by atrophy of the subcervical tubules. Two, or 2.5 per cent., were cysts of the vesical orifice, causing marked obstruction. Only one case of true middle lobe enlargement has come to my attention. Its development is so extensive that it envelops the vesical sphincter and a medium sized hypertrophy of the subcervical group which is entirely embedded in it. This specimen bears out the suggestion made to me some time ago by H. W. Plaggemeyer of Detroit, who is of the opinion that a true middle lobe enlargement does not project through the sphincter, but when that portion of the gland enlarges alone it lifts the sphincter up as well as the apex of the trigonum. It has been my experience that an enlargement of the subcervical group of tubules is frequently accompanied by an enlargement of the prostate gland itself, and adenomatous enlargement of the prostate is in nearly every instance accompanied by hypertrophy of the subcervical group of tubules. Therefore it is assumed that the stimulating influence which causes prostatic adenoma also affects the subcervical group in a similar manner, with the exception that it causes an earlier reaction in the case of the subcervical tubules.

I do not agree with the German view that tumors in this region are always accompanied by a small fibrotic prostate. Chronic inflammatory reaction does, of course, occur in many of the prostates associated with an enlargement of the subcervical group of tubules, but there are no specimens in my series which show atrophy of the prostatic tissue combined with this lesion.

CONCLUSIONS

1. Obstructive tumors at the vesical orifice, exclusive of adenomatous hypertrophy of the prostate proper, are due in my series in sixty-eight, or 77 per cent., of the cases to a hypertrophy of the subcervical group of tubules; and in ten, or 12.5 per cent., of the cases to a hypertrophic change of the musculature of the trigonum vesicae as it passes through the vesical orifice

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[24] Randall, Alexander: Prostatisme sans prostate, New York Med. Jour., Dec. 4-11, 1915.

to join with that of the urethra. In 4.5 per cent. of the cases, tumors arising from the subtrigonal group are present; 3.5 per cent. of the cases show a fibrous stricture of the vesical orifice; 2.5 per cent. have cystic conditions which cause obstruction; there is only one case in this series which shows a true middle lobe enlargement.

2. The same stimulation which causes an adenomatous hypertrophy of the prostate in most cases causes an overgrowth of the subcervical tubules, and on account of the greater frequency of the occurrence of the latter condition it is assumed that the subcervical tubules respond to the stimulation more promptly than does the prostate itself.

3. The prostate proper is only atrophied when the obstructive mass is due to a fibrosis of the vesical orifice. The subcervical tubules are also atrophied in such a case and are found to be surmounted by many layers of fibrous tissue and to be infiltrated with many small round cells.

4. Any obstruction at the vesical orifice which causes even a slight retention of urine should be treated promptly in order to relieve a condition which might become serious.

5. The treatment should consist of dilatation with sounds, massage and instillations in cases of slight degree. In marked cases with considerable residual urine the operation of choice is Young's punch operation. Chetwood's galvanocautery and the high frequency current may be used in certain selected cases.

6. It is never necessary or desirable to subject the patient to a suprapubic cystotomy for the relief of a tumor at the vesical orifice unless it is accompanied by a general adenomatous hypertrophy of the prostate gland.[25]

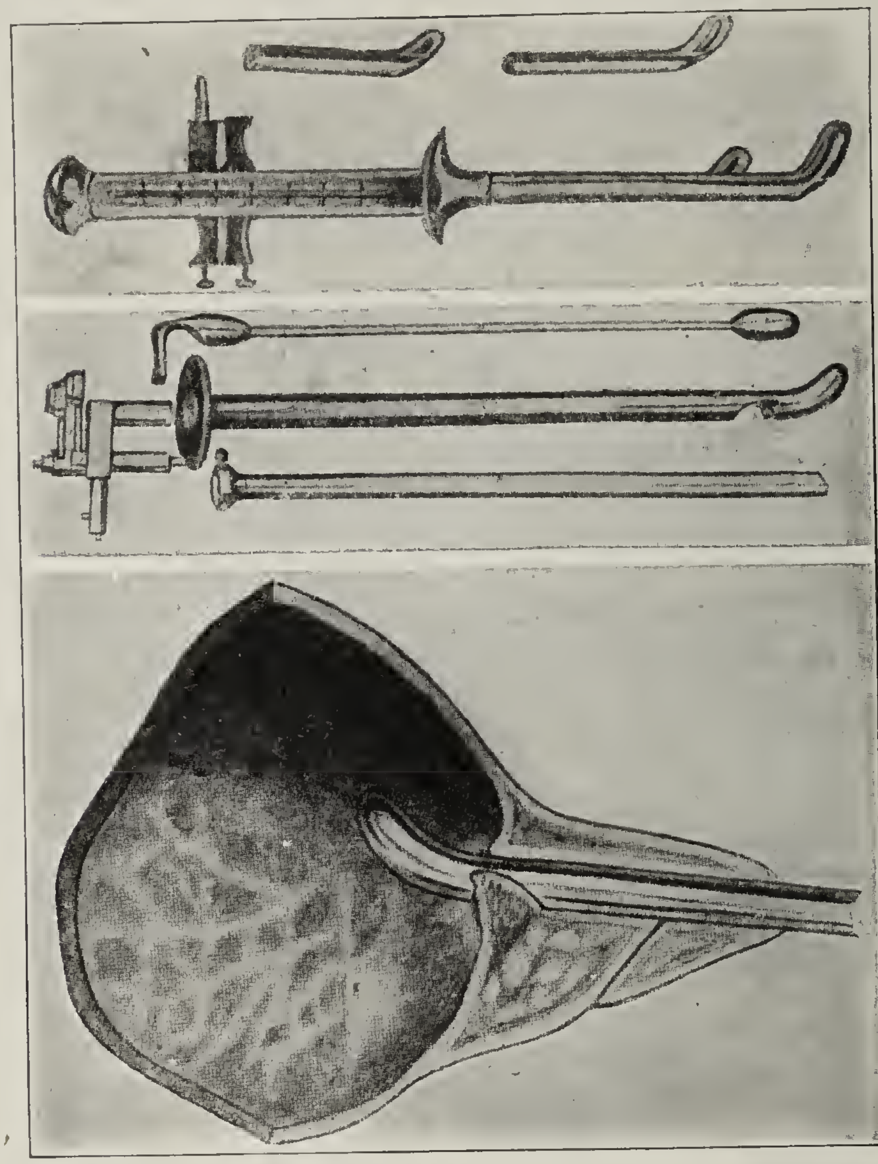

Fig. 8.—Above, Chetwood's galvanocautery; in the center, Young's urethroscope; below, Young's instrument in operation (Randall).

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CECIL AND LOWSLEY

Dr. H. W. Plaggemeyer, Detroit: Some years ago Dr. Keyes stated that it is not the size of the obstruction but its position in the urethra and mouth of the bladder that causes subsequent trouble from back pressure. The fact that Dr. Lowsley has found that in 77 per cent. of these cases there is an enlargement of the glands of Albarran and only one definite median lobe enlargement is to me rather astounding. My attention was first called to this some years ago when helping Dr. Young do the perineal operation. After a number of recurrences Dr. Young began to look for some trouble at the mouth of the bladder and in the floor because that is the anatomic position in which an obstruction is most natural and most easy, except possibly in the circular constriction of carcinoma, and in many of the cases he found this little knob about the size of a hazelnut, which was definitely enclosed in its own capsule. It lies in an anatomic plane separate and distinct from the prostate, and in the suprapubic operation it is usually removed. In the perineal operation one should always look for this definite little knob, very often small in size, but which may subsequently cause tremendous impairment of kidney function by back pressure. I cannot exactly subscribe to the idea of the punch operation in this type of case from a purely theoretical standpoint or from the very nature of the pictures Dr. Lowsley has shown this morning, because if this is a definite hyperplasia and we used the punch we would subsequently run the danger of having the aftereffects which we did in former cases in what was then supposed to be middle lobe hyperplasia. But the fact that Dr. Lowsley has only found one definite middle lobe enlargement might change our whole view of the subject. I think that this condition which exists here in young men is the condition that we have been looking for so long; what was previously termed inflammation of the bladder. In regard to the high frequency current treatment, it would seem that a preliminary treatment with the high frequency, even to the point of fibrosis, might pave the way for the complete operation by the punch. As far as the temporizing operation is concerned, I do not see much to be gained, because with a definite pathologic condition we would only be putting off the evil day.

Dr. H. J. Scherck, St. Louis: Some time ago I reported a case and I have since then observed a number of cases of superimposed edema at the vesical neck as a cause of vesical obstruction. This edema may be like a very large tumor mass. In one case the edema was marked when we opened the bladder but we could feel it disappear during the progress of the operation. It was superimposed on a hypertrophy of the prostate. Since that time I have observed the cystoscopic pictures in these cases of vesical retention without enlargement. While there are many causes for it, an important cause I think is unrecognized spinal conditions. They are very common, but the type I especially want to call attention to is this edema. This edema of the vesical neck, even involving the prostatic urethra, when the pressure is from behind, is a distinct entity. In two cases where I could not discover any cause except that for retention I have through the operating cystoscope simply divided the vesical neck two or three times with a little knife just sufficiently to deplete it to some extent, and the retention disappeared for a number of days, until the wound healed, and then the edema appeared again. This condition may be so slight as to be hardly observable. I believe that in many cases the punch or the cautery operation has the effect of depleting the parts which serve the purpose of relieving the obstruction. If the operation is sufficient to leave a groove the effect is permanent. In one case the condition recurred again. I believe that edema of the vesical neck as a result of an inflammatory condition of the verumontanum, or as an incident in a general arteriosclerosis or a nephritis, may be a cause.

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[25] In addition to the references already given, the following will be found of interest:

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DR. LELAND BOOGHER, St. Louis: It falls to the lot of all of us to drain the urine in these cases, and it depends on how we can best serve the patient in the drainage. A few years ago I read a paper on malarial hematuria, and I was severely criticized because I had drained a bladder of 2,500 c.c. at one sitting. I have lately had several cases, and one that far surpassed that. Of course, this drainage was done under observation, the patient being in the care of a nurse or a physician all the time. The advantage of this drainage at one time, doing it very slowly and only allowing a very fine needle-stream to flow, is that you will regain the muscular activity of the bladder. About a month ago a man entered my office to get relief from an acute retention. I examined him, and found he had a watermelon abdomen. He was suffering acutely. Because of the immense dilatation of the bladder an instrument was easily passed at that time, and was left in situ from 11:30 to 5:30 in the afternoon. At that time 3,200 c.c. had passed from that bladder. The man had not been able to urinate and had been using a catheter for four months. That night he passed 1,000 c.c. He has not used a catheter since, and the musculature of the bladder has come back into play. You can drain a little bit at a time and you can so weaken the bladder that it will lose its muscular activity. But if it is done slowly, at one sitting, there is 75 per cent. chance of regaining the muscular activity and of overcoming the irritation around the prostatic orifice.

DR. A. J. CROWELL, Charlotte, N. C.: I have during the last two or three years had a number of cases of retention of urine in young men that I think undoubtedly was due to enlarged verumontanum. At least, the treatment for hypertrophied verumontanum did away with the retention. We should keep this in mind in thinking of obstructions at the vesical neck in young men.

DR. PAUL M. PILCHER, Brooklyn: We must not draw conclusions as to the pathologic anatomy in these cases from specimens removed postmortem in cases in which there has not been urinary obstruction. The surgical pathology existing in the cases in which we have actual obstruction is different from that in which we find anomalies or deformities at the vesical neck in which we do not have obstruction. I believe our conclusions should only be drawn from those specimens removed from patients where actual obstruction took place. I also feel that we may be overenthusiastic in considering these subcervical and subtrigonal glands as the cause of the obstruction in so many of these cases. I feel that there is a close relationship between the tubules described as the subtrigonal and subcervical and the actual tubules which form the various lobules of the prostate. I believe there must be some error in concluding that the middle lobe obstruction is so rare. I have been a great admirer of Dr. Lowsley's work and have followed it very closely and am not criticizing it, but I want to be convinced more fully, and I do not think we are yet in a position to pass final judgment.

DR. EDWARD L. KEYES, JR., New York: Dr. Lowsley has studied the anatomic and pathologic prostrate for many years, and I am glad to testify to the accuracy of his pathologic findings. Dr. Pilcher will find in the literature several descriptions of the glands of Albarran concurring with Dr. Lowsley's. I venture, however, to call Dr. Lowsley's attention to the fact that the Chetwood operation can and has been done by me under local anesthesia. Removing the small prostate, notably the small fibrous prostate, is the most difficult surgical problem of prostatectomy. The solution of that problem I am coming more and more to think is not the high frequency current or the Young punch or the Chetwood operation, or any other of these devices whereby the obstruction is more or less fully relieved. We shave the tip off the prostatic enlargement, with relief for a while, then relapse. Having done about fifty Chetwood operations, I made a report of twenty-five followed more than a year. The mortality was very low. In the main the results were good. At that time—three or four years ago—I reported a certain number of recurrences. Last week I operated on two more patients with recurrences. If during a suprapubic operation you put your finger in and feel nothing but a tightly grasping contracture, put your finger through that contracture and remove the little intra-urethral sclerotic lobes.

Reflex retention in the male is what the French have called "prostatisme sans prostate," that is, retention of urine without notable prostatic enlargement as felt by rectum. The causes may be thus classified: First, small carcinomas. These may usually be diagnosed by rectal examination on a sound in the urethra. Second, tabes; diagnosed by spinal fluid, suggested by absence of the ankle jerk. Third, the small hypertrophy, which gives a normal prostate as felt by rectum, and is diagnosed by cystoscopy. Fourth, diverticula, which also are diagnosed by cystoscopy. Fifth, the true reflex. A few months ago the general service in Bellevue sent down a case with retention of urine. They had pronounced the rectum normal; but we found a linear stricture of the rectum. This man had several ounces of residual urine, an inflammation of the bladder and frequent urination. We anesthetized him, split his stricture, and cured him. We had a second patient whose inflamed bladder and retention of urine were due to fissure in ano. Operating on his fissure relieved all his urinary symptoms.

DR. ARTHUR B. CECIL, Los Angeles: When I took up the subject of reflex retention of urine I realized that as a clinical entity chronic reflex retention of urine would be doubted. It is true that the large majority of retentions of urine are mechanical in origin, due to obstruction in the urethra or at the neck of the bladder. If they are not of mechanical origin we have to consider and keep in mind the great difficulty of diagnosing certain obscure nerve lesions. In any questionable case a Wassermann test of the spinal fluid should certainly be made. In the cases I reported it is evident that the woman from whom was removed the hydronephrotic kidney and who was cured of her bladder disturbances was suffering from a chronic reflex retention of urine. It is also true that the case of marked seminal vesiculitis was cured by massage of the seminal vesicles. I might say that this man had previously been operated on suprapubically without relief. Chronic reflex retention of urine is not a common condition but it is undoubtedly occasionally responsible for some of the cases of inability to empty the bladder.

DR. OSWALD S. LOWSLEY, New York: I am really very glad to get Dr. Pilcher's suggestion and Dr. Plaggemeyer's suggestion that we go slow in blaming the subcervical group tubule enlargement for so many things. I suppose we are inclined to get overenthusiastic about any proposition that we work on a long time. I have dissected so many of these cases and have worked on them so hard that I think I am pretty nearly right about my observations concerning the middle lobe. There are surprisingly few middle lobes which project into the region of the neck of the bladder. When there is hypertrophy of the lateral lobes, there is always hypertrophy of the middle lobe as well, but it is just a connection between the two. Anatomically it seems almost impossible for it to project into the bladder in the usual way because the so-called middle lobe, which I believe is Albarran's group, projecting into the bladder, is within the sphincter. The middle lobe cannot, I think, project into the sphincter, because it occurs behind the sphincter. It does not go back, turn a corner and go into the sphincter. This one enormous specimen sticks right out, and there is no doubt about that, but practically all of these specimens removed at operation—I have studied a very great many of them—usually have more or less the appearance of that specimen which I passed around showing the subcervical group separated from everything else by the sphincter and attached to the upper end of the verumontanum and the middle lobe adjoining, with the two lateral lobes, to form the adenomatous hypertrophy. Dr. Keyes' point was well made about not shaving the tip off of this little nubbin that sticks out. Of course, you do not do that, because the whole mass projects directly within the vesical orifice, and in doing the punch operation you take out everything that projects, and there is not much left to grow out, because you take away the whole mass but I always tell my older patients who have not had a prostatectomy performed that they may have to have it later on. Even if it is only palliative, it gives them good drainage. It has the same effect as wearing an indwelling catheter. Then if the prostate becomes obstructive, as it is liable to do in these old men, you have already promised him that he might have to have a more serious operation later on, but, in the meantime, this palliative procedure is still worth while in my opinion. In the younger men, the men around 30 and 40, you do not have to consider that point, because, as a rule, the enlargement of the prostate is not considerable.

Edema at the vesical orifice is quite prevalent. The thing to do is to find the cause of the edema and relieve it, but in finding the cause it is possible to get a temporary relief, in which case some form of cauterization is better, either silver nitrate or the high frequency current or some such procedure. I am very glad to know that Dr. Chetwood's operation can be performed successfully under local anesthesia. In cases of fibrous stricture of the vesical orifice that is the operation that should always be performed, if it can be done under local anesthesia. The results are always good.

THE OPERATIVE TREATMENT OF TUBERCULOSIS OF THE SPINE *

NATHANIEL ALLISON, M.D.
AND
HERBERT H. HAGAN, M.D.
ST. LOUIS

This report is made in order to give our experience with forty cases of tuberculosis of the spine in which operation has been performed in a manner designed to stiffen their spinal columns by internal splintage. Two methods of operation have been used: the osteoplastic operation, known as the Hibbs operation, and the bone transplant operation, known as the Albee operation.

Of the forty patients operated on, nine had reached adult life before the onset of the disease, and thirty-one were children. The oldest patient was 37 years of age and the youngest 19 months of age. The diagnosis of tuberculosis of the spine was made positive in each case by roentgenographic study, the exact location and extent of the disease being clearly made out, and by clinical tests for tuberculosis, and, wherever possible, by guinea-pig inoculation.

Our first operation was done Oct. 5, 1912. Six patients were operated on in 1913; eleven patients in 1914; fourteen patients in 1915 and nine patients of this group in 1916. Of these forty patients, ten were operated on by the method of Hibbs and thirty by the method of Albee.

We have divided the cases into three groups in order more briefly to present their clinical characteristics.

Group 1: Patients operated on in the early stages of Pott's disease with little or no evidence of deformity and no complications.

Under this head fifteen of our forty cases fall. Without exception, this group of fifteen patients have stood the operation well, have had rapid convalescence, all symptoms have disappeared, and we feel that they represent complete recovery.

Group 2: Patients operated on that presented well marked deformity with persistence of more or less acute symptoms, but no complications.

Under this head nine of our forty patients are collected. Of these nine, eight have made recovery and are about without supports and are in fairly robust health. One patient has shown a return of acute symptoms after three years, and has signs of a developing pressure paralysis.

This patient was operated on after the method of Hibbs and did very well up to three months ago. She is now being treated as one would treat conservatively a case of Pott's disease with paraplegia.

Group 3: Patients who were operated on in the presence of complications to their more or less acute processes of tuberculosis of the spine.

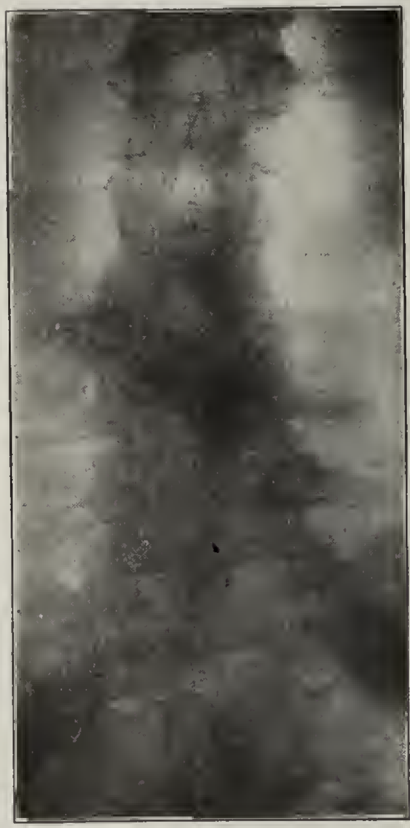
Fig. 1.—Roentgenogram of bone graft taken one year after operation, showing fracture of graft at seat of disease.

These complications were: psoas or lumbar abscess, 5 cases; tuberculosis of other joints, 2 cases; pressure paralysis, 5 cases; pregnancy, 1 case; pulmonary tuberculosis, 4 cases.

Psoas or Lumbar Abscess.—Of the five cases that presented abscess formation as a complication to the Pott's disease, three were treated conservatively as far as the Pott's disease was concerned, and the abscess was opened, its contents cleaned out, and the wound closed. In these three cases we had primary union of the incision for the cleaning out of the abscess.

The operation on the spine was then undertaken. In one of these cases the abscess refilled and discharged through the line of incision. In the other two cases the abscess did not refill.

These three abscesses were psoas abscesses.

In two of the cases, abscesses occurred after the operation on the spine, and they were treated in a similar manner. In one case we obtained healing, and in the second case the abscess continued to discharge but finally closed.

We are led to believe from this experience that abscess formation is not a contraindication to the operation on the spine.

Tuberculosis of Other Joints.—In two of our cases, in addition to having Pott's disease the patients had also tuberculosis of the hip joint. After the subsidence of acute symptoms the spine was operated on, and the hip has been treated conservatively in the ordinary manner. One case has been treated with a jacket spica and the other with a Bradford abduction hip splint. Neither of these patients has shown any retardation in their convalescence since the operation.

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Paraplegia.—Five of our patients have shown symptoms of spinal pressure evidenced by increased reflexes, ankle clonus, and inability to walk or stand.

One of these patients, a man of 30, had symptoms of Pott's disease for five years with a gradually increasing deformity. About two years ago he noticed a jerking of his legs when bearing heavy weight on his toes; shortly after this his legs became weak, especially the right one, and now the toes drag on the floor when walking, and his gait is very stiff. The physical examination showed a sharp line of hyperesthesia extending across the trunk at the level of the sixth dorsal on the right and the fifth dorsal on the left. Below this there was definite hypalgesia. On this man an Albee operation was done, Sept. 16, 1914. After the operation his area of hypalgesia gradually lessened and entirely disappeared, his ankle clonus, spasticity, and plus reflexes have now disappeared, and he is about without symptoms.

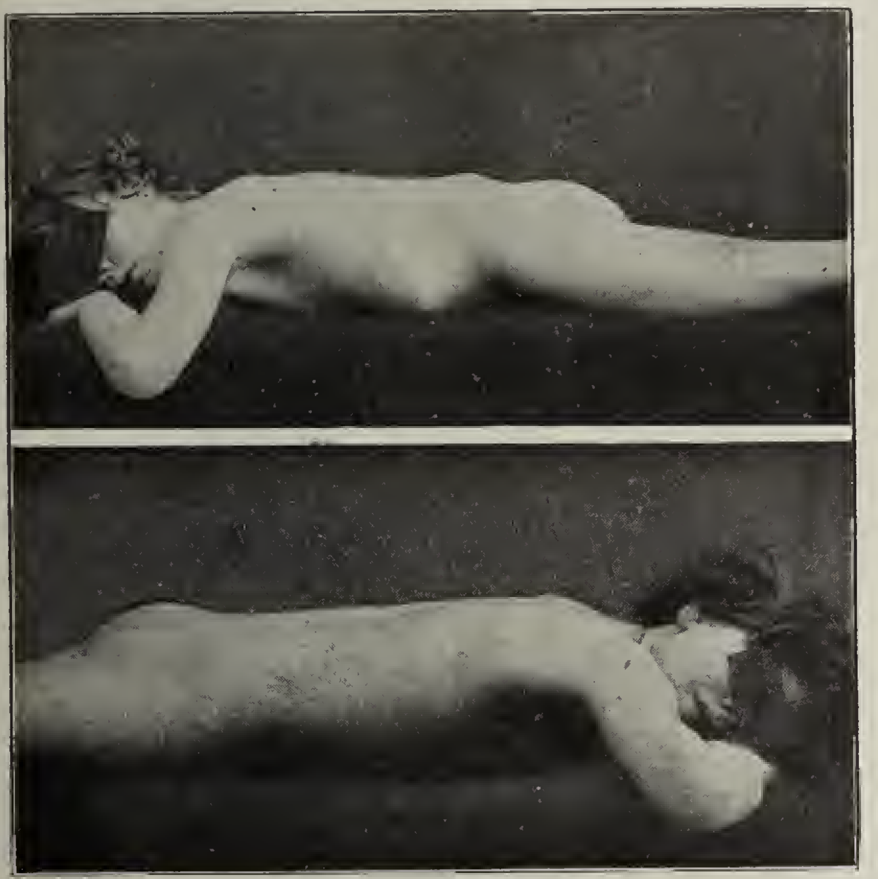

Fig. 2.—Lessening of deformity after Albee operation.

The second patient, 2 years of age, Jan. 27, 1915, showed clonus on both sides, Babinski on both sides, and very active knee jerks, and no voluntary power of the thigh or legs. He was operated on, March 22, 1915, an Albee operation being done from the seventh cervical to the tenth dorsal, being secured by a tibial graft. April 5, 1915, voluntary power had returned to some extent, in both legs, Babinski was still present, and clonus still present. April 28, the child began running a temperature with no assignable cause. May 19, patient is able to move his legs very well. Babinski has disappeared and also clonus. June 26, after a gradual onset, the child died of tuberculous meningitis. One other child in this group who had complete paraplegia died three weeks after the operation of tuberculous meningitis.

The two remaining cases of this group had only slight involvements, evidenced by ankle clonus, slight spasticity and positive Babinski. These two patients after operation rapidly improved. The signs of spinal pressure disappeared, and they are now about without symptoms.

We have been led to conclude from our experience with paraplegia as a complication in Pott's disease that an operation should immediately be done, as it seems to us to offer the best chance for a speedy recovery from the pressure on the spinal cord.

The two patients in this group who died died of tuberculous meningitis, and we have no explanation to offer for the occurrence of this fatal complication.

Pregnancy.—One of our patients, a woman of 19, had just recovered from her first pregnancy when she began to notice the symptoms of Pott's disease.

She had a well marked and rapid destruction of her first lumbar vertebra, and appeared at the hospital with her five months old infant. The infant was weaned and the mother was operated on several weeks later, a perfect result being obtained. She gained weight and was about without symptoms at the end of ten weeks and was discharged to her home. In spite of our advice she returned to the hospital at the end of six months again in a state of pregnancy. This pregnancy was allowed to run full term and a normal infant was born. The mother made a normal recovery, and since then has had no symptoms of activity in her diseased spine. A roentgenogram of her graft illustrates this report. This was taken after her second pregnancy and shows the graft in good position but broken through its middle.

In passing, it has been our experience in the study of these grafts after they have been placed in the spine that some of them show signs of fracture after a more or less indefinite period without causing any evidence of trouble.

Pulmonary Tuberculosis.—In our group of forty cases we have had four cases that showed signs of more or less active pulmonary involvement. In spite of this complication we have done the operation, doing it as rapidly as possible, so as to cut down the length of time required for the administration of the anesthetic. It has been our custom in these cases, and we might add in all cases where the physical condition of the patient was below par, to prepare the patient completely for operation and have everything ready to go ahead before the anesthetic is administered. As soon as the patient passes the primary stage of anesthesia, the operation is then started and finished as rapidly as possible. In this way considerable time has been saved. In none of these four cases has there been any evidence of the operation causing increased activity in the pulmonary involvement.

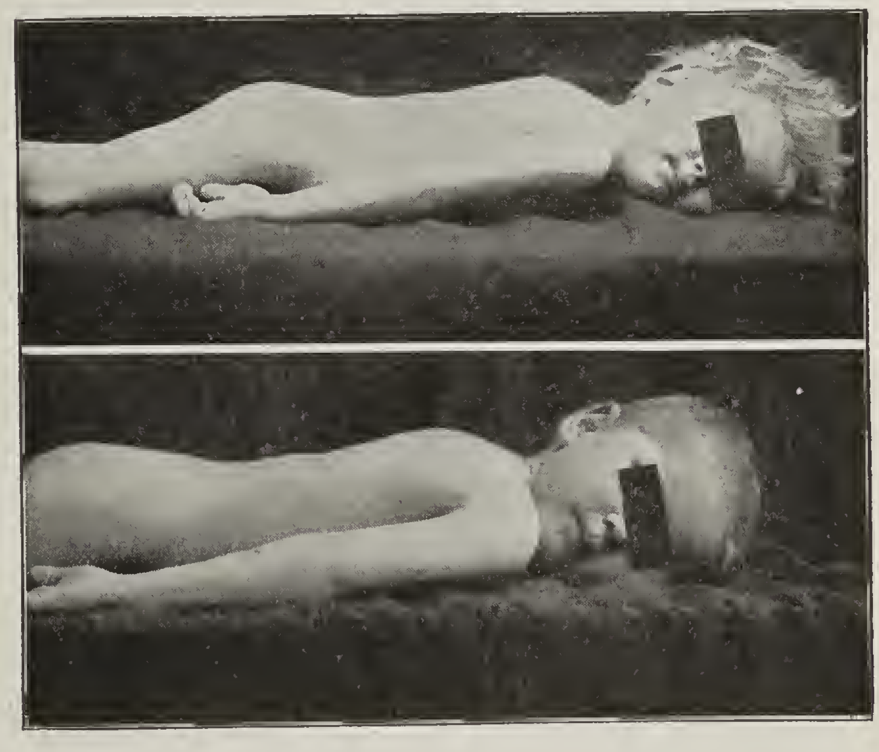

Fig. 3.—Lessening of deformity and rapid improvement in general condition after Albee operation.

Complications from the Operative Procedure.—In three of the forty patients operated on there has been infection at the time of operation of the operative wound.

One of these patients, a man of 27, developed a severe *Staphylococcus aureus* infection on the third day after operation in both the wound on the shin and in the back. After a very serious illness from this infection he gradually recovered and his wounds closed. Two pieces of his graft were discharged; one from the upper end of the wound and one from the lower. Healing finally took place and his result has been an excellent one.

The other two cases were slight infections, one of them involving the lower end of the graft, which was discharged, the other being simply a superficial infection at the site of the skin sutures. The other thirty-seven operated cases healed by primary union.

We have been struck in this series of cases, especially in children, with the immediate improvement in general health and with the rapid convalescence that these patients have made after operation. Almost without exception, the children have gained weight, have become very active when allowed to be up, and presented a marked contrast to the slow improvement seen in cases treated conservatively.

We discovered, what seems to us, to be a valuable method of holding these cases fixed immediately after operation. It is our custom to reverse the Whitman frame so that it lies concave on the bed, and place the child, face down, on this frame, securely binding it as one would in the reverse position. In this way there is no pressure on the operative wound, and the position of hyperextension is more or less perfectly kept up.

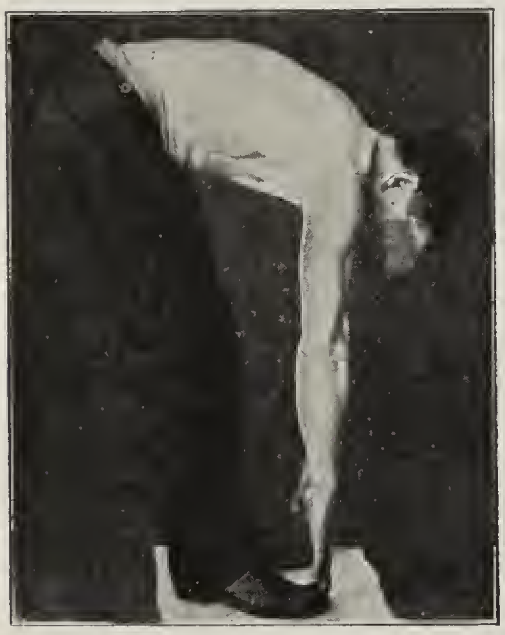

Fig. 4.—Ability to flex the spine one year after Albee operation.

We feel from our experience that it is highly advisable, and, indeed, in certain cases necessary to continue support for at least one year after the time of operation. We are led to this belief by the character of bone regeneration which must take place before the spinal column becomes securely ankylosed, and we feel that the too early removal of supports is likely to result in a return of symptoms and an increase in deformity.

SUMMARY

Forty patients were operated on.

Two deaths were due to tuberculous meningitis.

There were three infections at the time of operation without serious consequences.

Fifteen patients completely recovered without deformity or complication, and at the present time are far enough along since their operation to be called absolutely well.

Eight patients have deformity, but with the disease arrested and no active symptoms.

Of the sixteen patients who had complications, three with paraplegia have completely recovered, and two have died.

Of those with pulmonary tuberculosis (four patients) there is evidence of activity of disease at present, but the disease of the spine is not causing symptoms.

Of the patients with tuberculosis of other joints (two) these are still under treatment, but are making slower recoveries.

Of the patients with psoas abscess (five) all five have recovered and the abscesses have ceased to discharge.

The total of this group would be four cases of pulmonary tuberculosis, and two of tuberculosis of other joints, making six still under observation, leaving ten in which the disease has been arrested.

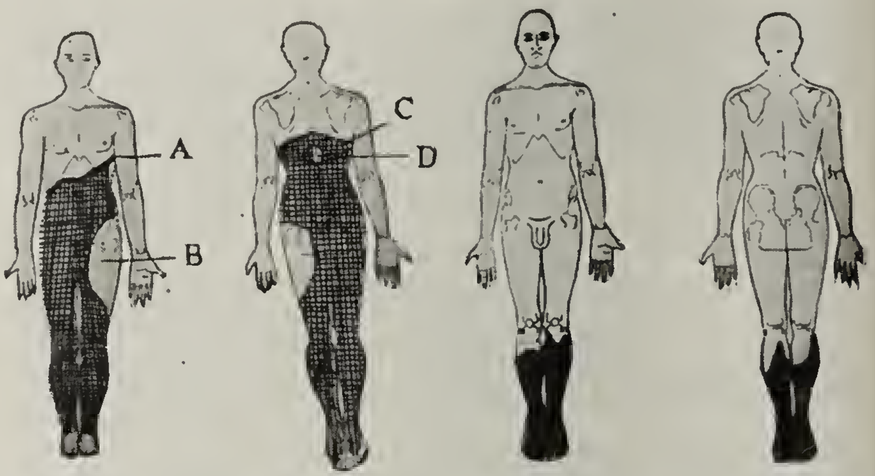

Fig. 5.—Rapid improvement in sensory changes in a case of paraplegia after Albee operation; three weeks' time; patient made complete recovery: shaded area, hypalgesia; *A*, narrow zone to hyperalgesia; *B*, area of normal to increased response to pin prick; *C*, hyperalgetic zone; *D*, gibbous.

We are led to believe from this experience with forty cases that an operation for ankylosing the spine should be performed in every case of Pott's disease as early as a diagnosis can be accurately made, and that the presence of complications should not influence the surgeon in delaying the operative procedure, unless the complications are of too grave a nature.

We do not feel in a position to discuss the relative merits of the Albee operation and the Hibbs operation. We have had equally good results with each procedure. We feel, however, that the Albee operation is more simply done and that on this account it is advisable in the majority of instances.

Our experience with adults and children has been about the same. We feel, however, that the good results obtained are much more conclusive in the case of adults, who respond very slowly to conservative measures.

537 North Grand Avenue—600 South Kingshighway.

ABSTRACT OF DISCUSSION

Dr. J. T. Rugh, Philadelphia: I want to endorse all that Dr. Allison said regarding the after-treatment of these patients. He has shown clearly the unwisdom of leaving off the support too early in these cases, especially in young children. Support must be maintained until bony union takes place, which requires six months to a year or a year and a half. I operated in one of these cases by the Albee method, a case of tuberculosis of the atlas and axis. The child was struck on the side of the neck with a baseball bat. About four hours

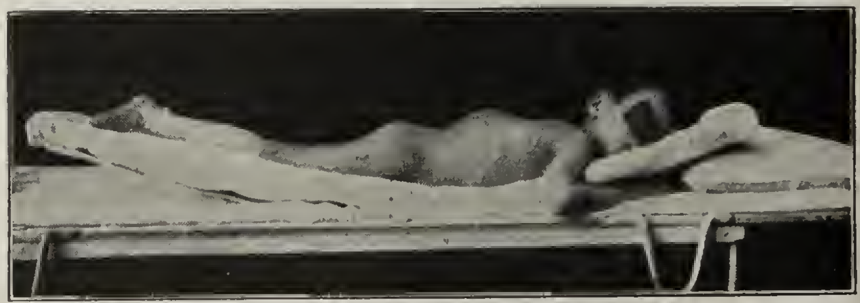

Fig. 6.—Reversed Whitman frame used for fixation after operation.

later he dropped in the street paralyzed. It was thought that the paralysis had come from the injury, but the subsequent history showed that he evidently had a tuberculous lesion there and that this accident had simply precipitated the entire trouble. He remained paralyzed for four or five weeks, when an abscess ruptured on the side of his neck and discharged, after which the paralysis cleared up. He came under my care a year and a half after the onset of the tuberculous trouble, with slight spasticity in the lower extremities. I dug a hole in the occiput, and measured my graft to fit between it and in contact with the third and fourth cervical spines. I placed the end of the graft in the lower pocket, tilted the head forward, and inserted the graft into the hole in the occiput. Then I tilted the head back and sewed the graft into place. There were no complications, and he made a splendid recovery. The paralysis has entirely disappeared. Before I operated, if his head tilted forward, he would immediately become paralyzed; and it had to be held back from six to eight hours before the paralysis disappeared. Since the operation, there has not been this trouble.

DR. JAMES T. WATKINS, San Francisco: I want to show you pictures of the spine of a child who died several months after I had performed a Hibbs operation. The morbid process involved the bodies of two vertebrae in the middorsal region, and at our operation we synostosed the laminae of six vertebrae, going well above and below the lesion. Dr. Ely said that his sections showed that the spines had disappeared. By that I suppose he meant that they had lost their configuration as spines and had become fused with the laminae. One can still differentiate them in the picture.

NEW METHODS OF PRECISION IN THE TREATMENT OF FRACTURES *

GEORGE W. HAWLEY, M.D.
BRIDGEPORT, CONN.

The treatment of fractures is largely a mechanical problem, and in spite of the fact that this is a mechanical age, little progress has been made in the mechanics of fracture treatment. In fact, the assertion has been made that many of the methods and devices in use today might easily be mistaken for implements belonging to the era of the wooden plow. Even the method of applying weights to fractures of the femur, as popularized by Gordon Buck as recently as fifty years ago, would have a familiar look to some of the ancients.

It is true, of course, that advance has taken place in the care of fractures; but the advance has largely been incidental to the development of roentgenography, and in the direction of technical and instrumental improvements in the operative treatment of fractures.

The simple methods have not received the attention which is their due, and even in the operative methods, the development has been in the direction of applied mechanics. One thing Lane emphatically demonstrated is the fact that successful fracture operations are impossible without efficient instruments and without a technical dexterity in the handling of exposed tissues hitherto unknown.

It is strange in this age of automatic machinery and instruments of precision to see so much dependence placed on the manual treatment of fractures. It is strange because hands must vary considerably in strength, skill and performance. The tradition "hand made" has lost much of its glamor. There would be no such things as automobiles, aeroplanes or submarines if their parts had to be turned out by hand. When it comes to precision and uniformity, mechanical methods must supersede the manual in the treatment of fractures, as in any other work in which the intelligent application of force is required. Any one who has attempted to exert traction on a broken limb and to hold it in a fixed position appreciates that it is not as simple as it looks. Even skilled hands become unsteady and fatigued. The element of unreliability is always present and increases with the inexperience of those who assist in the undertaking.

The time was when the diagnosis of fractures was made without the mechanical aid of the Roentgen machine, and the time is fast approaching when the treatment will not be undertaken without methods and apparatus of precision. It is impossible to apply force accurately by methods which are necessarily inaccurate. The opportunity for improvement in the simple methods of fracture treatment is abundant, and as these simple methods are made more efficient the necessity for open reduction will diminish.

The time is not far off when fractures will be almost entirely treated in hospitals. In fact, it will be difficult, as well as dangerous, to attempt to do so, because the public will be aware that complete scientific equipment for diagnosis and treatment can be found only in such institutions. There are few communities in which people are not within reach of a fairly modern hospital. Here they can be efficiently and promptly treated and sent home to convalesce. In this way, fracture patients become no burden to a hospital.

At the same time it will be necessary for the hospitals to devote more attention to the care of fracture cases. The public is becoming educated, and it is a public accustomed to "modern improvements." Moreover, the industrial world, which pays the disability bills in occupational fractures, is becoming interested. Not only must the apparatus be efficient, but its use must be in the hands of men especially trained for the work. It will no longer do to divide the fracture cases into small lots and assign them to men whose chief qualifications are that they are interested and proficient in abdominal surgery.

With the introduction of more precise methods, the treatment of fracture cases will become more systematic. Much of the unnecessary handling of broken limbs will be eliminated. This will save a vast amount of needless suffering and promote the processes of repair. One of the noticeable features will be the dispatch with which these cases will be handled.

There is no reason why a fracture patient entering a hospital should not be placed on a bed and a splint applied which permits physical and roentgenographic examination without disturbing the limb in any way. There is no reason why roentgenograms should not be taken at once, so that when the attending surgeon arrives, the complete record is before him and the permanent treatment can be instituted without delay. This simulates the treatment of surgical fractures (osteotomies) in which almost no difficulty is experienced, because the bones are approximated and immobilized before the muscular contractions have become fixed.

In the treatment of some 3,000 cases of fracture during the last seven years, I have preached and practiced the immediate reduction and immobilization of fractures under ether. During this time, I have never

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

cut or split a cast in anticipation or on account of swelling. In fact, the only cases of extensive swelling or of bleb formation (so commonly associated with fracture) which I have seen are those in which the treatment was delayed. As I have successfully proved to myself that the mortality and suffering in fracture of the hip in old people is directly due to conservative treatment, so I believe that if we are looking for swelling and trouble, then treat fractures expectantly. If we wait until the swelling disappears, it is only necessary to wait for it will not disappoint us.

THE TREATMENT OF FRACTURES OF THE FEMUR *

F. E. PECKHAM, M.D.
PROVIDENCE, R. I.

1. THE MIDDLE THIRD

Fractures of the femur in the middle third have aroused considerable discussion in recent times regarding methods of treatment. Different mechanical methods have been advocated by different surgeons, and finally the open method with the use of Lane plates occupied the center of the stage and caused quite a little excitement.

A fracture is a definite mechanical problem. First of all, a roentgenogram is necessary to see exactly what the condition is, whether transverse, oblique or comminuted. How far the fragments are riding by is also a good thing to know. In these fractures, the result is so easily obtained that, in the great majority of cases, no anesthesia is necessary, and there is no "setting of the bone" in the ordinary acceptation of that expression. Every orthopedic man learned during his early hospital training that an acute tuberculosis of the hip with its muscular rigidity and flexion deformity was overcome by traction. Pain was relieved almost instantly and muscular contraction was overcome by constant, incessant and efficient traction.

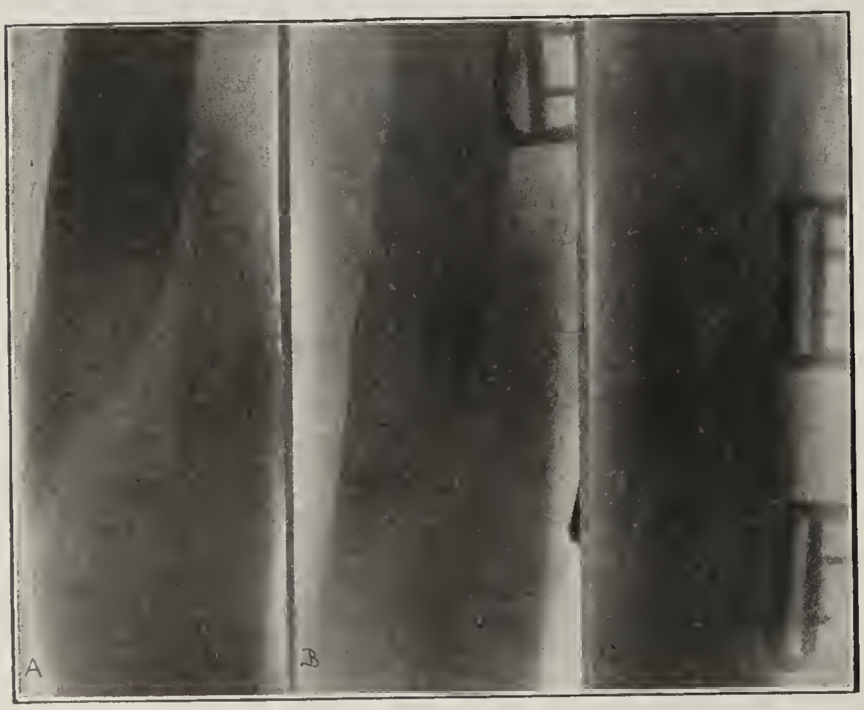

Fig. 1 (Case 1).—Oblique fracture of femur: *A*, fragments pulled down to length; *B*, *C*, result of gradually tightening the coaptation splints.

In a fracture of the middle third of the femur, traction properly and efficiently applied will just as surely overcome the muscular contraction which is the cause of the fragments riding by, thus producing shortening. For traction to be efficiently applied in this particular condition, countertraction must be equally efficient. Here is where the treatment, as usually prescribed in textbooks, fails. Efficient countertraction or counterextension is considered to be accomplished by elevating the foot of the bed. Nothing could be further from the truth. Elevation of the bed is usually (although not always) necessary; but to get really efficient counterextension, a well padded perineal band is placed in the groin, one of the straps going over the front of the body, the other going beneath the body, with a pulley at the head of the bed. Weights are then added to both the foot and the head of the bed, varying according to the necessities in the individual case. In the direct extension, anywhere from 10 to 40 pounds may be necessary. The foot of the bed may be elevated as usual and then about one-half the weight necessary in the direct extension may be added for the counterextension. If 30 or 40 pounds are necessary for the extension, then use 15 pounds for the counterextension. This makes a traction in each direction, thus pulling the fragments apart in the longitudinal direction of the leg.

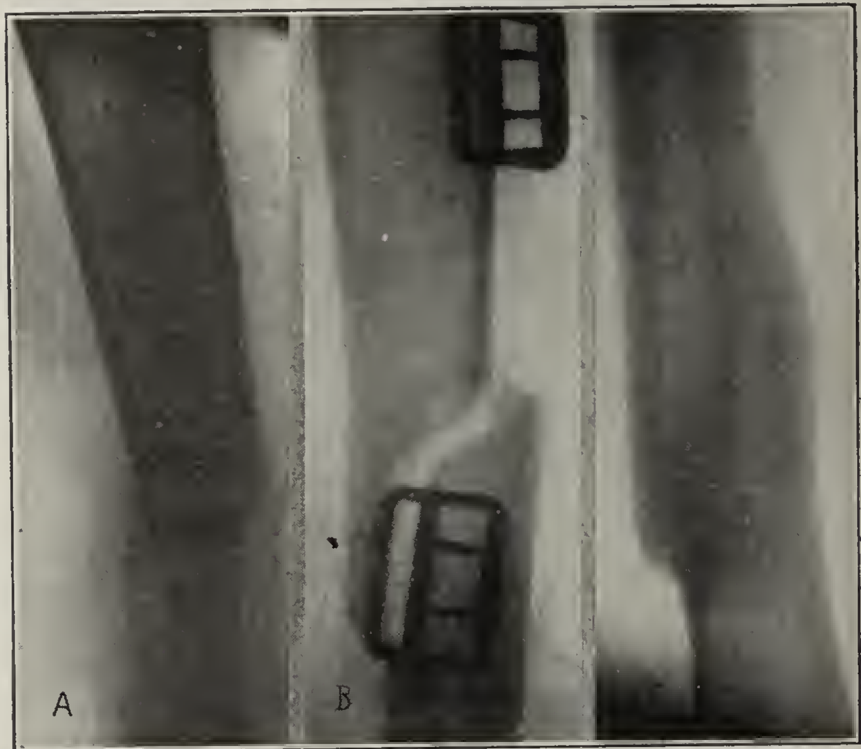

Fig. 2 (Case 2).—Oblique fracture of femur: *A*, fragments pulled too far apart by over an inch; *B*, apposition obtained by lessening the weight; *C*, condition a little less than a year after the injury.

If this "two way" pull is kept up constantly, incessantly and efficiently, there is usually only one thing can happen, and that is, the fragments will be pulled down so that, in the middle third, they will almost fall into apposition. Coaptation splints may be placed about the leg, but they do not need to be really adjusted and tightened until the leg is down to length. Now and then, a strand of tissue may be caught in such a way as to hold one end from just going into position. Under such conditions, pressure and counterpressure by pads of sheet cotton beneath the coaptation splints will usually correct. In case there should be a large piece of muscle interposed to prevent apposition, then all that is necessary is to take the patient to the operating room, bed and all, without removing the extension weights. After the usual preparation, make the incision, expose the fragments, remove the obstruction, and the ends will either fall into apposition or can be easily held by the coaptation splints over a light surgical dressing.

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

This method would seem to reduce the treatment of fractures in this location to their very simplest terms, and I wish to report some cases treated in this manner:

Case 1.—Mr. A. An oblique fracture of the femur with about 2 inches' shortening. Extension of about 40 pounds with foot of bed elevated and counterextension of 15 pounds. At end of ten days with coaptation splints tightened, the fragments were down and together (Fig. 1). Discharged from hospital with no shortening. This case was treated about one year ago, and a letter from the man states that he is at work (putting in elevators) and that he walks without a limp.

Case 2.—Mrs. B. This was an oblique fracture of the femur with 1½ inches' shortening. Extension of 35 pounds with foot of bed elevated, and counterextension of 15 pounds. At end of two weeks (Fig. 2 *A*) the fragments had been pulled over an inch apart, i. e., the leg had been pulled down until it was that much too long. Removing 10 pounds from the direct extension, the leg shortened up till the fragments were in apposition, as shown in Figure 2 *B*. This was treated a little less than a year ago, and in April, 1916, the patient reported at my office with no shortening, no limp, and the Roentgen ray shows the condition in Figure 2 *C*.

Case 3.—Boy, aged 4 years. Oblique fracture in middle third of femur. Extension of 15 pounds with counterextension of 10 pounds easily brought the leg down to length (Fig. 3 *A*), but the Roentgen ray showed the fragments "back to back" (Fig. 3 *B*) instead of edge to edge. Under ether, an attempt was made to readjust them, but with no result. Then the boy was taken to the operating room in his bed, with extension and counterextension in full force (Fig. 4). The leg was cleared of adhesive straps from the knee up and prepared for operation in situ. An incision was made through the skin, and then the muscle bluntly dissected to the bone, where a piece of muscular tissue was removed from between the fragments. The broken ends fell into apposition immediately. The skin was sutured and a light surgical dressing applied, and boy, bed and all returned to the ward. Union promptly resulted, with a perfect leg, as shown in Figure 3 *C*.

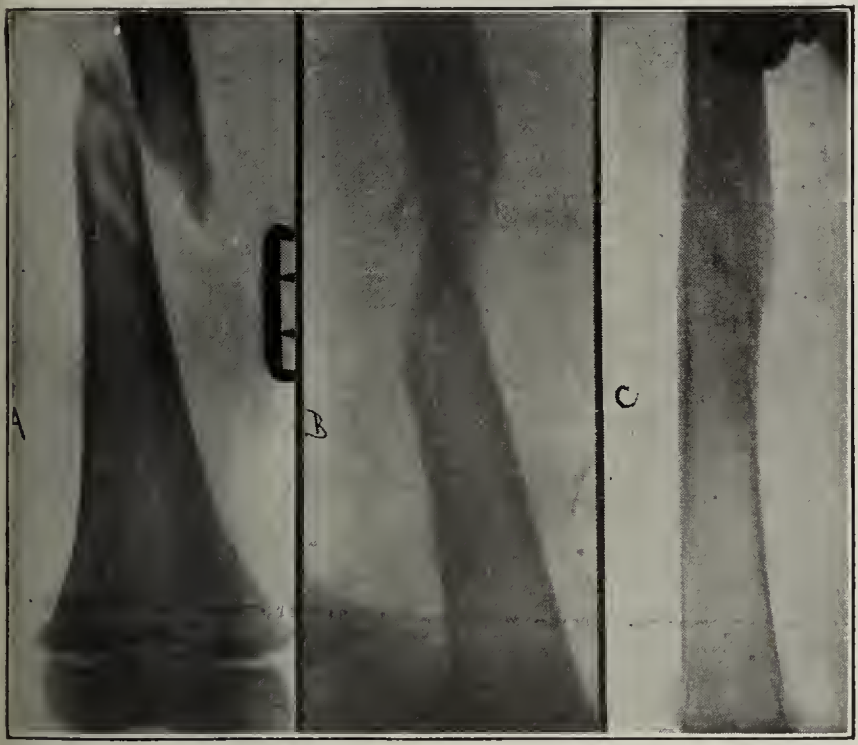

Fig. 3 (Case 3).—Oblique fracture in middle third of femur: *A*, leg pulled down to length: *B*, fragments back to back instead of in proper apposition; *C*, union some months afterward.

2. FRACTURES OF THE HIP

Appreciating that with extension and counterextension, the leg can hardly help coming down to length, it occurred to me that with proper mechanics, fractures of the hip could be readily treated without the use of the plaster spicas. A number of hips at different times having been opened through the anterior incision for the purpose of exploration and freshening of the broken surfaces, it was ascertained in this way ocularly that if the leg was pulled down to length and strongly internally rotated, the broken ends became locked in apposition. The getting down to length is easily accomplished by efficient extension and counterextension, as already described. The internal rotation is easily accomplished by rotary pulls by means of adhesive plaster straps extending around the leg from the top, over the inside and under the leg, then passing up over a particularly wide T splint. In this way the extreme degree of internal rotation may be obtained and held. With these mechanics kept perfectly efficient, the fragments are kept locked in apposition as verified by the Roentgen ray.

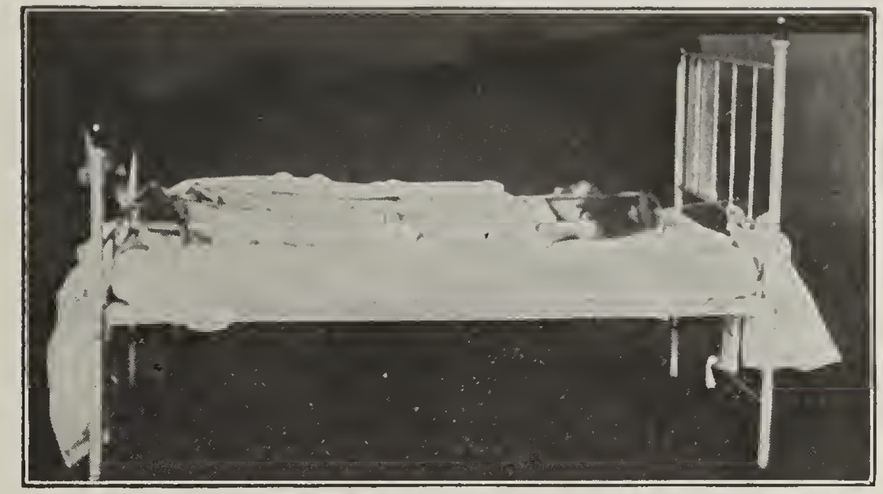

Fig. 4.—Method of extension and counterextension.

I wish to report two cases to demonstrate the efficiency of the mechanics:

Case 4.—A man sustained a fracture through the great trochanter with shortening of 1¾ inches. The leg was pulled down and internally rotated, thus bringing the broken surfaces into accurate apposition. The recovery was perfect, with possible flexion.

Case 5.—A boy sustained a separation of the epiphysis of the right hip, but continued to walk around on it, although lame and painful. Three months after the accident, the boy was brought for examination. The Roentgen ray showed the condition. Efficient extension and counterextension with strong internal rotation brought the hip down into position. Union was obtained, however, and scarification of the surfaces became necessary, but the roentgenograms are exhibited to demonstrate the possibilities of the mechanics as described above.

The results in these two cases were so encouraging that others have been treated in a similar manner with similar results. When treated in this way, the back and whole body is easily reached with alcohol and powder, and the patients are much more comfortable than those I have seen in plaster spicas.

266 Benefit Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HAWLEY AND PECKHAM

Dr. Fred H. Albee, New York: We employ the Hawley table in all cases of fracture in any part of the body where it is difficult to get replacement and hold the fragments firmly in position.

Dr. J. T. Rugh, Philadelphia: I want to speak of three cases of ununited fracture of the hip, one in a woman past 60 years of age. Two of these cases have been entire successes, and the third patient is not cured. In a case of old fracture of the neck of the femur a graft was placed.

That patient, at the end of many months, is walking well, with perfect results. A case of twisted fracture was also an excellent result. In another case there was some comminution in the head of the bone. When the graft was placed it, unfortunately, did not penetrate as far into the innermost piece of the head of the femur as it should. It has been a year and a half since the operation, and the patient is not yet walking. I could not understand why until I found that the graft did not penetrate all the fragments. I think that the secret of success is to get the peg through both or all the fragments. Then it does not make any difference whether the peg is round or square. If it is through in proper position, the result will be good.

Dr. John Ridlon, Chicago: As to the Hawley leverage device for congenital dislocation of the hip, I would say, in the first place, that it is not necessary to use any leverage device to replace a congenital dislocation of the hip. In the second place, it is dangerous to use it; because, with a leverage device like that and the one on the Bartlett apparatus, it is possible to fracture the neck of the femur. We fractured one with the Bartlett apparatus. As to Dr. Peckham's fracture work, it is possible to pull down some fractures of the shaft of the femur; and when you have pulled down three or four, you think that you can do this in all cases; but you cannot. I have had a case in a man of great muscle development where 58 pounds' weight for 8 days did not reduce the displacement at all. We have to use traction, in such cases, to an enormous amount to pull the fragments down; and when they have been pulled down, they do not always "drop into place," and we cannot always manipulate them into place. In this case, when the leg was opened and the bones pulled down with a space of half an inch between the ends of the fragments, and the traction slowly relaxed, instead of the fragments going end to end, they went just where they were before; and there was no tissue between the ends, muscle or otherwise.

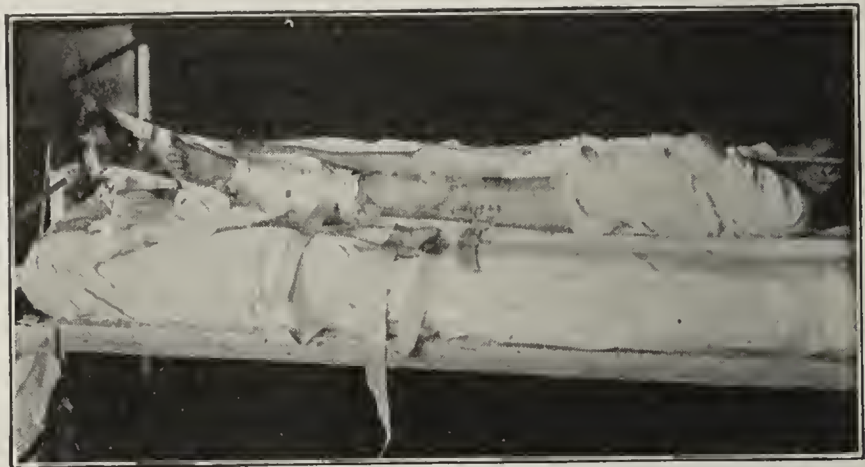

Fig. 5.—Wound the day the stitches were removed; method of operating.

Dr. H. R. Allen, Indianapolis: I enjoyed the demonstration of the use of the operating table with all of its fancy attachments and complications and believe it would be very gratifying to a man who feels that the plaster of Paris dressings are essential or scientific. Personally, I do not use such dressings for any human condition that I have ever seen. I do not like the use of inadjustable splints that conceal the results. I prefer splints made of wire and adhesive plaster. They are light, cheap, adjustable and sanitary, and permit inspection at all times. Such splints do not conceal errors. If you choose you can apply the splint before operating, then when the operation is through you are through. These splints do all that a plaster splint can do and as much more as you desire. They are easy to make and easy to apply and they are comfortable and do what is expected of them. I agree with Dr. Ridlon. But Dr. Peckham has never found a case that could not be reduced by traction alone. Dr. Ridlon and I and others have found plenty of this variety. Suppose you have a square ended fracture with overriding in a thigh whose ham-strings are tight on simple knee extension, how would you expect the jagged ends of the bone to slip past each other into place? If you unlock the thigh muscles by flexing the knee then the fragments will easily go to place. Then, after flexed reduction you lock the broken ends tight together by complete knee extension. There is a use for this mechanical tightening of the ham-strings but this use is not absolutely dependable. Dr. Peckham's method of traction will reduce most of the spinal fractures of the thigh, but what good is reduction by any method unless you follow it up with some guaranteed method of maintaining reduction. Really, the maintenance of reduction is all that counts since every bone will unite in the position in which it is held and in no other position.

Dr. J. C. A. Gerster, New York: Dr. Howard D. Collins has devised a most ingenious and convenient traction bandage-sling for use in connection with Dr. Hawley's table. Before applying the bandage two pieces of felt ¼ inch thick and 4 inches wide are laid next to the skin. One, 6 inches long, is laid in front of the ankle over the dorsum of the tarsus; the other, 4 inches long, is laid over the Achilles tendon. The bandage is of stout Canton flannel, 3 inches wide and 2 yards long. The bandage forms two symmetrical hitches, one in each side of the ankle. Each hitch forms a Y, one limb passing in front and one behind the ankle. Traction is made by pulling on the stems of the Y's. As soon as traction is released, constriction ceases. This spontaneous relaxation of the hitches would not take place if they were so applied that they formed T's instead of Y's. By appropriate adjustment, varying the site to suit each case, the points where the limbs and stems of the Y's meet can be so placed that the subsequent traction suffices to hold the foot correctly inverted and at right angles to the leg. As soon as plaster has set the projecting stems of the Y's, by which traction is maintained, are cut off flush with the cast. The blueness of the toes from interference with the venous return, present up to this time, subsides immediately, because constriction ceases on relaxation of traction. The advantages of nail extension are many for cases in which, on account of associated trauma to skin, etc., or on account of long standing shortening, the customary plaster of paris or traction methods are unsuitable. In fractures, properly treated from the very start, nail extension will not be indicated in more than 4 to 5 per cent. of the cases.

Dr. Edwin W. Ryerson, Chicago: It is perfectly evident that many fractures of the femur can be treated as has been outlined by Dr. Peckham, but some cannot, and other treatment must be used. Dr. Albee said that we need exact doweling to secure union of bone fragments. That is desirable, without doubt; but I have a perfect case in which I took the bone-spike from the tibia and filed it nearly round with a rasp and file, without using a doweling instrument. This was a complete fracture of the neck of the femur, incurred a year previous, a so-called intracapsular fracture. Another point I wish to refer to is the use of the motor drill for making holes in the upper end of the femur. I do not think you need it. I believe that it winds up the soft tissues too much, as Dr. Allen said a year or so ago. It is better to have the drill point in a plain hand-drill, because the work is then easier and safer, and you can control the drill better in going through the bottom of the trochanter. You should not start the drill on the trochanter itself, but just below the trochanter, and go obliquely upward and inward. In one of the roentgenograms shown the bone-peg was inserted at a right angle to the shaft of the femur. This is not the way I prefer to do. I go down under the overhanging border and drill upward and inward, and this is easier with the hand-drill than with the motor-drill. I have found the use of the Hawley table very satisfactory. I think that it solves many of our problems. In a clinic where much fracture work is done, I consider it invaluable.

Dr. Frank E. Peckham, Providence, R. I.: I do not think that any one can succeed every time. I selected three pretty bad cases and they resulted very well. I think that the less metal we put in, the better. I would suggest as a good motto, "M. M. J."—Minimize metallic junk.

The Partnership of Genius and Labor.—Genius begins great works; labor alone finishes them.—Joseph Joubert.

Therapeutics

TRINITROTOLUENE POISONING

In the ammunition factories of Great Britain, trinitrotoluene, one of the high explosives employed, has been found to be dangerous to the health of a minority of workers coming in contact with it, and has proved fatal from toxic jaundice. The matter has become so important that the medical inspector of factories has prepared for the benefit of practitioners a paper on the chemistry of trinitrotoluene (or T. N. T., as it is designated), its method of absorption, the symptoms produced by it, the precautions to be taken against poisoning, the method of treatment, and the differential diagnosis of trinitrotoluene poisoning from that of dinitrobenzene, tetryl and lyddite, the latter a picric acid derivative.[1]

Trinitrotoluene is a high explosive obtained by nitrating toluene, from coal tar, a benzene compound in which one hydrogen atom is replaced by CH_3, and in which during the process of nitrating three other hydrogen atoms are replaced by the nitro radical, NO_2. The product is solid at ordinary temperatures and may be reduced to a fine powder, melts at 80 C., and sublimes when melted.

When the skin or hair is exposed to trinitrotoluene by contact, a characteristic yellow or tawny orange stain is produced, which is removable by oils, greases, acetone, ether, benzene and other compounds, but not by water. When trinitrotoluene is treated with alcoholic solution of potassium hydroxid, a deep pink color, changing to purple and then to brown is produced, and this reaction is employed in testing for trinitrotoluene in urine, after the latter is treated to release the trinitrotoluene from its combinations, a rather complicated procedure.

Trinitrotoluene can be absorbed to a dangerous extent by the skin, and as fine dust or as sublimate will reach the mucous membranes of the nose and mouth, or perhaps even the lungs, and may be swallowed with the secretions of the mouth, nose and throat. It may be recovered from the feces unchanged in most workers, and in many from the urine, but only in combination. Among the symptoms it produces are dermatitis, much like that produced by other irritants, increased by flushing and perspiration and by friction; gastritis, with abdominal pain, vomiting, constipation which is constant, flatulence and distention; and blood changes similar to those of dinitrobenzene poisoning, with the presence of methemoglobin, though cyanosis and breathlessness are less evident. Cell degeneration is readily produced by trinitrotoluene, and when the liver is involved toxic jaundice results, though in only a few cases. Evidence of gradual absorption is shown by pallor of the face and an ashen gray color of the lips; sometimes the lips and tongue are deeply cyanosed. Jaundice may be conjunctival or general, and often appears suddenly during the first four weeks of exposure. Liver dulness is variable, ascites is sometimes present, respiratory distress is not noticeable when the patient is in bed, and pyrexia has occasionally been observed in severe cases; but neither bradycardia nor pruritus is common. Two deaths from anemia unassociated with jaundice have been reported, with reduction of red cells to one million, of unequal size, but no poikilocytes or nucleated reds. Microscopic examination excluded pernicious anemia. Death resulted from hemolytic aplastic anemia, the blood-forming marrow having been greatly reduced.

Points of differential diagnosis are the characteristic appearance already described, the character and situation of the abdominal pain, and the presence of constipation and abdominal distention. It may be confused with other gastric disturbances, and must be distinguished from tetryl and picric acid poisoning, the former staining the skin a yellow or apricot color, the latter a canary yellow or greenish yellow; both set up a dermatitis similar to that of trinitrotoluene, but the constitutional symptoms are not pronounced, and toxic jaundice from them has not been reported.

Postmortem, the outstanding feature is atrophy of the liver, which in some cases is reduced to half the normal weight. Microscopically, the greater part of the liver tissue is found to have undergone complete destruction, associated with proliferation of fibrous tissue. The kidneys are large and icteric, the cortex bulges, the labyrinths are frequently yellow, there is engorgement of the pyramids, and cloudy swelling and fatty degeneration of the tubules.

Treatment in the absence of jaundice is simple: removal from contact, rest in bed for a day or two, a diet consisting of milk, milk puddings, fruit and green vegetables, demulcent drinks, such as barley water, tea and coffee; for the constipation, vegetable laxatives and cascara, with a mixture containing sodium sulphate, potassium citrate and sodium bicarbonate as a routine measure. In jaundice cases, absolute rest in bed is essential; milk diet, small in quantity at first, gradually increasing to 4 pints a day; the bowels must be kept loose, preferably by mistura alba (a mixture containing magnesium carbonate, magnesium sulphate and peppermint water) repeatedly given. In jaundice with marked toxic symptoms the prognosis is grave. Alkali-producing drugs, such as the citrates and bicarbonates, should be given to overcome the tendency to acid intoxication. Rectal and intravenous saline injections have a place in the treatment of severe cases.

DISTURBANCES OF THE KIDNEYS

(*Continued from page 372*)

Nephritis

CLASSIFICATION

Were it possible absolutely to accept Fischer's theory of nephritis, namely, that an overproduction of acid in the body or an accumulation of acid in the kidneys is the usual cause of this condition, many complex problems connected with it would become simple. If, as he believes, it were true that the edema is due to too much acid in the system, and that most of the uremic symptoms are due to cerebral edema, our understanding of the pathology and the treatment of these conditions would be clearer; but, unfortunately, the treatment which he sometimes recommends to overcome the supposed excess of acid may be hazardous. Water, as he states, is undoubtedly the best diuretic; but it cannot be accepted that no other substances cause diuresis. Carbohydrates in diabetics act as diuretics, while a number of drugs will cause diuresis in normal conditions of the kidney.

Perhaps the best classification of nephritis is that offered by Oertel:[69]

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[1] Trinitrotoluene Poisoning, Med. Press and Circular, 1916, n. s., 102, 534.

[69] Oertel, Horst: The Classification of Nephritis, Arch. Int. Med., June, 1913, p. 653.

1. Simple nephritis.
2. Degenerative and exudative nephritis.
3. Degenerative and productive nephritis.
4. Productive nephritis.
   (*a*) Diffuse.
   (*b*) Focal and patchy.
5. Senile atrophy or nephritis due to arteriosclerosis of the kidney. Senile kidney.

1. The first class of nephritis is accompanied by all the classic symptoms of inflammation with exudate and with desquamation and proliferation of parenchyma cells in some cases. Recovery may be complete.

2. The second class shows degeneration and necrosis exudate with hemorrhage, proliferation of parenchyma cells and formation of casts in abundance.

3. The third class shows not only degeneration and most of the signs and conditions of the second class, but also a production of fibrous tissue and shrinking of structure, with thickening of the renal arteries.

4. The fourth class is identified by the development of new kidney-secreting structure.

In the diffuse type of inflammation not only is new tissue formed, but also there is a growth of connective tissue and distortion of the tubules.

In the focal form, hyaline swelling and fatty degeneration occur in the intima of the small renal vessels, causing impaired function of the parts of the kidney fed by these blood vessels, or, in extreme cases, actual obliteration, marked by a granular appearance of the kidney.

5. The fifth class or arteriosclerotic kidney consists of a noninflammatory degeneration.

While the foregoing classification is based on pathologic findings and may be difficult to interpret clinically, it is scientific and recognizes the well known interlocking and overlapping cases of nephritis. An exact diagnosis of the pathology of a kidney cannot be made by the urinary or blood findings; we can determine the signs and symptoms and the amount of excretion and retention only at a particular date and hour. Frequently we cannot accurately prognose the length of life of the patient, even when he is moribund.

The old classification of parenchymatous and interstitial nephritis is not sufficient. Most parenchymatous nephritis would probably be more aptly termed diffuse nephritis. Probably no interstitial nephritis occurs without more or less parenchymatous degeneration, if not inflammation. Possibly the senile sclerotic kidney may be termed more or less purely interstitial. We may recognize the factors which tend to produce acute or chronic inflammation of the kidneys, and the factors which are most likely to cause a parenchymatous and diffuse or interstitial type.

ETIOLOGY

The facts that albumin and casts are frequently found in the urine in various ailments, and that in incipient and advanced nephritis acute disturbances of the kidneys frequently occur have not been better demonstrated than by the findings of Brown and Cummins[70] in the cases of 7,000 patients admitted to the San Francisco Hospital, the majority of whom were men between the ages of 20 and 60. They found albumin and casts in 594 patients, although only thirty-eight of these were admitted for nephritis. They found that venereal infections, the more serious general infections and alcohol played a prominent part in the previous history of chronic nephritis. They draw the logical conclusion that a kidney once injured is later more susceptible to irritations.

Localized nephritis is known to be caused by bacteria from some acute infection, pyemic in type, as with infarcts, or by a more chronic localization, as in tuberculosis. Localized or general nephritis may be caused by some hidden chronic infection, as mouth or nose infections; or a more or less acute nephritis may be the result of an acute general infection, such as scarlet fever, diphtheria, pneumonia, cerebrospinal fever or smallpox. All the above mentioned infections ordinarily are the sources of diffuse nephritis, perhaps primarily parenchymatous.

Doubtless if the urine should be examined during the first stage of every acute infection, traces of albumin would frequently be found. The backache and high fever accompanying these infections is probably due to kidney congestion, caused by toxins of the bacteria, or by the disturbance of metabolism, especially protein. Probably, in the more simple general infections, the bacteria rarely reach or disturb the kidneys, but their toxins may affect these organs.

In lead poisoning, in syphilis, in prolonged cardiac insufficiency, in hypertension, in arteriosclerosis and in gout, although the nephritis may be more or less profuse, the interstitial form usually predominates. Prolonged intestinal disturbances, liver insufficiency, repeated strenuous physical labor, and polyglandular (ductless gland) disturbances are apt to cause chronic disturbance and chronic inflammation of the kidneys. Prolonged and repeated kidney congestion, due not only to cardiac insufficiency, but also to pressure from some abdominal cause, or to displacement of a kidney, tends to cause one or both kidneys to become infected with chronic inflammation. Probably abdominal pressure during pregnancy is a frequent cause of this type of nephritis.

The composition of the blood coming to the kidneys represents an important factor in the health of the kidney glands. The chief facts to be considered in this respect are: whether the blood contains the necessary nutriment; whether it carries elements causing dilatation or contraction of the kidney vessels; whether it carries an extra amount of waste products, drugs or foreign matter difficult of excretion or hard to metabolize or to change chemically into normal excretory products; whether the bulk of the blood coming to the kidneys is too great for the kidney structure to care for properly, or whether the amount of blood is insufficient to cause a proper kidney pressure both for nutrition and for excretion, making the kidney function normal. As stated, metabolic, organic or bacterial toxins may irritate or erode the kidney cells and sooner or later cause nephritis.

There doubtless is also a nervous control of the kidney circulation and of the kidney activity that at times plays an important part in an acute or chronic disturbance of the kidneys. Surgical conditions in the abdomen may reflexly interfere with the kidney function, making kidney tests inaccurate; this is especially true of ureteral, bladder and pelvic disturbances. Furthermore, disturbances of many glands, such as the liver, thyroid, suprarenals and pituitary, markedly change the work required of the kidneys.

As abnormal, repeated heart strain injures the heart and blood vessels, so repeated overmuscular effort, by increasing the exertion of the kidneys, may injure them.

Toxins or irritants absorbed from the intestine or from poisonous foods, cold storage foods, canned foods, or foods containing minute doses of boric acid or sodium borate may, by daily irritation, cause chronic nephritis. Chemical irritants such as turpentines, phenols and many aromatic oils or synthetic drugs, under certain conditions, may cause inflammation of the kidney. Too great an absorption of silver nitrate may cause acute nephritis, while prolonged use of mercury and arsenic may cause an acute or chronic form of this disease. Chloroform and ether may cause temporary kidney irritation.

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[70] Brown, P. K., and Cummins, W. T.: A Study of the Etiology of Chronic Nephritis, The Journal A. M. A., March 11, 1916, p. 793.

The kidneys generally respond to an increased demand on them by a dilatation of their vessels with an increased general blood pressure. Following the ingestion of large amounts of protein or the circulation of irritants in the blood, an increased amount of blood flows through the kidneys in a given time and the excretion of urinary substances is increased; thus the blood is purified. The person who is repeatedly poisoned continues for months in apparent health, entirely unaware of the slowly developing chronic changes taking place in his kidneys. There comes, however, a day of reckoning; the kidneys, heart and blood vessels gradually work less harmoniously, and the kidney congestions result in chronic nephritis.

If the close relation of the kidneys to the skin, relative to excretions is considered, many unexplained albuminurias and attacks of nephritis will be understood. The excretion of solids by the skin is increased in this disease, although the total excretion is small.

While acute nephritis caused by cold alone is probably very rare, it may be the exciting cause of an already existing subacute or chronic disturbance. Chilling of the body at any time increases kidney activity, while warming of the body decreases it.

Any disease of the skin which prevents normal perspiration is detrimental to the kidneys, whether caused by burning, erysipelas, scarlet fever, dermatitis exfoliativa, or by any other acute or chronic general inflammation of the skin. The larger the area of skin affected, and the greater the inability to excrete water, the greater is the danger which threatens the kidneys. The reverse is also true: in chronic nephritis the immediate prognosis is more favorable when the skin is soft, moist and healthy, but is less favorable when the skin is dry and harsh.

Ether and chloroform anesthesia, especially the latter, which always causes kidney disturbance, by repeated use become a positive menace to the kidneys.

Diabetes may be a causative factor in nephritis, as frequently excessive amounts of nitrogenous food are consumed. Syphilis may also be an etiologic factor, either per se or through the arsenic or mercury treatment employed to cure it.

Chronic alcoholism is perhaps an indirect cause of nephritis since it disturbs the circulation, the liver and the digestion. Tobacco, by causing an abnormal blood pressure which finally injures the heart, becomes an indirect cause of nephritis.

The recuperative power of the kidneys and the harmless nature of occasional urinary symptoms of nephritis must, however, be recognized. Hence, extreme care should be used in diagnosing a case of nephritis. When a case is thus diagnosed it should be remembered that if one fourth of the kidney structure is healthy, this is sufficient to prevent serious symptoms. Furthermore, diseased parts may recover, or even if hopelessly degenerated, neighboring parts of the kidney may hypertrophy and carry on the extra work.

To sum up, heart and blood vessel insufficiency is a common forerunner of inflammation. This congestion may be the result of lordosis, or of a floating kidney. Prolonged exertion and hard work is a common cause of congestion and albuminuria, as is also profuse sweating, which increases the viscosity of the blood by dilating the kidney vessels.[71]

Prolonged low blood pressure and a reclining position associated with serious illnesses, such as typhoid fever and tuberculosis, are detrimental to the kidneys, resulting in extended passive congestion. Hence, the patient's position in bed should be changed frequently, just as soon as he is able to endure it.

Albuminuria, which frequently follows operations, may be due to the anesthetic, to an abnormal position long retained, such as that in pelvic operations, or to the two combined. Hence, anesthesia and abnormal positions on the operating table should be of as short duration as is compatible with efficiency and accuracy of technic.

An important fact to bear in mind is that one attack of nephritis apparently breaks down the resistance of the kidneys, and that frequent attacks of albuminuria, which is generally caused by renal congestion, leaves them susceptible to real nephritis.

(To be continued)

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

TABELLAE DULCES ARISTOCHIN (WESTERN), 1 GR.—Each tablet contains aristochin, 1 grain, with cocoa, sugar and saccharine as vehicles.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Western Chemical Company, Inc., Hutchinson, Minn.

TABELLAE DULCES HEROIN (WESTERN), 1/100 GR.—Each tablet contains heroin, 1/100 grain, with cocoa, sugar and saccharine as vehicles.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Western Chemical Company, Inc., Hutchinson, Minn.

TABELLAE DULCES NOVASPIRIN (WESTERN), ¼ GR.—Each tablet contains novaspirin, ¼ grain, with sugar, starch, liquid petrolatum, saccharine, curcuma and oil of lemon as vehicles.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Western Chemical Company, Inc., Hutchinson, Minn.

TABELLAE DULCES TANNALBIN (WESTERN), 1 GR.—Each tablet contains tannalbin, 1 grain, with cocoa, sugar and saccharine as vehicles.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Western Chemical Company, Inc., Hutchinson, Minn.

TABELLAE DULCES TERPIN HYDRATE WITH HEROIN (WESTERN), 1/100 GR.—Each tablet contains terpin hydrate, ½ grain, and heroin, 1/100 grain, with cocoa, sugar and saccharine as vehicles.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Western Chemical Company, Inc., Hutchinson, Minn.

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[71] Sollmann: Am. Jour. Physiol., 1905, **13**, 24.

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SATURDAY, FEBRUARY 10, 1917

THE EARLY DIAGNOSIS OF WHOOPING COUGH BY CULTURAL METHODS

The statement is frequently made that not enough is being done to control and reduce the spread of whooping cough. Thus Morse[1] has recently voiced a strong demand for increasing efforts in this direction, and he urges an educational campaign to convince physicians and the general public of the seriousness of whooping cough and of the necessity of a much stricter enforcement of notification and isolation than is now practiced. It is accepted that the disease is caused by a small bacillus, discovered by Bordet and Gengou, which is transferred in the sputum from the sick to the well. This bacillus is probably present in the respiratory tract from the earliest moment of infection, and it is demonstrable in the sputum long before the diagnosis of whooping cough can be made from the symptoms.

In order to reduce the chances for spreading pertussis, the disease must be recognized much earlier than is now the rule, and the patients properly isolated while they are still in the catarrhal stage when, in fact, they are the most infectious. In the early stages of the disease there are not available any easy short cuts to diagnosis by way of immunity reactions because the complement-fixing and other immune substances have not yet developed sufficiently. The whooping cough bacillus is hardly distinguishable from the influenza bacillus on direct microscopic examination. The only remaining method now known by means of which a definite diagnosis can be made in the early stages of whooping cough is the isolation of the bacillus from the sputum by cultural methods. Morse apparently recognizes that this is quite true, but dismisses the method as too difficult and complicated for practical purposes, a conclusion from which one might well differ because the technical procedures are certainly no more difficult and no more complicated than many now in daily use for practical ends.

Chievitz and Meyer[2] in Copenhagen have been studying the sputum in whooping cough by cultural methods. They find the bacillus present in practically all cases when the catarrhal stage is well established. In making the cultures it is necessary to fish out mucopurulent flocculi from the last portion of the expectorate, to wash them in sterile salt solutions, and rub them over the surface of the medium (blood-potato-agar). The characteristic colonies resemble minute drops of mercury — polished and glistening — and appear after an incubation of about four days. The final step is agglutination of the bacilli in the colonies by the serum of rabbits or horses immunized with *Bacillus pertussis*. In very small children or when there is no sputum the Danish workers obtain good results by making the patients cough against plates of culture medium held a few inches away from the mouth. This simple way is of value especially at the very beginning of the infection. When the attack has lasted about four weeks or so, cultures are usually no longer obtainable, and the Danish regulations now permit release from quarantine after four weeks and two negative cultures.

It appears, then, that we have it in our power to secure the benefits which would result from the diagnosis of whooping cough earlier than can be made from the symptoms alone. To repeat, the cultural diagnosis of whooping cough in the early stages, when it is most infectious and isolation would accomplish the most, does not appear to be so inherently difficult as to be really impracticable. Arrangements should be made for the introduction and use of this early diagnosis by culture because thereby sickness can be prevented and life saved.

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[1] Morse, J. L.: Whooping Cough: the Measures to be Taken for Its Control and Prevention, Boston Med. and Surg. Jour., 1916, **175**, 723.

[2] Chievitz and Meyer: Ann. de l'Inst. Pasteur, 1916, **30**, 503.

NOCTURIA

The efficiency of the functions of different parts of the alimentary tract have long been studied experimentally and for purely diagnostic purposes by the use of test meals and test diets. It has lately been proposed to investigate somewhat similarly the presence or absence of impairment of renal function, both qualitatively and quantitatively, by the employment of a "nephritic test meal." The application of this idea, the clinical development of which we owe primarily to Hedinger and Schlayer,[1] has recently been carried out extensively by Mosenthal.[2] It has been ascertained that the nephritic test meal, when duplicated on the same patient, yields identical results, provided the clinical condition has not changed. As selected by Mosenthal, the dietary contains approximately 13.4 gm. of nitrogen, 8.5 gm. of salt, 1,760 c.c. of fluid, and a considerable quantity of purin material in the form of meat, soup, tea and coffee.

The most important findings in the urine of healthy persons on the nephritic test meal are exemplified in the differences between the day and night urines. Whatever the quantity of urine excreted during the day by such normal persons, it is found that the night specimen varies within very narrow limits. It is high in specific gravity (1.016, but usually 1.018 or higher), high in its concentration of nitrogen (above 1 per cent.), and small in volume (400 c.c. or less), regardless of the quantity of fluid ingested or the amount of urine secreted during the day period.

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[1] Hedinger and Schlayer: Deutsch. Arch. f. klin. Med., 1914, **114**, 120.

[2] Mosenthal, H. O.: Renal Function as Measured by the Elimination of Fluids, Salt and Nitrogen, and the Specific Gravity of the Urine, Arch. Int. Med., November, 1915, p. 733.

Nocturnal polyuria, or nocturia, on the other hand, is one of the earliest symptoms of renal disease, according to Mosenthal. By this is not meant a frequent voiding of urine — a "nocturnal pollakiuria" — not accompanied by an increase in the total usual volume of 400 c.c., but rather an increased volume of night urine. True nocturia may be found when few other signs of nephritis are detectable. The specific gravity and the nitrogen concentration of the night urine are lowered as soon as the kidney function becomes involved. When the nephritis becomes severe and chronic, an advanced degree of functional inadequacy of the kidney is indicated by a markedly fixed and low specific gravity, a diminished output of both salt and nitrogen, a tendency to polyuria, and a night urine showing an increased volume, low specific gravity and low concentration of nitrogen. Such functional pictures, we are told by Mosenthal, are not confined to nephritis. Diminished renal function is present, however, and its cause must be sought for in many directions — the urinary passages, the blood, or the kidney itself.

The fundamental features of the ominous nocturia also apply to other conditions than those established by this special nephritic test diet. Addis and Watanabe[3] have recently collected numerous data in regard to the volume of urine of persons on a constant water intake. They find that the volume of urine in normal persons on a constant diet with the same water intake is extremely variable for any single day or part of a day. The average volume of the last three days of the diet when the water intake was 2,070 c.c. varied in twenty individuals from 1,013 to 1,712 c.c. for a twenty-four hour period, from 684 to 1,195 c.c. for the first twelve hours of the day, and from 501 to 788 c.c. for the first eight hours of the day. The percentage of the twenty-four hour volume excreted during the twelve hours of the night did not exceed 47 per cent. in any subject, when the volumes for the last three days of the diet were averaged. When the kidneys are diseased, however, the volume of urine passed at night is often larger than the day urine.

These studies are of particular value in furnishing criteria for what constitutes a true nocturia, that is, an abnormally high proportion of night urine. With this established by some dependable method, the existence of renal imperfection may be suspected even when other signs more familiar have not made their appearance. As in so many other departments of medical practice, here, too, absolute rules applicable to every case cannot be laid down. There are too many complicating variables in the human physiologic mechanism to permit the application of hard and fast directions. Christian[4] has noted that in patients with pernicious anemia the disease is accompanied by a disturbance of renal function, as measured by renal dietary tests, which is similar to that found in patients with advanced chronic nephritis. In these patients there is no evidence of chronic nephritis, and the disturbance appears to be due to the anemia, decreasing with the subsidence of the severity of the anemia unless this is maintained so long that a permanent disturbance of renal function ensues. Christian properly points out that caution is required in the interpretation of the results of such tests in patients supposed to have nephritis. For, he states, if a patient with moderate nephritis, as indicated by other tests and by symptoms, happened to have a fairly severe anemia, the latter factor might give to the picture of renal excretion a fixation suggestive of advanced nephritis, and lead to a prognostic interpretation which was unjustifiably poor. Consequently, it will be well to consider the element of anemia when drawing conclusions from dietary renal tests applied to patients with nephritis, though it is not probable that this will prove a complicating factor in many cases, for usually the degree of anemia in patients with nephritis is slight — much less than their pallor would suggest.

THE VENEREAL DISEASE PROBLEM—II

Recommendations of the British Royal Commission on Venereal Diseases

Among the topics considered by the comprehensive report of the Royal Commission on Venereal Diseases[1] are the prevalence and distribution of the venereal diseases, the unreliability of statistics as shown by death registration, the effects of the venereal diseases on those primarily infected and on their offspring, and the economic effects of the venereal diseases. On the question of notification the commision reports adversely, saying:

> We think it clear . . . that if a case for notification of venereal diseases is to be established it must be based upon the assistance which notification would afford to the treatment of the individual, and the consequent protection of the community, and not on the ground that it would facilitate general preventive measures. . . . The main objection which has been urged against notification of venereal diseases is that it would actually do more harm by deterring people from seeking treatment, and by driving them more than ever into the hands of unqualified persons.

The commission believes it possible that the situation may change after the general measures for treatment which it has recommended have been for some time in effect, and after the public has been educated in the venereal diseases, but it does not regard notification as now practicable. It thinks that anonymous notification would not be satisfactory. The report lays stress on the need for increased attention to the venereal diseases in the scheme of medical education. It urges the necessity for opportunity for special study of the venereal diseases, and suggests that one of the functions of the clinics for venereal diseases which it recommends shall be the affording of opportunities for study to medical students and practitioners. The commission believes it is important that every effort should be made to enlighten the public as to the seriousness and the contagious dangers of the venereal diseases and their distressing after-effects, and that there should be a franker attitude toward these diseases. It holds that children under 14 are unfitted for this instruction. To older children it recommends such instruction, but points out the difficulties and the objectionable character of many well intentioned books and pamphlets which have been issued on the subject. It considers that no such publications should be countenanced by educational authorities unless they bear authoritative endorsement. In the case of England it recommends that such publications should have the endorsement of the National Council for Combating Venereal Diseases. The commission gives its endorsement to the various organizations which have been formed for promoting the welfare of youth, for teaching sexual morality and for developing character, and adds, "The fact that we recommend that free treatment should be provided for all sufferers makes it, in our opinion, all the more necessary that the youth should be taught that to lead a chaste life is the only certain way to avoid infection."

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[3] Addis, T., and Watanabe, C. K.: The Volume of Urine in Young Healthy Adults on a Constant Diet, Jour. Biol. Chem., 1916, **27**, 267.

[4] Christian, H. A.: Renal Function in Pernicious Anemia as Determined by Dietary Renal Tests, Arch. Int. Med., October, 1916, p. 429.

[1] The Venereal Disease Problem—I, editorial, The Journal A. M. A., Feb. 3, 1917, p. 375.

The main emphasis of the report is placed on the necessity for early and accurate diagnosis and for early and continuous treatment. The commission finds that present opportunities for diagnosis and treatment are entirely unequal to the needs of the situation. In recommending improvement in the facilities for treatment it considers that existing institutions should be utilized as far as possible, that new institutions should be founded only when it is unavoidable, and that the new clinics should be part of general hospitals, and not stigmatized by being devoted to venereal diseases alone. It is convinced that existing hospital facilities, with necessary extensions in certain localities, would furnish all of the institutional needs of the situation, but it believes that no adequate system of treatment is possible unless responsibility for it is assumed by the state. The institutions provided must be available for the whole community. To that end they should be made accessible, and evening clinics should be provided. They should be free from embarrassing restrictions. Patients should be given treatment regardless of their residence, and should be free to go to clinics outside of their own district. Persons able to pay should, if possible, be sent to their physicians, but even they should not be refused treatment in the public institutions if they are unwilling to go to a private physician. It is pointed out that treatment to be effective in controlling the public dangers of the venereal diseases must be continued until a cure, or freedom from infectiousness is attained, and that effective provisions must be made for seeing that treatment is continued through the infectious period. Compulsory treatment is suggested for the delinquent.

The commission believes that any government scheme which is carried into effect must rely largely on the education and the cooperation of the medical profession, and must depend in the end for its success on the general practitioner, who constitutes "the first line of defense in the community." The report emphasizes strongly the great damage which is done in the treatment of venereal diseases by unqualified practitioners; by drug store prescribing, by quacks and, as well, by less vicious but ignorant practitioners of special sects; and strict measures to prevent such treatment are recommended. The commission believes that all advertising of remedies for venereal diseases should be prohibited by law.

Readers who have noted the first steps in this campaign will realize that the commission has done its work well. On many hotly debated questions it has offered a judicial, conservative opinion. Its findings are not purely local, but show a consideration and a broad grasp of human nature, economic conditions and social problems that could be held only by so representatively constituted a body as this commission was.

THE PROBLEM OF KIDNEY FATIGUE

In physiology and medicine, as in other sciences, the introduction of new methods of observation and experiment usually leads to new facts which may necessitate a revision of our older theories. In former days some of the intellectual disciplines advanced almost solely by the single method of accumulating new data. The older natural history thus at first contented itself largely with the description of more and more species. At length, however, there came a time when the storehouse of observations had to be inventoried, and its contents arranged in some orderly fashion. The procedure of taking stock of the known always raises questions which carry us into the field of the unknown.

The study of the distribution of the so-called waste products of the body, made possible by improved chemical methods of blood and tissue analysis, has been fruitful in enlarging the horizon of our knowledge. Urea, creatinin, uric acid and other familiar urinary components can now be followed back farther on their path from the threshold of formation in the metabolic transactions of the organism. It is not so long ago since the failure of these substances at times to appear in the urine in expected amounts gave rise to the conclusion that, owing to some renal insufficiency, they were being accumulated in the blood itself. Retention and uremia were satisfactory expressions to account for a diversity of pathologic symptoms in which defective kidney function was believed to play a part. Today we can advance beyond the stage of mere guesswork in many of these cases. Renal function can be tested quite accurately in a number of ways; furthermore, the blood can be examined, without any serious technical obstacles, for the suspected evidences of unexcreted waste products.

Apparently unlike responses of the kidneys to tasks of excretion imposed on them experimentally by investigators have led to the assertion of the existence of what might be called "kidney fatigue."[1] This idea is somewhat in harmony with the observed fatigue or temporary exhaustion of other glandular structures, such as the pancreas and salivary glands, in which the outpouring of some specifically accumulated product is assumed to entail time for its replacement by cellular synthesis.

It is by no means so certain, however, that an equally active and immediate part in the work of urine formation is played by the kidney cells. Without denying their physiologic cooperation, it must be admitted that physical and physicochemical processes serve to promote no small portion of the renal performance. So far as such changes are concerned, there is little occasion to expect any signs of fatigue. This is in accord with the belief of Ambard that the kidney manifests no intrinsic variability in function. He maintains that if the concentration in the blood and in the urine of the substance excreted is known, the action of the normal kidney may always be predicted with mathematical accuracy. According to Ambard there exists, for any person, a constant relation between the concentration of urea in the blood and its excretion in the urine. A study of Ambard's "constant" under conditions of extreme variation of functional demands may therefore be expected to give evidence for or against the existence of renal fatigue.

The work of Schlayer and others on water and chlorid excretion by the kidneys has been interpreted as indicative of a wide variability in kidney action even under the same conditions. Addis and Watanabe[2] have approached the debated question by a study of the rate of excretion of urea administered to young healthy adults who were on a constant diet carried through in order to obtain detailed information as to the range of variation in the function of the normal kidney under uniform conditions. In a large number of experiments on such persons, they found no evidence of variability in kidney action in the work of excreting preformed urea added to a constant diet. Such variation as was found in the amounts of urea excreted could be fully accounted for as arising from extrarenal factors. It is concluded, therefore, that the normal kidney under constant conditions is characterized by the possession of a high degree of constancy of function. The rate of excretion of the administered urea during successive periods of the twenty-four hours showed that the repetition of large doses of urea did not elicit the condition which has been described as "kidney fatigue." A fraction of the urea which was administered remained in the body after twenty-four hours. This urea was not retained because of any failure on the part of the kidneys to eliminate it, for the amount retained was no larger when 40 than when 20 gm. of urea were taken.

In connection with these experiments it should be recalled that administered urea is not accumulated in the blood alone, but exists, as Marshall and Davis[3] have shown, for the greater part distributed to the tissues, from which it is gradually withdrawn for excretion by the kidneys. Indeed, the major part of ingested urea soon enters the tissues, so that its concentration in certain organs is approximately equal to its concentration in the blood. The tissue reservoir, so to speak, for the storage of large quantities of urea temporarily present in the body has not been known until quite recently. It serves most advantageously as a regulatory factor to avert undue concentration of urea at any moment in any particular locality. Retention of this substance may accordingly be possible because it is never brought to the kidneys for excretion. But even when exceptionally great loads are imposed on the kidneys, as occurred in the successive increase in urea-eliminating demands over several days in the experiments of Addis and Watanabe, the existence of a condition approximating fatigue of these organs could not be detected.

EPIDEMICS OF TYPHOID FROM WATER SUPPLY

A number of typhoid epidemics have been reported in this country which have been due to the contamination of a good public water supply with water drawn privately from an auxiliary source, i. e., bad water has been mixed with good in a double system of connected pipes. The purpose of the dual system of water piping in its origin was largely economical. It has been the policy of fire insurance and underwriter companies to require of their industrial risks the instalment and maintenance of two systems of fire service, one from the public water supply, the other from an independent source. The aim of this requirement is to afford additional fire protection by automatic sprinklers and the like in case either system is put temporarily out of commission. In many parts of the United States such a double system of water piping in factories has existed for more than twenty-five years. It is natural, perhaps, that in most instances little attention should be paid to the sanitary quality of the secondary private supply, designed only for emergency use, and that this supply should be obtained as a rule from the most convenient source, often a highly polluted stream on which the factory is situated. The necessity for the separation of the two systems, however, appears to have been generally recognized, but it was for a long time supposed that the mixing of the waters could be prevented by check valves which were placed in the piping system.

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[1] Lindemann, W.: Die Funktionen der Niere, Ergebn. d. Physiol., 1914, **14**, 652.

[2] Addis, T., and Watanabe, C. K.: The Rate of Urea Excretion, II, The Rate of Excretion of Administered Urea in Young Healthy Adults on a Constant Diet, Jour. Biol. Chem., 1916, **27**, 249.

[3] Marshall, E. K., Jr., and Davis, D. M.: Urea: Its Distribution in and Elimination from the Body, Jour. Biol. Chem., 1914, **18**, 53. The Distribution of Urea in the Body, editorial, The Journal A. M. A., Sept. 26, 1914, p. 1115.

One of the first events to shatter confidence in the efficiency of the check valves was a typhoid outbreak in Lowell, Mass., in the summer of 1903. What happened at that time is told in the report of the Lowell Water Board:

> On Saturday, July 18, there occurred a fire on the Merrimack Corporation, at which the Locks and Canals' reservoir was drawn upon to such an extent that the pressure in their pipes went below the city pressure. Consequently, the check valves between the two system opened, and the city water flowed into the Locks and Canals' pipes until the fire was extinguished. Some time after the Locks and Canals Company started pumping, it was found that their reservoir did not fill, and on investigation it was found that a check valve situated on the Massachusetts Corporation near the corner of Canal and Bridge streets had failed to close, and water from the Locks and Canals was flowing into the city mains. Within a few days an epidemic of sickness appeared resembling cholera morbus, and later developed many cases of typhoid fever.

It seems now to be generally admitted by engineers that even modern check valves are not to be depended on. In the Lowell case the check valve was made especially for the Locks and Canals Company, was said to be substantial and well constructed, and had been found in supposedly good working condition one week previous to the fire. The general reliability of check valves is apparently not very high. One water works superintendent expresses his opinion feelingly: "Any one who has ever had much experience with check valves knows that they are an invention of the devil."

Outbreaks of water-borne typhoid caused by the dual water pipe system are far too common. They have been reported among other places at Winnipeg and Toronto, at Omaha, at Circleville, Springfield and Van Wert, Ohio, and have been suspected in many other localities. In Philadelphia, in 1913, numerous typhoid cases developed in a section of the city supplied with the excellent public water from the Torresdale filtration plant, at the same time that other parts of the city supplied from the same source were typhoid free. Bacterial examination of the tap water in the affected district gave evidence of contamination. Inspection of manufacturing establishments along the Delaware River water front disclosed the existence of a number of factories having dual connections with the polluted river water. When complete severance of the filtered water supply from the private source was enforced, typhoid diminution followed.

One of the most recent epidemics attributed to this cause occurred in September, 1916, at Elgin, Ill., where the employees of a large watch factory suffered severely. This disastrous outbreak has had an especially instructive sequel since under the Illinois Compensation Act the death claims — eighteen in number — against the watch company have been settled through the agency of the State Industrial Board. The action of the manufacturing corporation seems to have been exemplary since the very onset of the epidemic; not only have the death settlements been adjudicated with the complete cooperation of the factory officials, but also during the progress of the epidemic the medical and hospital responsibility and expenses were promptly assumed by the watch company. It is estimated that the actual outlay by the manufacturer in behalf of the typhoid sufferers will be approximately $100,000.

There is little doubt that typhoid cases which can be traced directly to the drinking water furnished by an employer come properly within the provisions of such laws as the Illinois Compensation Act. In such cases it can be reasonably maintained that the employee is subjected to a risk "peculiar to the employment and not common to the neighborhood." A significant problem is raised for manufacturers if the drinking of infected water furnished by the employer can be made one of the causes of injury or death for which the employer must pay compensation.

There seems today sufficient reason for demanding that under no circumstances shall a connection be permitted between the pipes of a public water supply and a polluted source. Complete and absolute separation of the private and public pipes must be insisted on. It should not be difficult to solve the problems of adequate fire protection and industrial convenience without jeopardizing the public health. This matter may well receive more consideration from health authorities and other public officials than is given it at present. We are not aware that the sanitary quality of a factory water supply is given adequate attention by factory inspectors. Experience has shown, however, that the private water supply of an industrial establishment is too often the cause of preventable illness and death, and is a health hazard to which searching attention should be given. Health officials and factory inspectors everywhere should ferret out these dual water connections and summarily eliminate them.

A Motto for a Pathologic Amphitheater.—The dissecting room at Toulouse is decorated with an inscription which would be singularly apt for a necropsy theater: *Hic locus est ubi mors gaudet succurrere vitae.* "This is the place where death delights to help life."

Current Comment

THE OUTPUT OF CALCIUM AND MAGNESIUM IN MAN

It can scarcely be doubted that chemical pathology has many chapters in which perversions of the metabolism of the alkali earths, calcium and magnesium, are concerned in some degree. The rôle of these elements in the living body is hardly known in even its most superficial aspects; and whether we happen to have in mind the bones and their development, the blood, the endocrine glands, the nervous tissues, or some other structure, in each case calcium or magnesium are as yet mere incidents in the story of some interesting phenomenon. Whether an undue proportion in which they chance to be found is the result or the underlying cause or merely an unrelated incident in the problem under investigation is rarely ascertainable. Calcium and magnesium enter the body with the food and leave it with the excreta. The paths of excretion are diverse, but we scarcely know the details of even a single feature of the transit of these two important mineral nutrients through the organism. A recent writer[1] was well justified, therefore, in saying that it would be fortunate if calcium metabolism would receive as much attention as basal metabolism has lately received. It seems axiomatic also that, if we would know more about such diseases as osteomalacia, rickets, osteoporosis and infantilism, we must first have forthcoming sufficient data on the normal behavior of the body with which to compare the findings in these pathologic states. It is not always realized to what a large extent calcium leaves the body with the feces. The average daily urinary and fecal output of calcium calculated as oxid over periods of five days for five apparently normal persons, ranging in age from 13 to 70 years, was:

Urinary excretion	0.175 to 0.619 gm. of CaO
Fecal excretion	0.413 to 0.801 gm. of CaO
Total daily excretion	0.588 to 1.420 gm. of CaO

The predominant belief that the output of calcium exceeds that of magnesium in the urine appears to need revision. According to Nelson and Burns,[2] who examined twenty-five apparently healthy persons living on a mixed diet, in seventeen the daily output of calcium was larger than that of magnesium, and in eight, the magnesium predominated over calcium. The largest amount of calcium (calculated as oxid) excreted in one day was 0.488 gm.; of magnesium (calculated as oxid), 0.416 gm. The smallest amount of calcium was 0.099 gm.; of magnesium, 0.118 gm. Either calcium or magnesium may therefore be excreted in the larger amount in the healthy person. The preponderance of one element is as indicative of normal behavior as the other. Furthermore, the results indicate that each person exhibits a constant behavior as to whether calcium or magnesium shall be greater in amount in the urine voided. In the case of the three persons examined over the five day periods, of nineteen determinations only two showed a daily output of calcium exceeding that of magnesium. Such statistical facts are the beginnings of what ought to become in the not too distant future a comprehensive investigation of the metabolism of the mineral nutrients.

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[1] Nelson, C. F., and Williams, J. L.: The Urinary and Fecal Output of Calcium in Normal Men, Together with Observations on the Hydrogen Ion Concentration of Urine and Feces, Jour. Biol. Chem., 1916, **28**, 231.

[2] Nelson, C. F., and Burns, W. E.: The Calcium and Magnesium Content of Normal Urine, Jour. Biol. Chem., 1916, **28**, 237.

MEDICAL PREPAREDNESS

While the severance of diplomatic relations with Germany does not necessarily mean war, it unquestionably brings us, as a nation, to a point at which a state of war with a European nation must be considered as a possibility. As usual in times of general excitement, many of our newspapers are filled with rumors, as many of our citizens are filled with hysteria. In emergencies, physicians, of all men, are expected to keep cool and to be able to act efficiently. This is a duty of the profession as a whole, as well as of individuals. If war comes, the rôle of the medical profession will be an important and responsible one. That these responsibilities will be assumed without hesitation and borne with credit is beyond question. In case of conflict with the Central Powers, it is difficult to see, under present conditions, how land forces could be employed, at least in the near future. Service would probably be limited to work on shipboard. For this, the Bureau of Medicine and Surgery of the Navy has its regular corps, as well as the Navy Medical Reserve. Whatever may be the outcome of the present situation, the medical profession, and especially the younger men, should understand that the Army Medical Corps needs more men and that the navy is anxious to secure additional medical officers. Those physicians not needed or adapted to regular military service should at least affiliate themselves definitely with the national Red Cross, through its various local branches, and prepare themselves, either now or for the future, to be of service.

THE RESPONSE OF A SINGLE KIDNEY TO EXCRETORY STRAIN

The capacity of one of various paired organs, notably the kidneys, to execute satisfactorily the functions which are ordinarily shared by the two organs has often been demonstrated. One eye, one lung or one kidney frequently fills suitably the ordinary needs of the individual deprived of the other organ. After ligation of one ureter, or extirpation of one kidney, the remaining kidney occasionally functions even more efficiently than both kidneys before the operation. Under extraordinary needs, however, the limit of working capacity most readily manifests itself. Addis and Watanabe,[1] taking a somewhat arbitrary index of functional capacity, have demonstrated this ability anew. The work the kidney was called on to do in their experiments was represented by the urea in the blood. The work it did was evidenced by the urea in the urine. Renal capacity was represented by the ratio between the work done and the work to be done. This was studied before and after ligation of one ureter whereby one kidney was excluded from participation in the excretory process. Extra renal work was supplied by injections of urea into the subject. When no urea was given there was no decrease in the renal capacity because of the extirpation. The added strain was within the capacity of the remaining kidney. When the work to be done was greatly increased by the injection of urea, however, the strain which before operation had stimulated both kidneys to greater efficiency was too much for the remaining kidney; its maximal rate of work was less than the rate of increase in the work to be done, and there was a consequent decrease in the ratio. This outcome, they point out, illustrates an important principle in the measurement of kidney function. It shows that function may be entirely normal under ordinary conditions, and yet not so under strain. The administration of a large quantity of urea before the renal capacity is determined not only has the advantage of tending to equalize the experimental conditions; it may also bring to light latent deficiencies. The phenolsulphonephthalein test fails to do this. Representing, as it does, the excretion of a minute amount of a foreign substance, no strain is imposed by this test on the capacity of the kidneys. Its main value lies in indicating the presence and perhaps the degree of pronounced renal disease. Doubtless some other test of a type like the experimental one just reviewed, which will place a strain on the kidney tissue in excreting an unusual amount of some normally present catabolite, such as urea, will better serve for the diagnosis of a latent defect. A further search in this direction may therefore seem worth while.

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[1] Addis, T., and Watanabe, C. K.: A Method for the Measurement of the Urea-Excreting Function of the Kidneys, Jour. Biol. Chem., 1916, **28**, 251.

THE SARGOL VERDICT — AN INSPIRATION

The Sargol verdict, briefly referred to under New York news last week, is one of the most encouraging incidents in the movement toward truth in advertising. Sargol was a nostrum of the get-fat-quick variety; as an alleged "flesh builder" it was advertised extensively and intensively by its exploiters. Two facts it had in its favor: it was not advertised, directly at least, for the cure of disease and it contained no dangerous or habit-forming drugs. The chief, if not the only, objection to the nostrum was the simple fact — now a matter of court record — that its sale was an outrageous and impudent fraud. To one not familiar with the curious mental slant of certain advertising managers this last objection might seem all-sufficient to bar advertisements of Sargol from all decent newspapers and magazines. Not so! The attitude of some newspaper publishers on the subject of "patent medicine" advertising is this:

"Does the preparation contain any habit-forming or dangerous drugs?"

"No!"

"Then take the advertisement."

Other publishers add another question:

"Is the product recommended for serious diseases?"

"No!"

"Then the copy is acceptable."

The fact that a nostrum is sold under claims that are obviously or demonstrably false is brushed aside with the sophistry that claims made for "patent medicines" are "matters of opinion!" That Sargol passed muster on the two questions just propounded doubtless explains why many newspapers and magazines sold their space to the exploitation of this medical fake. From a legal point of view the Sargol case was remarkable in that the essential question involved was fraud — not danger to the public health, not a violation of some drug law — just simple, elemental fraud! The case, which was a criminal one, lasted thirteen weeks; the defendants, who were shown to have made over half a million a year, had the wealth and the influence of the nostrum fraternity behind them. Yet the Government won! Attorney F. J. Cregg and his associates, on whom fell the burden of protecting the public, can justly feel proud of having performed a notable public service. Especially will the ever-growing army of men who believe in honest advertising rejoice in the outcome of this case. For it means that we are brought materially nearer the time when the man with a worthwhile product and a desire to sell it honestly will not be handicapped by having his goods placed in juxtaposition with confidence-destroying humbugs, medical or otherwise.

PIDAN — AN ORIENTAL FOOD

Food conservation is not a novelty which has come into vogue with the introduction of cold storage plants or chemical preservatives. All sorts of procedures for desiccating, smoking, pickling and otherwise handling perishable foods have been known almost from time immemorial. Edible products are often saved from spoiling by being converted into new forms of food materials, as cheese is prepared from milk, or catsup from tomatoes. The Chinese and other Oriental peoples preserve eggs in an analogous manner by making an altered product out of them. This food material, known as pidan, has recently received an extensive examination in the laboratory of food chemistry of the Department of Home Economics at the University of Chicago.[1] Pidan is made on a factory scale from ducks' eggs. The latter are kept in an infusion of black tea, lime, salt and wood ashes — obviously an alkaline solution — for nearly half a year, much as eggs are preserved in solutions of sodium silicate in this country. They are then drained and coated with rice hulls, whereupon they are ready for the market. The taste of the pidan is characteristic and the odor markedly ammoniacal. There is a tendency for uninformed persons to class such products unreservedly with what are commonly termed rotten eggs. This may not be justifiable. Pidan has no odor of hydrogen sulphid and, we are assured, does not closely resemble so-called decomposed eggs. Noteworthy chemical changes do, however, attend the long storage process in the formation of pidan. The Chicago investigators state that water in large quantities has been transferred from the white to the yolk, and water has been lost from the white to the outside. The ash and the alkalinity of ash have increased in a way similar to that of other eggs preserved in alkali. The ether extract has decreased and its acidity is high. Both total and lecithin phosphorus have decreased. The noncoagulable nitrogen has increased and also the ammoniacal nitrogen, the latter to an extraordinary degree, and the amino nitrogen is high. From these changes the conclusion is drawn that decomposition of the egg protein and the phospholipoids has taken place. The production of pidan from the fresh eggs is probably brought about through the agency of the alkali, bacteria and enzymes. Like cheese, the product is eaten without being cooked.

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[1] Blunt, Katharine, and Wang, C. C.: Chinese Preserved Eggs—Pidan, Jour. Biol. Chem., 1916, **28**, 125; abstr., The Journal A. M. A., Jan. 6, 1917, p. 66.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Personal.—Dr. Edwin J. Boyes, Oakland, was seriously injured in a collision between a Southern Pacific electric train and his automobile in Oakland.

Book Night.—The San Diego Medical Library held its annual "Book Night," January 30. Each member was asked to contribute at least one textbook on medicine.

Proposed Consolidation of State Boards.—A bill introduced in the senate proposes to abolish the state boards of dental examination, medical examination, optometrists and embalmers, and to consolidate them with the state board of health. This would mean the saving of about $35,000 a year to the state. The act also provides for three lay members on the state board of health, who shall receive a salary of $2,400 a year.

Psychopathic Hospital Urged.—A bill prepared by the state board of health carrying with it an appropriation of $500,000 provides for the establishment of a state psychopathic hospital to be located near the University of California Medical School in San Francisco, to be governed by the university regents with the professor of psychiatry as ex officio director. The hospital is to provide not only a research laboratory but treatment for all patients requiring special or intensive study for a short period.

ILLINOIS

Personal.—Dr. William L. Hanson, Belleville, has left for England, where he has received an appointment in the British Hospital Medical Service.

Tuberculosis Survey.—The Illinois Tuberculosis Association is arranging for a tuberculosis survey of LaSalle, Adams, Morgan, McLane, Champaign, Livingston, Ogle and King counties.

Proposed Consolidation of Boards.—Bills reorganizing the state executive department in accordance with the plans of Governor Lowden have been introduced in the house and senate. Under the proposed plan the department of registration and education is to include the bureau of registration, which will have charge of the licensing of physicians, dentists, pharmacists, optometrists, barbers, nurses and all other members of professions and trades for whom state certificates are necessary. The bill also transfers the state food commission from the department of health to the department of agriculture.

Chicago

Personal.—Dr. Lowell F. Ingersoll was run over by a street car, January 22, and sustained severe injuries of the foot.

Heat Stroke Research.—The directors of the Fenger Memorial Association have made a grant of $400 for research on heat stroke.

Dr. Billings Ill.—Dr. Frank Billings was taken ill with pneumonia on Saturday, February 3. The latest reports are that he is progressing favorably.

Internship Examinations.—Examinations for internship in Cook County Hospital will be held March 13 to 15. Graduates of medical schools in Cook County are eligible.

Free Water for Hospitals.—An ordinance fixing the license fee for hospitals at $50 and granting free water to institutions was recommended by the committee on health of the city council, February 1.

Municipal Tuberculosis Sanatorium. — Dr. Charles P. Caldwell, president of the board of directors of the Chicago Municipal Tuberculosis Sanatorium, proposes the establishment of a tuberculosis diagnosis station for each side of the city, and states that two of these stations can be completed by October if the project is approved.

Clinic Week for Women Physicians.—The medical women of Chicago announce a clinic week to be held in Chicago, February 12 to 16. Clinics will be held at many of the leading hospitals and special lectures will be given on eugenics and social hygiene. A schedule of the clinics may be obtained from Dr. Rachel Watkins, secretary of the Medical Women's Club, 25 East Washington Street.

INDIANA

Vaccination Ordered.—The city board of health of Terre Haute has issued an order that all of the 11,000 pupils of the public schools must be newly vaccinated for smallpox unless they can show certificates of vaccination within seven years. About thirty cases have been reported so far in Terre Haute.

Personal.—Dr. Henry O. Bruggemann, Fort Wayne, president of the local health board, sailed from New York for Vienna for Red Cross work, February 3.——Dr. Arett C. Arnett, Lafayette, commander of Ambulance Company No. 2, Ind. N. G., gave a talk before the Tippecanoe County Medical Society, January 23, on "Conditions on the Mexican Border."——Dr. Brown S. McClintic, Peru, after three years' service with the Russian army, is on his way home by way of China.——Dr. Paul F. Martin, Indianapolis, who went abroad last May under the auspices of the American Relief Expeditionary Association, is now in charge of 2,000 beds in the military hospital at Pardubitz, Austria.——Dr. Donald C. McClelland, Lafayette, M. C., Ind. N. G., has returned from service on the southern border.

IOWA

Summer School for Physicians.—The University of Iowa announces that it will give a summer course in medicine during June and July next. The course will cover four weeks, beginning June 18.

Hospital Property Purchased.—The Buchanan County Hospital Committee has purchased a site for $7,000. More than $60,000 of the $75,000 required for the establishment and equipment of this hospital has already been subscribed.

Personal.—Dr. Will D. Runyon, at present superintendent of the Union Printers' Home at Colorado Springs, and formerly assistant superintendent of the State Sanatorium, Oakdale, has been appointed medical director of the Woodbury County Tuberculosis Hospital.——Dr. Lena A. Beach, Carroll, has been appointed head of the Women's Reformatory, Rockwell City.——Dr. Eugene O. Koeneman, Eldora, has been appointed physician to the State Industrial School for Boys.

KENTUCKY

Hospital Head Retires.—Sister Euphrasia, for more than forty years superintendent of St. Joseph's Hospital, Lexington, retired, January 28, and will spend the balance of her life at Nazareth.

Personal.—Dr. John G. South, Frankfort, was elected president of the Kentucky State Board of Health, January 9, for the fourth consecutive term.——Dr. H. H. Carter, Shelbyville, has been appointed a member of the state board of health, succeeding Dr. O. C. Robertson, Middlesboro.

MARYLAND

Personal.—Word has reached Baltimore of the illness of Dr. Howard A. Kelly, who is now at Kissimee, Fla. His condition is said not to be alarming.——Dr. George H. Hocking, Govans, who was shot several times by a demented patient, is recovering and will leave shortly for New York to recuperate.——Dr. Irvin M. Wertz, Hagerstown, was severely injured recently when a taxicab in which he was riding collided with a delivery truck.

More Room for Insane Needed.—As a result of the failure of the last legislature to provide funds for the erection of buildings at the state hospitals for the care of the insane, the City Detention Hospital for the Insane at Bay View will be overfilled by the end of 1917. There are now 268 insane patients at the institution, as compared with 139 a year ago. The legislature voted in favor of state care of all indigent insane in Maryland, but the last legislature failed to provide for new buildings.

MASSACHUSETTS

Physical Training in Public Schools.—A committee of leading educators has been formed to secure adoption of a bill, drafted by Dr. Dudley A. Sargent, Harvard, providing for physical training without military features in the public schools.

MONTANA

Personal.—Dr. James H. Drake, Mondak, has been appointed county physician of Bighorn County, and Dr. Wilson A. Russell, Hardin, county health officer.

Physicians and Surgeons Building Incorporated.—Articles of incorporation of the Physicians and Surgeons Building Commission, Butte, have been filed. The company has a capital stock of $100,000.

Society Condemns Contract and Fraternal Practice.—The Missoula County Medical Society has gone on record as condemning fraternal or large contract practice, by its endorsement of a report of the committee appointed on that subject, of which Dr. George M. Jennings, Missoula, was chairman.

NEBRASKA

Personal.—Dr. J. S. Anderson, Seward, has been reappointed state veterinarian, and Dr. W. T. Pritchard, North Platte, has been appointed deputy state veterinarian.——Dr. James D. Case, Dorchester, has been reappointed state health inspector of the state board of health, and Dr. William F. Wild, Lincoln, state bacteriologist.——Dr. Frank S. Owen has been elected president, and Dr. Ernest T. Manning vice president of the Omaha University Club.——Dr. William L. Ross, Omaha, was painfully injured by the overturning of his automobile, January 10.

NEW MEXICO

Resigns Commission.—Dr. Henry A. Ingalls, Roswell, has resigned his commission in the Medical Corps of the National Guard, and has resumed practice at Roswell.

Visiting Nurse for Schoolchildren.—As a result of the cooperation between the medical and dental professions, and the school authorities of Albuquerque, a school and visiting nurse has been employed to secure a better standard of health among schoolchildren.

NEW YORK

Birth Control Legislation.—A bill designed to legalize the dissemination of knowledge regarding the prevention of conception was introduced into the legislature, January 24, by one of the socialist members of that body.

New Long Island Hospital.—The Mercy Hospital, a small institution conduced by the French Nursing Sisters at Hempstead, L. I., is to enlarge its activities. A 97-acre site has been purchased and plans are completed for the erection of a group of hospital buildings to cost $100,000, one of which will be a convalescent home costing $30,000.

State Death Rate.—The state health department reports that for 1916 the death rate for the state was 14.6 per thousand population. With the exception of 1915, when the rate was 14.5, this is the lowest annual death rate recorded in the state. The infant mortality rate has been cut from 110 per hundred thousand population in 1906 to 51.2 in 1916. Measles alone of the infectious diseases has shown a slightly higher rate of mortality than in preceding years. The mortality rate of typhoid fever fell to 5.8 per hundred thousand as compared with 15 in 1910, and 26.7 in 1900.

Personal.—Dr. John H. Pryor has been elected president of the Buffalo Association for the Relief and Control of Tuberculosis.——Dr. Edgar R. McGuire, Buffalo, has been elected to the chair of surgery in the Medical Department of the University of Buffalo, to fill the vacancy caused by the death of Dr. Roswell Park.——Dr. Samuel M. Strong has been elected chief of the surgical staff of the Flushing Hospital, to succeed Dr. C. B. Story.——Dr. Anthony F. DeGraffenried, Bayside, has been elected secretary of the surgical staff of the hospital, succeeding Dr. George J. J. Lawrence, who is with the troops on the Southern border.

Chamber of Commerce Opposes Compulsory Health Insurance.—The New York State Chamber of Commerce has put itself on record as opposed to the Mills bill for compulsory health insurance which was introduced into the senate, January 15. The committee held that the expenses of sickness, allowance for medical attendance, etc., should be borne by the employer and employee, in equitable proportions and the state should pay only the expense of supervision. The chamber, however, favored the creation of a commission by the legislature which should ascertain whether employees are receiving a living wage and investigate the conditions under which they live.

New York City

Polk Portrait Presented to Academy.—At a stated meeting of the Academy of Medicine, February 1, Dr. Walter B. James announced that the portrait of Dr. William M. Polk had been presented to the academy, and that this completed the full line of portraits of presidents of the academy. Dr. George D. Stewart made the address of acceptance on behalf of the academy. The portrait is the work of Miss Belle Isaacs.

Wellington Law in Effect.—The Wellington law which went into effect, February 1, provides that children must remain in school until they are 15 years of age, or if they wish to go to work before reaching that age, that they must be graduates of elementary schools. Under this law the state industrial commission supervises the issuing of permits to children by health officers. The 50,000 children to whom permits to work have been issued during the past year are not affected by this law. It affects only the children who will seek permits from now on.

Personal.—Dr. Douglas Symmers has been appointed assistant director of the pathologic laboratories of Bellevue and Allied hospitals.——Dr. Sigismund S. Goldwater has been appointed, by the board of estimates, consultant on health and hospitals.——Dr. Arthur Freeborn Chase has been elected a member of the board of trustees of Bryn Mawr College.——It is announced that on May 1, Dr. John S. Billings, deputy commissioner of health, will retire after more than twenty years of service. Dr. Billings expects to continue his work in preventive medicine as health officer for the stock exchange and public library.

Death Rate Still High.—The hospitals of this city are overcrowded and this condition is reflected by the mortality statistics. For the week ending January 27 there were almost 100 more deaths than during the corresponding week of last year, the rate being 17.34 as against 16.46 for the corresponding week of 1916. As during the preceding weeks, respiratory diseases were largely responsible for the increased morbidity and mortality. The contagious diseases, scarlet fever, measles and diphtheria are not as prevalent as during previous years. The city hospitals for contagious diseases are filled to only 25 per cent. of their capacity.

Public Health Education in the Movies.—The state health department's bureau of education find that free shows do not attract any considerable number of spectators, or arouse as much interest as shows for which admission is charged. For these reasons the bureau of public health education has arranged to loan health reels free to moving picture theaters which will show them as a part of their regular program. The pictures shown have an introductory legend and a "trailer" indicating that they are shown by the department of health. The department requests any one interested in this form of public health education to arrange with their neighborhood moving picture theater for the display of health films.

Eating Places Must Have Permits.—Because of certain legal difficulties encountered by the department of health in dealing with insanitary and dirty restaurants and hotels, the board of health has enacted an ordinance prohibiting the operation of any restaurant in New York City except under a permit from the board of health. The term restaurant in this ordinance includes every buffet, lunch room, grill room, lunch counter and every other place where food is prepared, cooked, served, sold and consumed on the premises and every counter in a saloon where food is given away. The permit system will go into effect immediately and will be similar to that used so successfully by the department in the control of the milk supply.

Council of State Medical Society Reproved.—At the last meeting of the New York County Medical Society a resolution was passed disapproving of the action of the council of the state medical society in endorsing the tentative draft of the compulsory health insurance bill. While it was acknowledged that the council of the state society had not transcended its powers in taking this action, it was the prevailing opinion that such action should not have been taken until the county societies had had time to discuss the proposed bill and had expressed an opinion on it. At this meeting the proposed medical practice act, which would require annual registration, carrying with it a fee of $2, was also discussed and disapproved. It was the consensus of opinion that any help that it might lend in the prosecution of illegal practitioners was more than counterbalanced by the inconvenience it would impose on the members of the profession.

PENNSYLVANIA

Academy Purchases Building.—The Pittsburgh Academy of Medicine has purchased the property of the Bellefield Club, a lot 50 by 140 feet, with a two-story brick building, for the sum of $2,500.

Typhoid in Centre County.—Up to February 1, there were reported ninety cases of typhoid fever in the south precinct of Rush Township, Centre County, with one death. The hospital and private sanatorium of Philipsburg are taking care of as many patients as they can accommodate. The fever in nearly every case has been found in the homes supplied with water from one source. A warning has been given to boil all water and the reservoir and pipe line are to be given a careful investigation.

Personal.—Dr. John B. McAlister, Harrisburg, has been elected a trustee of Gettysburg College.——Dr. George B. Kalb, Erie, who has retired from practice and removed to California, was recently presented a silver loving cup by the Erie Antituberculosis Society.——H. Lyndley Hosford, who had been secretary to Commissioner of Health Samuel G. Dixon for five years, has resigned to resume charge of the campaign of a committee of citizens of New York, proposing the enactment of health laws similar to those of Pennsylvania.

Philadelphia

Medical Institutions.—An elaborate statement was issued, January 27, by the pneumonia commission of the Department of Health and Charities which is actively continuing its study of the causes and conditions responsible for grip and pneumonia. This commission is headed by Dr. David Riesman.

College Endowment.—A reunion supper of more than 100 workers for the endowment fund for the Women's Medical College of Pennsylvania was given, February 2, in the college building. The purpose of the meeting was to elect new officers, to obtain a charter, and to get on a permanent working basis so that the fund of $70,000 now on hand can be raised to $1,000,000.

License Test Case.—John A. Seibert, a neuropath, was convicted, January 30, before Judge Martin in Quarter Sessions Court for practicing medicine without a license. The prosecution was brought by the State Bureau of Medical Education and Licensure, and was a test case to determine whether neuropaths are compelled to be licensed. Sentence was deferred until the disposition of a motion for a new trial should be announced.

New Officers.—Society of Normal and Pathological Physiology: president, Dr. Paul A. Lewis; vice president, Dr. Oliver H. P. Pepper; secretary, Dr. A. N. Richards, and treasurer, Dr. Edward B. Krumbhaar.——Philadelphia Neurological Society, January 26: president, Dr. Williams B. Cadwalader; vice presidents, Drs. Max H. Bochroch and Samuel D. Ingham; secretary, Dr. Samuel Leopold, and treasurer, Dr. Nathaniel S. Yawger.——Philadelphia Genito-Urinary Society: president, Dr. Hiram R. Loux; vice president, Thomas R. Neilson, and secretary-treasurer, Benjamin A. Thomas.——Physicians Motor Club: president, Dr. S. Leon Gans; vice presidents, Drs. John J. Robrecht, Charles A. E. Codman and Charles R. Haig, Jr.; secretary, Dr. Howard A. Sutton, and treasurer, Dr. Lewis H. Adler.

Legislation for Clean Streets.—Legislation giving state officials power to compel Philadelphia street cleaning contractors to clean up the streets and to comply with state regulations is being considered by the legislative committee of the Walnut Street Association. The 1917 specifications for street cleaning have not been lived up to by the contractors. They are not using water or flushing streets, and the block men are not obeying the rules, which specify the carrying of sprinkling pots in front of every dust carrier. The widespread epidemic of pneumonia, grip and other disorders is probably caused in some degree by the condition of the streets, and unless they are cleaned up it is feared the toll may be heavy in infantile paralysis victims during the coming summer. Since January 1 there have been 752 deaths from pneumonia in Philadelphia, as compared with 675 during the same period in 1916.

VERMONT

New Members.—The governor has made the following appointments on the State Board of Medical Registration: Dr. W. Scott Nay, Underhill, reappointed for six years; Dr. Amos Eugene Parlin, Island Pond, a former member of the board, eclectic member, for six years, and Dr. Edward Kirkland, Bellows Falls, as homeopathic member, to fill out four years of the unexpired term of Dr. E. B. Whittaker.

Personal.—Dr. William R. Rowland, East Corinth, is said to have retired from practice and has entered the universalist ministry. He will be in charge of parishes at New Madison, Greenville and Palestine, Ohio.——Dr. Don D. Grout, superintendent of the State Hospital, Waterbury, for twelve years, has resigned, and has been succeeded by Dr. Watson L. Wasson, assistant superintendent.

CANADA

The Ontario Medical Commission.—Mr. Justice Hodgins resumed the sittings of this commission the past week. Lieut.-Col. Irving H. Cameron of the University of Toronto urged that a proper diagnosis could only be made except through a complete knowledge and understanding of the human body, and that massage treatment, such as osteopaths and chiropractors used, was not neglected in the medical courses of the universities.

Feebleminded Require Institutions.—The annual meeting of the Ontario Society for the Care of the Feebleminded was held in Toronto, February 2. Dr. Joseph D. Page, superintendent of the Immigration Hospital, Quebec City, spoke on feeblemindedness in relation to immigration, stating that, owing to hasty examinations and lack of specially trained examiners, many mentally defective persons were admitted. He advocated the inspection of immigrants before their tickets were bought, and also that Canadians should be employed as ship surgeons. Dr. Gordon Bates, Toronto, outlined the work of the Toronto branch of the society. The city council favored using the Industrial Farm, and would ask the legislature for permission to raise the money for the erection of suitable buildings.

University Men Overseas.—Brown, Toronto, 1908, is recovering from enteric fever in St. George's Hospital, Bombay, India; Little, Toronto, 1914, is on sick leave in India following paratyphoid fever; Maclachlan, Queen's, is in Colaba Hospital, Bombay, recovering from fever; Moon, Toronto, 1914, and Ball, Toronto, 1914, are at the front in Mesopotamia; Roy Philips, Toronto, 1914, is with No. 23 Indian General Hospital at Basra, Mesopotamia; Dr. Ramsay, McGill University, is at the front in Mesopotamia; Lyons, Dalhousie University (Halifax, N. S.), is also in Mesopotamia; Lieut. Edward Fidlar, R. A. M. C., is in Bombay.——Lieut.-Col. Ethelbert B. Hardy, D. S. O., Toronto, has been appointed commanding officer of the Toronto Base Military Hospital, succeeding Major Camown A. A. Warren, who returns to the headquarters staff, Military District No. 2, Toronto.——Capt. W. L. C. McBeth, Toronto, is to command the Military Hospital at Hamilton, Ont.——Capt. J. S. McCallum, winner of the Military Cross, is to be assistant to Captain McBeth.

Personal.—The Victoria Cross has been awarded to Major Roscoe D. Arnott, Stratford, Ont., for conspicuous bravery on the field of action.——Lieut.-Cols. Robert Rennie, Toronto, and Edward C. Hart, Victoria, B. C., C. A. M. C., have been made Companions of the Order of St. Michael and St. George. ——Capt. John Arthur Cullum, Regina, Sask., C. A. M. C., has been awarded the Bar to the Military Cross for evacuation of the wounded under heavy fire.——Major Charles Carter, Hamilton, Ont., C. A. M. C., has been appointed deputy assistant director of medical services in charge of the troops at Hamilton, Brantford, St. Catherines and Niagara Falls, Ont.——Capt. Malcolm A. Carmichael, Strassburg Station, Sask., C. A. M. C., medical officer of the Ninety-Sixth Winnipeg Reserves, has been transferred to the medical training school at Shorncliffe, England.——Lieut.-Col. George Clingan, C. A. M. C., Brandon, Man., has been given command of the Canadian Convalescent Hospital at Monks Horton, England. Capt. John M. Eaton, Winnipeg, Man., has been appointed second in command.——Dr. Charles C. Tatham, formerly of Cargill, Ont., has been appointed medical superintendent of the Strathcona Hospital, Edmonton, Alta., which was taken over by the Military Hospitals Commission early in December. Dr. Hobert L. Collins has been appointed to the staff of that hospital.——Major W. W. Judd and Capt. C. H. Hudson have resigned their commissions in the Canadian Army Medical Corps.

GENERAL

Missouri Valley Physicians to Meet.—The annual meeting of the Medical Society of the Missouri Valley will be held in Keokuk. Iowa, March 22 and 23, under the presidency of Dr. Charles R. Woodson, St. Joseph, Mo. The society will be the guests of the Physicians Club of Keokuk.

Bequests and Donations.—The following bequests and donations have recently been announced:

Methodist Hospital, Philadelphia, $5,000, by the will of A. A. Stephens, Tyron, Pa.

The Appui aux Artistes, Blind French Soldiers' Hospital, at Parma, Italy, and the Italian Red Cross, equal parts of $13,500, the net proceeds of an operatic entertainment, given in Chicago, January 21.

Fish Hatchery Discontinued.—On the recommendation of the commissioner of fisheries, the secretary of commerce has discontinued the fish hatchery located at Havre de Grace, Md., at the mouth of the Susquehanna River, for the propagation of shad (*Commerce Reports*, Jan. 31, 1917). The legislature of Maryland has neglected to provide legislation protecting this fish, so that the take of shad roe has fallen in twenty years from about 210,000,000 maximum to a little over 2,000,000 minimum, increasing the cost of propagating the fish at this station to more than twelve times what it formerly was.

FOREIGN

French Physicians Raise Their Fees.—The syndicate of physicians of the Seine district have agreed to charge 25 per cent. more for their services hereafter for clients who have not had to suffer directly from the fact of the war.

New Hospital for Women at Munich.—The new Universitäts-Frauenklinik was recently dedicated at Munich. It is said to be the largest of the kind in Germany. The building alone cost 3,000,000 marks, about $750,000, and the equipment nearly a third as much. Döderlein is the chief of the clinic.

Embargo on Medicinal Herbs.—The French government by decree of Jan. 25, 1917, from and after January 27 prohibits the export, etc., of fruits for distilling, and roots, herbs, flowers, leaves, barks, lichens, fruits and seeds of medicinal character, subject to the usual exceptions (*Commerce Reports*, Jan. 31, 1917).

Coffee Grounds as Feed for Cattle.—A company in Berlin is collecting coffee grounds, and especially the grounds from the various cereal substitutes for coffee, and is drying them to use as feed for cattle. An official appeal is made to restaurant keepers and others to save and collect the grounds for this purpose.

Chair for Welfare Work Founded at the Collège de France, Paris.—The city and county authorities of Paris have founded and appropriated funds for a chair of *prévoyance et assistance sociales* at the Collège de France of the University of Paris. The incumbent of the chair has not been selected as yet. The salary is to be 12,000 francs, about $2,400.

Homage to Gersuny.—On the occasion of the fiftieth anniversary of R. Gersuny's entering on the practice of his profession, an endowment fund was presented in his name to the training school for nurses connected with the Rudolfinerhaus at Vienna which he was mainly instrumental in founding. The fund is for welfare work among the nurses.

Institute for Research on Psychiatry.—A number of members of the Kaiser Wilhelm Association have planned a German institute for research on psychiatry. The funds subscribed as yet do not permit an independent establishment, but it is proposed to organize an institute of the kind as a branch of the Munich psychiatric clinic, after the close of the war.

"Treatment of Hernia Without an Operation."—The military authorities in the Berlin district have closed the Colemann establishments at Berlin. Colemann is said to be of English birth and advertised to cure hernia without operative measures, working under his own name and as the Dr. Colemann's Bandagengesellschaft m. b. H. He had been several times reprimanded by the Berlin Tribunal of Honor, but now the military authorities have put him out of business.

The Kraussianum at Munich.—Nearly $400,000 was bequeathed in 1910 to the city of Munich by Dr. G. Krauss to found, as a memorial to his father, an institution for mechanical and other forms of orthopedics, especially those practiced by the elder Krauss. The stately building housing it is now completed. It stands on the grounds of the University orthopedic clinic with which it is closely affiliated, Prof. F. Lange being in charge.

Deaths in the Profession Abroad.—**A. Chauveau**, the biologist and physiologist, at Paris, aged 89.——**Huguet Pike**, an American doctor at Paris, admitted to practice in France in 1869, chevalier of the Légion d'honneur.——The former professor of ophthalmology at the Universities of Bern and Rostock, **von Zehender**, aged 91.——**C. Posselt**, professor of diseases of the skin and syphilis, at the University of Munich, aged 79.——**E. Leser**, professor of surgery at the University of Halle until 1894, since then he has been living at Frankfurt a. M.——**H. Schule**, director of the insane asylum at Illenau and coeditor of the *Allgemeine Zeitschrift für Psychiatrie*, aged 76.——**W. Lublinski**, author of numerous works on his specialty, laryngology, aged 64.

Centennial of Father of Atomic Notation, Isolator of Several Familiar Drugs.—The Chemical Society of France held a memorial meeting, December 9, on the hundredth anniversary of the birth of the French chemist, C. F. Gerhardt, 1816-1856. His fame rests mainly on his conception of the molecule as a unitary structure, built of atoms, as the basis of all substances. Among the chemicals he isolated are said to be acetanilid, acetylsalicylic acid and cinnamic acid. With Laurent he founded a school of practical chemistry at Paris the aim of which was to "teach the art of the laboratory to students entering a scientific, medical or pharmaceutic career or industrial chemistry." The school was not commercially a success, and Gerhardt's life was a struggle, sacrificing his position, his fortune and even his life, to the search for truth, dying at 40. He was professor at the University of Strasburg the last year or two of his life.

WAR NOTES

Losses in the Profession in Germany.—The *Deutsche medizinische Wochenschrift* of Dec. 14, 1916, gives the number of physicians who have fallen at the front as 395; 214 have died from sickness contracted in the course of their service with the troops; 221 have been severely wounded, and 677 wounded but not severely, while 200 have been taken prisoners and 110 are missing. These figures are from the German casualty lists 1 to 700.

Virchow's Medals Donated to the Common Cause.—Rudolf Virchow's family have donated to the Berlin Goldsammelstelle seven gold medals that had been conferred on the scientist by foreign scientific organizations. The medals have a total weight of 1,200 gm. and are valued at 2,800 marks in gold, about $650. The heirs of Mommsen have taken a similar step, turning in to the gold reserve the medals that had been awarded to Mommsen in his day.

The Interned Sick and Wounded in Switzerland.—The *Münchener medizinische Wochenschrift* states that fully 30,000 sick and wounded are now interned in Switzerland and being cared for there. This, it adds, is a most comprehensive practical philanthropy which insures the permanent gratitude of all the countries involved. There have been 128 cases of insubordination compelling disciplinary measures, and twelve of the interned had to be returned to the prison camps whence they came.

Effect of War Diet on the Sick.—The local sickness insurance societies of Berlin have recently sent out question blanks to the physicians connected with the work to inquire as to the effect of the war diet on different categories of the sick, whether it has a depressing influence on the resisting powers or not. Separate reports are asked for those under and over 18, and for men and boys and women and girls. Special data are also sought as to the influence of the war diet on the anemic, the nervous, the tuberculous, those with stomach trouble, with acute diseases, and the pregnant.

Vacation in Norway for Nurses with the Belligerent Forces.—Our German exchanges mention that at the recent annual gathering of the hotel proprietors of Norway, a suggestion was made by the chief of the medical department of the Norwegian army to the effect that the hotel proprietors offer the nurses at the hospitals of the belligerent forces free accommodations to enable them to get a brief rest and respite. The plan was cordially taken up and backed by private individuals, and invitations for the purpose have been sent to the headquarters of the forces of each of the belligerent nations. An equal number of nurses from each of the forces is planned.

Conference to Study Welfare Work for War Cripples.—A conference for the study of professional retraining and of other questions affecting the wounded in war is to be held by representatives of the Allies at Paris, March 6, under the initiative of the Belgian government. The organizers of the conference are appealing to all experts in any of the questions relating to this subject to report to the secretary, rue du Bocage de Bléville, Havre, or the Office National des Mutilés et Réformés de la Guerre, 97 quai d'Orsay, Paris. The five sections are devoted to the physical and the professional training, the placing of the men, and their economic and social interests.

Typhus and Smallpox in Poland.—The *Berliner klinische Wochenschrift* gives the figures for the incidence of these diseases in the newly acquired portion of Poland, now called the Generalgouvernement Warschau since the occupation by the Germans. By three-month periods there have been 704; 5,256; 6,294, and 2,309 cases of typhus, with, respectively, 32; 428; 510, and 140 deaths. The corresponding figures for smallpox are 955; 1,029; 918, and 195, with 157; 144; 130, and 23 deaths. The figures show that the health authorities are getting the diseases under control, and that smallpox will soon be practically stamped out, while typhus is also declining. There have been no cases of cholera in the district for more than a year.

The New Law for Patriotic Service in Prussia.—Conferences are being held by the university authorities, medical societies and groups of all kinds of organizations to discuss ways and means for carrying into effect the provisions of the law for auxiliary patriotic service, *vaterländische Hilfsdienst.* The law went into effect, Dec. 5, 1916, and mobilizes the entire population between the ages of 16 and 60, not directly engaged in the war. The government authorities and the representatives of the organized physicians have been in prolonged and confidential conference over the working of the law as it affects medical men and medical students. The outcome has not been made public as yet.

BERLIN LETTER

(*Received Jan. 26, 1917*)

BERLIN, Dec. 4, 1916.

Personal

Nov. 12, 1916, Professor Bruns, the neurologist, died in Hanover at the age of 58. He had been one of the pupils of Professor Hitzig of Halle. His best known published work is the section on tumors of the nervous system in Nothnagel's "Special Pathology and Therapy." His contribution to the subject of hysteria in children is also well known. His last work of any great size was the "Handbook on Diseases of the Nervous System of Children," in which he was a collaborator of Ziehen and Cramer. He also made many individual contributions to the diseases of the spinal cord, tumors of the brain and their treatment, the neuritides of diabetes mellitus, etc.

Prof. E. Gaupp, ordinarius in anatomy in Breslau, died suddenly, Nov. 24, 1916. He had succeeded Professor Hasse in this position at the beginning of the present semester.

Health of the German Army

A recently published report of a member of the medical division of the army details the morbidity of the troops from the beginning of the war to February, 1916. The figures are made on the basis of a thousand. The average monthly morbidity from August, 1914, to January, 1915, was 129.3; from February to July, 1915, it was 114.2; from August, 1915, to January, 1916, it was 105. The morbidity rate has not increased since then. Particularly noteworthy is the absence of any epidemics. The results of the surgical treatment given in the various hospitals were exceptionally good. The results are given in percentages, as follows: 86.6 per cent. recoveries in the field military hospital, and 90.1 per cent. in the home hospitals; only 1.5 per cent. of the wounded and sick died. These percentages could have been obtained only by having efficient medical care and a well trained corps of nurses. At about the middle of 1916, 18,000 physicians were in the field, and 6,000 were attached to the military service at home. Four thousand served as volunteer nurses. The medical service was aided by 92,000 members of the sanitary division and army nurses, 23,000 male and female nurses in the military districts, and 72,000 in the home hospitals. Nervous diseases occurred less frequently in the troops in active service at the front than among those not so engaged. Diseases due to exposure occurred much less frequently than one would suppose. The supply of drugs is more than sufficient. It is ample to permit of furnishing drugs to the armies of all the central powers. The recently adopted steel helmet has proved to be of great value. Without any forehead protection it wards off shrapnel bullets, pieces of shell and other larger explosives, and with the forehead protection it even wards off rifle shots.

NEUROSIS AND NATIONALITY

In a recent number of the *Wiener klinische Wochenschrift,* Dr. Schneider discussed the predisposition of various nationalities to diseases of the nervous system, basing his remarks on observations made on Austro-Hungarian soldiers. He found that the Magyars, the Roumanians and the Czechs were particularly predisposed to severe nervous disturbances as the result of their war experience. The Poles and German-Austrians occupy the middle ground, whereas the Jew shows a strong predisposition to these diseases. From the literature the impression is gained that nationality and race play a considerable rôle in the etiology of functional nervous disturbances, especially of the hysterical type. While Schneider's observations confirm these impressions, the result was not quite what the literature would lead one to expect. The Poles, for instance, show a predisposition to severe nervous disturbances of all kinds. However, the percentage of persons so affected corresponds with the average of all nations (about 12 per cent.). All the remaining Slavs, excepting the Czechs, show a much lower percentage. A proper conception of the percentages given by Schneider can be gained by considering only those nationalities which were represented by more than 100 patients. These were the German-Austrians, the Czechs and the Magyars. The Poles were represented by eighty-one cases, too few to permit of drawing definite conclusions. All disturbances of the nervous system occurring among the first three nationalities mentioned above were as follows: Among 377 Germans there were thirty-three cases (9 per cent.); among 194 Czechs there were thirty cases (15 per cent.), and among 199 Magyars there were thirteen cases (6.5 per cent.). There were seven cases of ambulatory war neuroses, all occurring among the Czechs who, on the whole, seem to be particularly predisposed to traumatic hysteria. About 40 per cent. of the Jews had nervous disturbances, mostly mild in type, with complete recovery and rarely exhibiting hysterical symptoms. Of the Roumanians, 21 per cent. were affected, and of the Germans only 13 per cent.; of the Ruthenians and southern Slavs, 11 per cent. A strong predisposition to the apathetic depressive nervous diseases was noted among the Roumanian soldiers, such cases occurring even when the troops were on the march.

Campaign Against Venereal Diseases

The Prussian medical commission has formulated the following rules of governing the campaign against venereal diseases: 1. General rules for combating venereal diseases: (*a*) improving the economic status of the population so as to make early marriage possible, and to guard the female population against delinquency; improving housing conditions and instituting official supervision of homes; (*b*) instituting instruction on sexual life and especially on the dangers of extramarital sexual relationship and of sexual diseases; (*c*) improving the physical and moral status of youth by means of gymnastics, play and sport; (*d*) instituting a campaign against the misuse of alcohol; (*e*) improving the diagnosis and treatment and preventing the spread of venereal diseases; (*f*) improving the means and methods for treating venereal diseases, erecting dispensaries in which such diseases can be treated, with the assurance of absolute secrecy as to the identity of the individual and treating all severe cases in an institution; (*g*) proper instruction by the physician as to the dangers of venereal diseases, their method of spread and especially the precautions which must be taken by one who is under treatment; (*h*) reducing the price of the newer specific drugs, and (*i*) campaign against quackery. 2. An amendment of Paragraph 180 of the imperial crime punishment regulations is urged. 3. Supervision of prostitution, the burden of which shall hereafter fall on the medical man and not on the police. 4. Enforcement of the law of Oct. 28, 1905, and the ministerial edict of Dec. 11, 1907. 5. Keeping the prostitutes off the streets and out of public places, and segregating them for moral as well as police reasons.

LONDON LETTER

LONDON, Jan. 15, 1917.

The War

NEW FOOD REGULATIONS

Lord Devonport, the food controller, has issued six orders regulating the use of bread, sugar and other staple foods. It is the duty of the food controller to regulate the supply and consumption of food in such manner as he thinks best for maintaining a proper supply of food, and to take such steps as he thinks best for encouraging the production of food. The first of the orders makes an important extension of the two existing flour and bread orders, under which millers are now required to extract from wheat a percentage of flour averaging 76 (as stated in a previous letter to The Journal). Under the new order, every miller will be required to add to the prescribed percentage a further percentage of not less than 5, either by a further milling of wheat or by the addition, at his option, of flour derived from barley, maize, rice or oats. He may add yet another voluntary 5 per cent. (making 10 per cent. in all) in addition to the compulsory 5 per cent. With regard to the milling of grain other than wheat, it is stated that barley and rye present no difficulties. Existing machinery, however, will not mill maize or oats at the same time as it mills wheat, and the admixture of maize or oats with wheat will probably have to be made in the form of flour. A wheat (restriction) order prohibits the use of wheat for any purpose except that of seed or of making flour, and thus makes illegal the feeding of wheat to animals. The object is, of course, to reserve wheat for human consumption. A good deal at present is being dissipated in other directions, particularly in the feeding of stock, and it is necessary to check this waste. An exception is made to the order in respect of "tailings, screenings and damaged wheat unsalable for milling." The food controller now prohibits entirely the use of any grains required for food or feeding-stuffs, or any of their products, for the purpose of food for game birds. It is felt that with the present emergency the rearing of pheasants and indulgences of this kind cannot be continued. The manufacture of extravagant sweets is stopped. A maximum retail price of 6 cents an ounce for chocolates and 4 cents an ounce for other sweetmeats is fixed. The price in each case includes the price of any covering in which the sweets are sold. The use of sugar or chocolate for the external covering of cakes, pastry or similar articles is prohibited. During 1917 no manufacturer will be allowed to use for sugar confectionery or chocolate more than 50 per cent. of the amount so used by him in 1915. The use of winter milk in the manufacture of chocolate is prohibited. The export of oats from Ireland is prohibited except under license. The price to be paid to growers for potatoes is $40 a ton for the first quality in January and February, with a rising scale attaining a maximum of $45 for later months. The maximum price for the best seed potatoes is to be $60 a ton.

ACCUMULATED FATIGUE IN WARFARE

The second interim report of the British association committee, of which Prof. J. H. Muirhead is chairman, to investigate fatigue from the economic standpoint contains an interesting section by Dr. T. G. Maitland on accumulated fatigue in warfare. The breakdown resulting from long-continued trench strain, while soon recovered from after a period of rest, leaves the quality of the soldier's work on his return to activity impaired; his aim is less good, his decision less prompt. The hope of obtaining an ideal working day for each unit is incapable of realization, as the strain in the field varies with the occasion and depends on such mutable factors as sleep, food, noise and nervous strain. With the present greater ability to supply reinforcements, strain can be diminished as well as the actual fighting units more often replaced, and in this way an opportunity is given for what Dr. Maitland calls a "growing delicacy of perception in the anticipation of the breaking point." From a military standpoint the most important item is the large class of combatants who do not collapse in the field but return from the lines with extreme pallor, a low blood pressure, and a *faiblesse irritable* shown by the restlessness of hands and feet. In these cases fatigue has gone slightly beyond the possibility of sound physiologic recuperation. To reduce the incidence of such cases, which are an encumbrance, the hours in the fighting line have been lately diminished. The ultimate sequel of such long-continued fighting strain has been seen by Dr. Maitland in Serbian soldiers who have lived through six years of nearly continuous Balkan War and many of whom show marked arteriosclerosis. He was able in most cases to exclude the action of mineral poisons, alcohol and acute specific toxins, and to establish the production of fibrosis in the arteries from hard work alone.

Another Death from a Salvarsan Substitute

Some weeks ago in describing a death due to kharsivan (The Journal, Sept. 30, 1916, p. 1030) I stated that the coroner of southeastern London, who held the inquest, said that he had had in his district three deaths from salvarsan or its substitutes within a short period. After a brief interval the following case, again in the same district, has occurred at Guy's Hospital. A man, aged 33, a tram conductor, was admitted with syphilitic meningitis of the spinal cord. He was given an intravenous injection of arsenobenzol, the French substitute for salvarsan. He had been carefully prepared and the operation lasted three quarters of an hour. A rather small dose, 0.04 gm., was injected intravenously, and the patient died suddenly two hours later. Dr. Spilsbury, pathologist, who made a postmortem examination, said he found a large tumor in the front part of the brain, and extensive softening of the brain. Death was due to coma from disease of the brain, accelerated by the administration of arsenobenzol. The patient was really in a very serious condition, but the exact nature and extent of the disease of the brain could not be easily diagnosed. The dose of arsenobenzol given was the usual dose, but, if anything rather small. The witness was afraid there was a danger of fatal results occasionally, but more often when there was disease of the brain. He thought every care was exercised in the administration of the drug, which was one of the best known remedies. It was similar to kharsivan, the English substitute, and was being used with most beneficial results in a large proportion of cases. The jury returned a verdict of death by misadventure.

The War and Public Health

In his report for 1915-1916, Dr. Arthur Newsholme, health officer of the Local Government Board, states that the war has directed attention to means for improving the health of mothers and of their children during the first five years of life. During 1915, work with this object was largely augmented. The need for greater effort to save child life is shown by the markedly lower natural increase of population in 1915 than in 1914. In the former year there were 362,354 more births than deaths in England and Wales. Last year this excess of births over deaths was only 252,201. There were 64,569 fewer births and 45,584 more deaths in 1915 than in 1914. In 1915 as many as 98,477 infants died in their first year after birth, and 55,607 died at ages of from 1 to 5. Dr. Newsholme says that there is no insuperable difficulty in reducing the total deaths in childhood to half the present number. At the end of last March about 1,000 health visitors had been appointed by local authorities. This means one health visitor approximately to 800 births annually. A steady approach is being made to the standard of one health visitor to 500 births, which was laid down as desirable in his memorandum of November, 1915. So far as infectious diseases are concerned, with the single exception of measles, the record of 1915, like that of 1914, remained favorable. Smallpox heretofore has failed to gain more than a temporary footing in any district. Dysentery, notwithstanding the return to this country of many soldiers recovering from this contagious and relapsing disease, has not spread. In both the civil and the military population typhus has failed to spread; and the amount of typhoid fever has been so small as to inspire fresh hope that this disease, like typhus, will soon be counted among the almost extinct diseases of this country. There have been no cases of plague or cholera. Cerebrospinal fever showed much activity, and special work was undertaken, both military and civil, to control its spread and to investigate its natural history. Acute anterior poliomyelitis occurred sporadically in this country during 1915. Tuberculosis work has been greatly restricted by the war.

Reference is made to the national scheme for the diagnosis and treatment of venereal diseases, which promises to be among the most successful public health work of the early future. As the nonrecommendation of compulsory notification by the royal commission has been criticized, Dr. Newsholme recalls that in the memorandum which he presented to that body he emphasizes the following considerations, to which further inquiries have led him to attach increased importance: Even if compulsory notification of these diseases could be enforced—a very doubtful point—the consideration of its enforcement should be postponed until after these conditions have been fulfilled: (*a*) Adequate arrangements must be available for the gratuitous treatment of all applicants suffering from venereal diseases in every administrative area. (*b*) There must be legal prohibition of treatment by unqualified persons so that all cases of early venereal disease receiving treatment will come under the observation of physicians. When these conditions have been fulfilled, patients will generally avail themselves of the facilities for treatment officially provided or will be treated by their own physician, and the question may legitimately arise whether the public safety is then adequately protected, or whether notification is necessary to insure that every patient continues treatment as long as this is needed in the public interest. Attempts to secure the notification of venereal disease in adults under any of the forms in which it has been recently suggested would only diminish recourse to the treatment shortly to be provided in all our chief centers of population.

The heavy demands of the army for physicians has led to an extensive employment of women as health officers, assistant health officers, tuberculosis officers and resident medical officers in sanatoriums and fever hospitals. In this great national emergency their services have proved invaluable.

Selected Parents

A paper on "The Principle of Eugenics" was read to the Insurance Institute of London by Major Darwin, son of Charles Darwin and president of the Eugenics Education Society. Major Darwin compared the inborn qualities of a man to be a fixed anchor to which he is tied by an elastic cord. Everything that is possible should be done for the environment of the living—that is, in order to stretch these elastic cords; but it is foolish not to try to insure that the anchors of our successors on earth shall be cast on better ground. This is the aim of the eugenist, and, as this science is in its infancy, it cannot be expected yet to have accomplished great things. Few persons really care what happens to the nation long after they are dead, yet we must make an effort to insure that the innate qualities of our race shall continue to improve. The eugenist aims at substituting for the apparently blind selection of nature in the matter of parentage a conscious and rational selection.

The fact that offspring often differ from their parents is frequently held to tell against all eugenic reform; but modern science endorses the belief of every breeder of animals in the advantages of breeding only from the best stock. In regard to the methods of the stock yard, it must, however, be remembered that in the case of man his religion must be taken into account, whereas in the case of animals it need not. It is the lessons and not the methods of the stock yard which must be held in view. Another objection raised against all eugenic reform is the difficulty of deciding who had better and who had better not become a parent; but if attention be confined to the unquestionably fit and unfit there will be ample work to do. As to increasing the birth rate among the fit, we must rely largely on awakening the moral sense of our fellow countrymen and appealing to their spirit of patriotism. It is immoral and unpatriotic to limit the size of the family when both parents are fairly healthy, except to insure that there shall be an adequate interval between births, and that the family shall be brought up in comfort, but not in luxury, without external aid. Reforms in taxation might aid and reinforce this moral precept. As to diminishing the fertility of the unfit, the mental deficiency act, if properly administered, would be an example of what might be done, and somewhat similar measures are possible with regard to criminals, drunkards and paupers. What is mainly desirable is an investigation to ascertain if the danger to the nation from the present rapid multiplication of inferior stocks is as great as it appears to eugenists. If it be so, it must be dealt with with a fearless hand. But that is not yet. If the nation could see that its future is largely in its own hands, the battle would be half won. It is not the creation of the superman which eugenists are now aiming at; for that ideal receives but little support from science. The endeavor should be to increase the proportion of the existing higher types; and it is now doubly necessary thus to act in view of the slaughter of our fittest in battle.

PARIS LETTER

PARIS, Jan. 11, 1917.

Death of Professor Chauveau

French science has just suffered a great loss in the death of Prof. Jean Baptiste Auguste Chauveau, aged 89 years. He was born, Nov. 23, 1827, at Villeneuve-la-Guyard (department of Yonne). Chauveau entered l'Ecole vétérinaire d'Alfort at 17, leaving it at 20 to become chef de service at l'Ecole vétérinaire de Lyon. A considerable part of his professional life was spent there, first as professor of anatomy and physiology, then as director, to which position he was appointed in 1875. Two years later, i. e., at the age of 50, he secured his degree of doctor of medicine. Afterward he occupied the chair of general pathology at the Museum of Natural History of Paris; he also was general inspector of veterinary services.

It was as a physiologist that Chauveau became known. In collaboration with Marey, he invented and put into practical use the method of registration of physiologic movements and especially that of the cardiac rhythm. In pathology, tuberculosis was one of the subjects of chief interest to him. He was the founder and director of the *Revue de la Tuberculose*. He also directed the *Journal de Physiologie et de Pathologie Générales*. A member of l'Académie des Sciences since 1886, Chauveau entered l'Académie de Médecine in 1891 and became its president in 1913.

The War

MEDICAL EXAMINATION OF CANDIDATES FOR MILITARY AERONAUTIC SERVICE

By reason of the disadvantages presented by candidatures for this service not justified by sufficient physical aptitude, the undersecretary of state of the military health service has warned physicians in charge of the aviation depots to comply rigorously in the examinations with instructions concerning the physical aptitude of the aviator who is to enter the service. Moreover, on the arrival of officers at the aviation school, or of soldier aviators at the aviation depots, they must undergo examinations by two physicians. At the second examination, which shall be thorough, the attention of the specialists shall be drawn particularly to the necessity of ascertaining the absolute integrity of the respiratory, circulatory and renal functions. Careful attention shall be given to discerning organic from inorganic cardiac murmurs. Aspirants who present arrhythmia or permanently slow pulse (Stokes-Adams syndrome), tachycardia, Basedowan tachycardia, or extrasystolic arrhythmia will be excluded from service only when connected with an organic lesion of the heart. By way of compensation, the following disorders of cardiac rhythm will not constitute contraindications, when applications are made for positions as student pilots: total bradycardia, emotive tachycardia, tachycardia due to physical exercise or respiratory arrhythmia. All cases presenting emotivity with nervous instability, however, shall be excluded. Physicians are to study the health of the students in training by means of repeated examinations, and they are especially urged to study the arterial pressure of the aviators with the sphygmomanometer. This practice may be of much value in the course of training, as well as in obviating the dangers of overtraining. In a general way, aviation tends to produce a lowering of the highest arterial pressure even when the minimum pressure remains normal, as when the aviator is not in flight. This lowering of pressure is especially appreciable in subjects little or moderately trained. Overtraining may cause a marked lowering of pressure even in aviators inured to the service.

LARGE ABDOMENS (PAUNCHES) AMONG THE SOLDIERS

Drs. Désiré Denecheau and Henri Mattrais have observed disorders characterized by enormous abdomens without any trace of organic trouble, save a slight colitis readily relieved by simple flexion of the thighs. The origin of this disorder is traced back to a peculiar action of the diaphragm noticed in patients thus affected. It appears like a phenomenon of the motor order which can be produced, as well as relieved, at will. In the estimation of Denecheau and Mattrais it is brought about by digestive troubles common in colitis; aerophagia also contributes to the condition, although it is not believed to be the only cause. Briefly, this trouble is analogous to the nervous abdomen frequently observed in those whose nerves are overwrought by fright. It should not, however, be the cause of discharge from duty, much less, invalidation at half pay.

Marriages

BERNARD SAMUEL STRAIT, M.D., Penn Yan, N. Y., to BARBARA FANNIE KUNTZ, M.D., of South Williamsport, Pa., January 15.

GEORGE LOUIS STEELE, M.D., West Springfield, Mass., to Miss Vera Gertrude Colburn of Bangor, Me., Nov. 30, 1916.

PAUL THEODOSIUS FERRER, M.D., to Miss Minnie Elizabeth Hoehl, both of Port Chester, N. Y., Dec. 31, 1916.

PAUL E. BETHARDS, M.D., to Miss Florence Freeman, both of Toledo, Ohio, at Brockton, Mass., January 17.

CLAUDE GRIFFIN, M.D., to Miss Caroline Claire Stewart, both of Carrollton, Ga., Dec. 23, 1916.

GEORGE CERIO, M.D., Rome, Italy, to Miss Mabel Norman of Newport, R. I., January 20.

Deaths

Henry Theodore Bahnson, M.D., Winston-Salem, N. C.; University of Pennsylvania, Philadelphia, 1867; aged 71; a Fellow of the American Medical Association; a Confederate veteran; local surgeon of the Southern Railway System; president of the board of surgeons; chief surgeon of the Winston-Salem Southbound Railway Company; once president of the Medical Society of the State of North Carolina; a member of the American Public Health Association; president of the state board of health; secretary of the state board of medical examiners; a member of the board of directors of the Morganton State Hospital; died at his home, January 16, from angina pectoris.

Pearce Kintzing, M.D., Baltimore; University of Pennsylvania, Philadelphia, 1887; aged 55; a Fellow of the American Medical Association; chief physician to the Franklin Square Hospital, Baltimore; professor of anatomy and surgery in the Women's Medical College, Baltimore, from 1890 to 1897; professor of practice of medicine and diseases of the heart, and clinical medicine in Maryland Medical College from 1899 to 1901, and since 1904 a director and trustee of the Maryland Medical College; died at his home in Baltimore, about January 31.

Frank Sidney Fielder, M.D., New York; College of Physicians and Surgeons in the City of New York, 1892; aged 50; a Fellow of the American Medical Association and New York Academy of Medicine; demonstrator of anatomy in Cornell University Medical Department; attending pediatrist to Bellevue Hospital, outpatient department; assistant surgeon, United States Navy, during the Spanish-American War; author of several textbooks on diseases of children; died at his home, January 24, from pneumonia.

Dexter Boylston Farnsworth, M.D., Springfield, Mo.; Rush Medical College, 1877; aged 67; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; a specialist on diseases of the eye, ear, nose and throat; died at his home, January 22. At a special meeting of the Greene County Medical Society, January 23, it was decided to postpone the annual banquet of the association on account of the death of Dr. Farnsworth.

Francis A. Smith, M.D., Rock Island, Ill.; Pulte Medical College, Cincinnati, 1891; aged 64; formerly of Zanesville, Ohio; local surgeon for the Baltimore and Ohio Railroad, and a member of the Zanesville Board of Education; for six years head physician for Ohio of the Modern Woodmen of America, and since 1903 chairman of the board of supreme medical directors of that organization; died at his home, January 21, from cerebral hemorrhage.

James R. Barnett, M.D., Neenah, Wis.; Rush Medical College, 1868; aged 74; a Fellow of the American Medical Association; and at one time president of the State Medical Society of Wisconsin; for four years a member of the state legislature; a veteran of the Civil War; supreme medical examiner of the Equitable Fraternal Union; died at his home, January 30, from senile debility.

William A. Young, M.D., Newport, Ky.; Medical College of Ohio, Cincinnati, 1893; aged 46; formerly a member of the Kentucky State Medical Association; local surgeon for the Chicago, New Orleans and Texas Pacific Railroad; surgeon to the Speer's Memorial Hospital, Dayon, Ky.; health officer of Campbell County for eight years; died in the Speer's Memorial Hospital, December 21, from multiple sclerosis.

Frederick W. Schmidt, M.D., Riverdale, Chicago; Northwestern University Medical School, 1885; aged 55; formerly a Fellow of the American Medical Association and a member of the American Association of Railway Surgeons; local surgeon for the Illinois Central System; died at his home, January 31, from septicemia, after an illness of one year.

Thomas Jackson Thompson, M.D., San Diego, Calif.; College of Physicians and Surgeons in the City of New York, 1872; aged 73; for seven years deputy health officer of the port of New York, and later for eight years an officer of the U. S. Public Health Service in Japan; died at his home in Kensington Park, San Diego, January 10.

Jacob S. Newcomer, M.D., Chicago; College of Physicians and Surgeons, Chicago, 1893; aged 54; for many years a practitioner of South Dakota and an officer of the United States Indian Service; senior consulting physician of the Contagious Diseases Hospital of Chicago; died at his home, January 27, from nephritis.

Melanchthon C. Porter, M.D., Topeka, Kan.; College of Physicians and Surgeons, Chicago, 1890; aged 54; a Fellow of the American Medical Association; professor of surgery in the University of Kansas; formerly surgeon to the Union Pacific Railway, and health officer of Clay Center; died at his home, January 30.

William H. Winterbotham, M.D., Salina, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1872; College of Physicians and Surgeons, Chicago, 1884; aged 70; formerly a Fellow of the American Medical Association; a member of the Kansas Medical Society; died at his home, January 21, from influenza.

George Wilbur Crawhall, M.D., Seattle; Rush Medical College, 1890; University of Pennsylvania, Philadelphia, 1896; aged 54; formerly a Fellow of the American Medical Association; a member of the Washington State Medical Association; died at his home, January 8, from myocarditis.

Benjamin F. Farley, M.D., York, Neb.; Rush Medical College, 1870; aged 73; formerly a Fellow of the American Medical Association, and once vice president of the Nebraska State Medical Association; a veteran of the Civil War; died at his home, January 17, from pneumonia.

Matthew O. Ricketts, M.D., St. Joseph, Mo.; University of Nebraska, Omaha, 1884; aged 60; a colored practitioner of St. Joseph; a member of the Nebraska State Legislature from 1893 to 1895; died in St. Joseph's Hospital, St. Joseph, January 15, from disease of the intestines.

Frank Beegle Statler, M.D., Johnstown, Pa.; Jefferson Medical College, 1889; aged 52; a Fellow of the American Medical Association; died in the Memorial Hospital, Johnstown, January 16, from abscess of the liver, ten days after an operation for appendicitis and cholecystotomy.

Arthur Alonzo Vibbard, M.D., Albany, N. Y.; New York Homeopathic Medical College, New York, 1894; aged 48; a member of the Medical Society of the State of New York; a specialist on diseases of the eye, ear and nose; died at his home, January 19, from pneumonia.

Horace B. Erb, M.D., Allentown, Pa.; Medico-Chirurgical College of Philadelphia, 1888; aged 58; a member of the Medical Society of the State of Pennsylvania; a specialist in diseases of the eye, ear, nose and throat; died at his home, January 24, from pneumonia.

Albert W. Sharp, M.D., Kettle, Ky.; University of Louisville, Ky., 1888; aged 59; a member of the Kentucky State Medical Association; a member of the legislature from the Adair-Cumberland District in 1914; died at his home, about January 2, from pneumonia.

Leon L. Moye, M.D., Vidalia, Ga.; Atlanta (Ga.) College of Physicians and Surgeons, 1902; aged 38; a member of the Medical Association of Georgia; formerly a member of the faculty of the Atlanta School of Medicine; died at San Antonio, Texas, January 14.

Stacy B. Collins, M.D., Seaford, Del.; Jefferson Medical College, 1876; aged 81; a member of the board of education and president of the board of health of Seaford; at one time a member of the state board of health; died at his home, January 17, from paralysis.

William Henry McLaughlin, M.D., Hedrick, Iowa; State University of Iowa, Iowa City, 1887; aged 53; formerly a Fellow of the American Medical Association; formerly a practitioner and druggist of Wester, Iowa; died at Springdale, Ark., January 13.

Sidney Smith Pruitt, M.D., Holland, Ky.; University of Tennessee, Nashville, 1886; Barnes Medical College, St. Louis, 1899; aged 55; formerly a member of the Kentucky State Medical Association; died at his home, January 10, from pneumonia.

Peter Alois Pfeffer, M.D., St. Louis; Barnes Medical College, St. Louis, 1908; aged 40; formerly a member of the Missouri State Medical Association; died in St. Anthony's Hospital, St. Louis, January 4, from septicemia, due to the bite of a dog.

Frederick Pollock Lane, M.D., New Haven, Conn.; Yale University, New Haven, 1904; aged 36; a Fellow of the American Medical Association; a member of the staff of the Hospital of St. Raphael; died at his home, January 14, from pneumonia.

Samuel J. Covert, M.D., Perrysville, Ohio; College of Physicians and Surgeons, Baltimore, 1882; aged 65; formerly a member of the Ohio State Medical Association; died at his home, November 8, from cerebral hemorrhage.

William H. M. Pearson, M.D., Council, Ark.; Memphis (Tenn.) Hospital Medical College, 1908; aged 37; formerly a member of the Arkansas Medical Society; died in Memphis, Tenn., November 15, from cirrhosis of the liver.

Isaac Jones Wells, M.D., Nanuet, N. Y.; University of Nashville, Tenn., 1865; Bellevue Hospital Medical College, 1866; aged 77; for many years an appraiser in New York Customs House; died at his home, January 20.

Rufus M. Lemon, M.D., Callaway, Va.; Kentucky School of Medicine, Louisville, 1877; aged 60; formerly a member of the Medical Society of Virginia; died at his home, October 28, from chronic nephritis.

Daniel Dwyer, M.D., Dunmore, Pa.; University of Michigan, Ann Arbor, 1891; aged 55; formerly surgeon of the Carbondale (Pa.) Emergency Hospital; died at his home, January 9, from cerebral hemorrhage.

Samuel J. Dewey, M.D., Breckenridge, Mo.; Washington University, St. Louis, 1871; formerly a practitioner and druggist of Springhill; a veteran of the Civil War; died at his home, January 10.

Hiram Munson Boyd, M.D., Manatee, Fla.; Columbus (Ohio) Medical College, 1877; formerly a practitioner of LaMoure, N. D.; died at his home, January 7, from carcinoma of the intestines.

Blin A. Harris, M.D., Norwich, N. Y.; New York University, New York, 1885; aged 54; a Fellow of the American Medical Association; died at his home, December 24, from heart disease.

John M. Cooke, M.D., Colorado Springs, Colo.; Rush Medical College, 1887; aged 63; a Fellow of the American Medical Association; died at his home, January 14, from cardiorenal disease.

Arvid Anderson, M.D., New Britain, Conn.; University of Michigan, Ann Arbor, 1892; aged 54; a Fellow of the American Medical Association; died at his home, January 10, from pneumonia.

Otto Appley, M.D., Damascus, Pa.; University of Buffalo, N. Y., 1880; aged 65; died in the Deer Park Sanitarium, Port Jervis, N. Y., recently, after an operation for disease of the intestines.

Jacob Bell Cornell, M.D., Somerville, N. J.; College of Physicians and Surgeons in the City of New York; 1878; aged 65; died at his home, January 20, from cerebral hemorrhage.

S. R. Wakefield, M.D., Eugene, Ore.; Willoughby (Ohio) Medical College, 1846; aged 95; died at the home of his son in Creswell, Ore., December 13, from senile debility.

Augustus W. Harrington, Esther, La. (licensed, Louisiana); aged 76; formerly a druggist and practitioner of New Orleans and Rayne, La.; died at his home, December 31.

Wilfred Cumbermede Hummell, M.D., Marysville, Ida.; State University of Iowa, Iowa City, 1895; aged 44; died at his home, December 3, from heart disease.

Herman F. Klemp, M.D., Topeka, Kan.; Hahnemann Medical College, Chicago, 1867; aged 79; died in a hospital in Topeka, January 16, from senile debility.

George Carleton Hale, M.D., New Bedford, Mass.; Vermont Medical College, Rutland, 1891; aged 74; died at the home of his son in Providence, January 13.

James Amos Fechtig, M.D., Baltimore; Hahnemann Medical College, Philadelphia, 1871; aged 68; died at his home, January 18, from pneumonia.

William Daniel Turvill, M.D., Madison, Wis.; Rush Medical College, 1882; aged 63; died at his home, October 15, from cerebral hemorrhage.

Walter John Colgan, M.D., Bridgeport, Conn.; University of Georgetown, Washington, D. C., 1913; aged 27; died at his home, December 1.

Relief B. Leeds Harding, M.D., Long Beach, Calif.; University of Michigan, Ann Arbor, 1884; died at her home, December 13.

Achibald Mitchell Galbraith, M.D., Hayward, Calif.; Cooper Medical College, San Francisco, 1889; died at his home, December 30.

John O. Aldrich, M.D., Bath, N. Y.; Eclectic Medical Institute, Cincinnati, 1883; aged 68; died at his home, January 18.

Duncan S. Allen, M.D., Seneca, N. Y.; Albany (N. Y.) Medical College, 1865; was found dead in bed, December 23.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

THE WILLARD PYORRHEA TREATMENT

Oren Oneal's New Brand of Quackery Is Barred from the United States Mails

After defrauding the public of amounts estimated by federal investigators at $75,000 a year by means of a fake "cure" for pyorrhea, F. W. Willard, M.D., D.D.S., has been denied the use of the United States mails. Willard himself seems to have been merely a hireling, for the official report of the government declares that the owner of the business was Dr. Oren Oneal. Some of our readers will remember Samuel Hopkins Adams' characterization of Oneal in his "Great American Fraud" series. At that time Mr. Adams said:

> "If I were organizing an American Institute of Quack Specialists I should select Dr. Oren Oneal of Chicago as the first president. The artful plausibility of his advertising, his ingenuity in 'jollying along' the patient for his reluctant dollars, the widespread familiarity of his features through the magazine advertising pages, and, above all, his sleek and polished personality, make him the natural candidate."

And more to the same effect. Mr. Adams went further. He investigated Oneal's methods with some degree of thoroughness and when he brought to the quack's attention concrete examples of the disreputable methods employed, Oneal insisted that all Mr. Adams had against him were "a few technicalities." To this Mr. Adams responded:

> "Dr. Oneal is proceeding on a false premise. I have nothing against him; I found him a singularly agreeable and frank specimen of the genus Quack. But every man, woman and child who reads his advertisements has this against him and against the magazines that print his stuff; that he is a maker of lying promises, a deliberate swindler, and a tamperer with blindness at the peril of others, for a fifty-dollar fee."

This was over ten years ago. Eye-quackery stock having, apparently, taken a slump, Oneal has turned to tooth-quackery and the blatant advertisements of the Willard concern have for some time been an offense against decency and honesty.

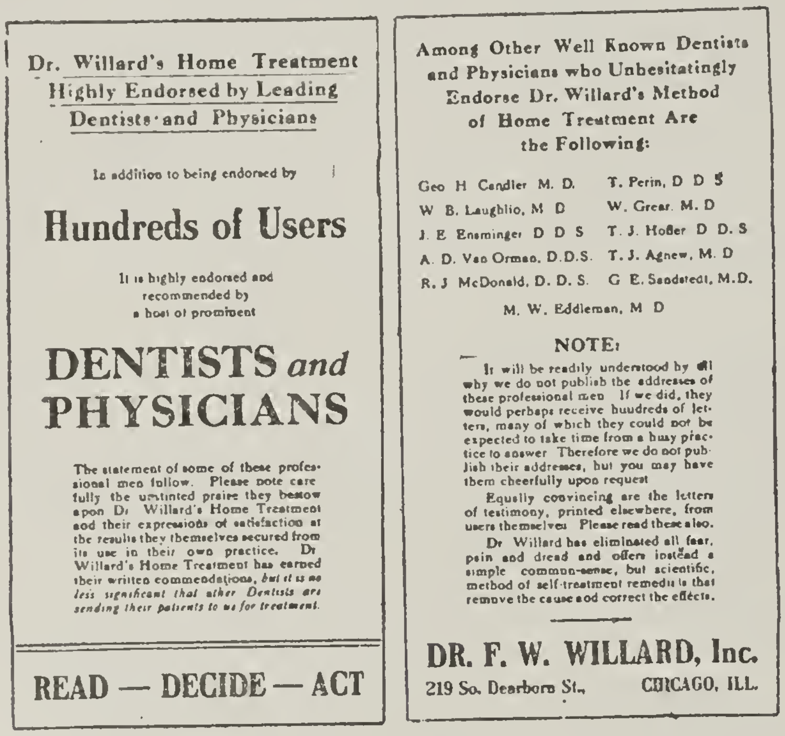
The company seems to have been incorporated under the Illinois law in 1912. At that time its president was one M. L. Katz who, it seems, had been engaged in the advertising business in a small way. Willard was at first vice president and secretary, while Oneal was the third member of the corporate body. In 1915, Oneal acquired Katz's interest and Willard became president with Oneal as general manager. It was brought out in the government investigation that Willard received a salary for his services as "president and medical advisor" and claimed to have nothing to do with the business management of the fakery which he stated was under the sole direction of Oneal.

In July, 1916, Willard was called on by the government to show cause on or before Sept. 26, 1916, why a fraud order should not be issued against him and the company. On the date set, Willard and Oneal presented themselves at the office of the solicitor of the Postoffice Department having as their legal representative one W. M. Ketcham of Chicago. Ketcham apparently operates a business having the somewhat imposing name "Federal Advisory Association." Ketcham was a postoffice inspector for a number of years but in 1910 went into business for himself. The apparent object of the "Federal Advisory Association" is to furnish information, to those willing to pay for it, on the question of how they may use the United States mails without technically violating the law. From other material in our files, it seems that the "Federal Advisory Association" also essays to offer suggestions on the wording of "patent medicine" labels and cartons.

Francis W. Willard was graduated by Marion Sims College of Medicine, St. Louis, in 1891. This fact, verified by the records, is admitted in one of the Willard booklets which states further: “After practicing medicine for some time he began the study of dentistry . . . and was graduated from the dental department of the Washington University.” Curiously enough, however, another piece of advertising sent out by the Willard concern is a photographic reproduction of Willard’s alleged diploma from the dental college. This diploma gives the date of his dental graduation as 1890—one year *before* he was graduated in medicine! According to our records, Willard was a dentist at Anna, Ill., for a number of years before coming to Chicago.

PYORRHEA CURED BY MAIL!

The business of the Willard concern was the sale on the mail-order plan of a so-called home treatment for pyorrhea or Riggs’ disease. The “treatment” consisted of five remedies, three to be taken internally and two to be used in the mouth. The price asked was $5 for an amount sufficient to last thirty days if used in accordance with directions. Advertisements placed in such newspapers and magazines as were not above participating in the profits of this fraud were the mediums by which Willard-Oneal got in touch with their victims. The advertisements urged the reader to send for the free illustrated book and full information regarding the alleged treatment. Those that sent for it received a small booklet with circular matter and an order blank. The following quotations from the booklet indicate the character of the claims made for the treatment:



Dr. Willard’s Home Treatment Highly Endorsed by Leading Dentists and Physicians

In addition to being endorsed by

Hundreds of Users

It is highly endorsed and recommended by a host of prominent

DENTISTS *and* PHYSICIANS

The statement of some of these professional men follow. Please note carefully the unstinted praise they bestow upon Dr. Willard’s Home Treatment and their expressions of satisfaction at the results they themselves secured from its use in their own practice. Dr. Willard’s Home Treatment has earned their written commendations, *but it is no less significant that other Dentists are sending their patients to us for treatment.*

READ — DECIDE — ACT

Among Other Well Known Dentists and Physicians who Unhesitatingly Endorse Dr. Willard’s Method of Home Treatment Are the Following:

Geo H Candler M. D.
W B. Laughlin, M D
J. E Ensminger D D S
A. D. Van Orman, D.D.S.
R. J McDonald, D. D. S.
T. Perin, D D S
W. Grear, M. D
T. J. Hofler D D. S
T. J. Agnew, M. D
G E. Sandstedt, M.D.
M. W. Eddleman, M D

NOTE:

It will be readily understood by all why we do not publish the addresses of these professional men. If we did, they would perhaps receive hundreds of letters, many of which they could not be expected to take time from a busy practice to answer. Therefore we do not publish their addresses, but you may have them cheerfully upon request.

Equally convincing are the letters of testimony, printed elsewhere, from users themselves. Please read these also.

Dr. Willard has eliminated all fear, pain and dread and offers instead a simple common-sense, but scientific, method of self-treatment remedies that remove the cause and correct the effects.

DR. F. W. WILLARD, Inc.
219 So. Dearborn St., CHICAGO, ILL.

One of the circulars sent out by Willard professed to contain testimonials from “leading dentists and physicians” together with the names of such physicians who had “unhesitatingly endorsed” Willard’s treatment. Here are two pages of this circular reproduced in miniature.

> “I have originated and perfected my two-fold treatment—a treatment which is both local and constitutional—which has had and is having such remarkable success. I may claim in all modesty that I probably have treated more cases of Pyorrhea than any other dentist in this country, and the fact that I have been so universally successful proves that my treatment is correct. This is why you should pay close attention to one who knows the real and underlying cause of this trouble and who knows how and why it may be relieved by a simple, inexpensive home treatment.”
>
> “Dr. Willard’s treatment is a two-fold or combination treatment. Dr. Willard’s treatment consists of remedies for relieving and counteracting the local conditions in the mouth. The first essential is absolute cleanliness, and this is secured by ingredients, carefully and scientifically compounded for this special purpose that kill the surface germs and render the mouth tissues antiseptically clean. It was necessary to spend a great deal of time in experimentation before it was possible to produce a remedy that was at the same time very powerful as a germicide and cleanser and non-irritating to the delicate mucous membrane of the mouth. In addition to these qualities it contains the wonderful remedy, Emetine, which is claimed by many noted authorities to be an absolute specific for Pyorrhea. There is no alcohol or any harmful substance in it.”
>
> “The next step after antiseptically cleansing the mouth and gums is to combat the diseased condition existing in the gums themselves. This is accomplished by means of a medicated cream—extremely penetrating—that is gently rubbed into the gums with the finger. . . . Its effects are apparent almost at once and great relief may be confidently expected from the very start.”

PLAYING ON FEAR

In all his “literature” Willard emphasized and kept ever before the mind of the reader the fact that some dental operations are accompanied by pain while his mail-order treatment was painless. For instance:

> “Painful Operations and Treatment may Be Avoided.”
>
> “With Dr. Willard’s treatment there is absolutely no suffering of any kind.”
>
> “Loose and diseased teeth may be restored to their normal health and firmness without the least discomfort.”
>
> “The gums may be healed without the slightest pain.”

The entire scheme is well set forth by Judge W. H. Lamar, solicitor for the Postoffice Department, in his memorandum to the postmaster-general recommending the issuance of a fraud order. We quote freely from the memorandum:

“The booklet contains a number of testimonials from persons who are alleged to have used Dr. Willard’s home treatment with success. Nearly all of the testimonials relate to cases of pyorrhea which were in advanced stages, and a careful reading of the entire booklet unquestionably leads the reader to believe that the treatment in question will cure practically all stages of the disease. In the booklet Dr. Willard gives the customer certain alleged symptoms of pyorrhea, and by the use of these symptoms and the symptom blank already referred to the patient ‘diagnoses’ his own case. Dr. Willard states:

> Symptoms of Pyorrhea or Riggs Disease
>
> It may be that you who read this are already in the clutch of this awful disease of Pyorrhea, sometimes called Riggs Disease, and that you now know it. If you are in doubt read the following pages, whereon the symptoms are enumerated and make sure. To conclude that Pyorrhea is not present when it is, and to neglect immediate treatment on that account, would indeed be a grave mistake, and one which you might very well repent for the balance of your life. Therefore, make sure. Then act AT ONCE.
>
> Read the following and determine how far the disease has advanced in your case.

“Testimony of the experts at the hearing clearly shows that it is impossible for a patient to diagnose his own case, for the reason that a diagnosis of pyorrhea requires considerable clinical experience, and further that it is impossible for a dentist to diagnose pyorrhea without examination of the patient. Even when a personal examination is made it is possible for a dentist who is a beginner to mistake other mouth lesions for pyorrhea or vice versa. It appears that gingivitis, caused by lack of care in the mouth, and certain catarrhal conditions will often simulate pyorrhea.

“Reading of the booklet gives the impression not only that Dr. Willard’s home treatment will cure practically all cases of pyorrhea, even in advanced stages, eliminate all pain in connection therewith, and save the patient large sums of money which he would otherwise have paid to dentists, but instills in the minds of patients who are in fact not suffering from pyorrhea in any form, fear of the disease.

THE “TREATMENT”

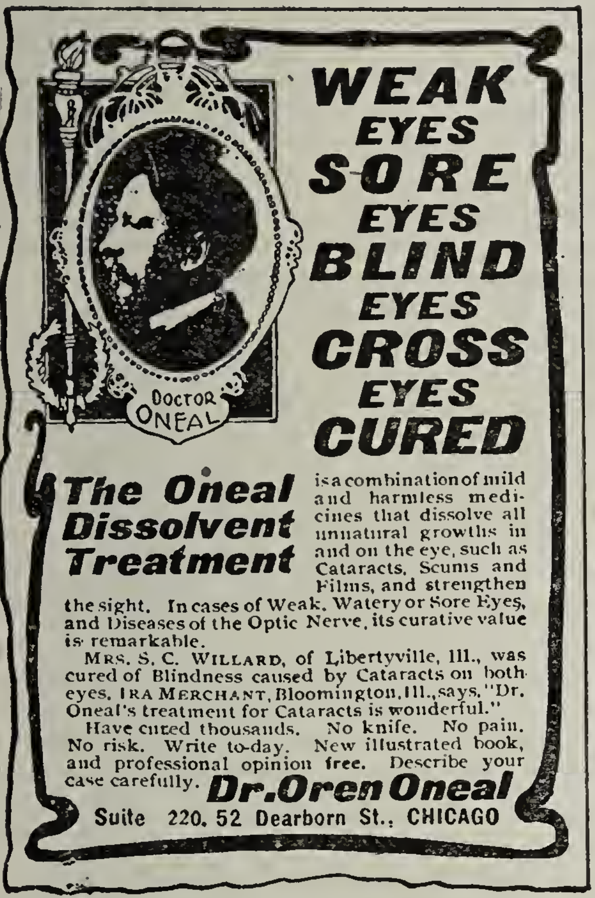
The ingredients in the Willard treatment were analyzed by the Bureau of Chemistry, Department of Agriculture, and the government’s report gives a detailed analysis of the preparations. The findings of the government chemists can be summarized as follows:

Dr. Willard’s K-3 Tablets.—These were sugar coated tablets with a menthol flavor consisting essentially of the sulphocarbolates of zinc and calcium and a small quantity of the bismuth salt. Practically half of the tablet was made up of a mixture of starch, sugar and talc.

Dr. Willard’s L-2 Tablets.—These were light tan in color and contained washing soda, baking soda, Glauber salts and resins with a trace of colchicin. Over 38 per cent. of the tablets was a mixture of starch and talc.

Laxative Liver Tonic Tablets.—These contained some laxative drug such as cascara, aloes or podophyllin. Over 70 per cent. of the tablet was made up of a mixture of chalk, gypsum, talc and sugar.

Dr. Willard’s Dentol.—These were tablets that the purchaser was told to dissolve in water and use the solution as a mouth wash. Great stress was laid on the fact that the tablets contained emetin. The federal chemists found that over 96 per cent. of the tablets was made up of milk sugar and boric acid, while there were small quantities of menthol, thymol and eucalyptol. The total ipecac alkaloids (emetin) found by the chemists was only fifteen-hundredths of 1 per cent. The Willard concern claimed that paraform was also present in these tablets but it was not found.



WEAK EYES
SORE EYES
BLIND EYES
CROSS EYES
CURED

The Oneal Dissolvent Treatment is a combination of mild and harmless medicines that dissolve all unnatural growths in and on the eye, such as Cataracts, Scums and Films, and strengthen the sight. In cases of Weak, Watery or Sore Eyes, and Diseases of the Optic Nerve, its curative value is remarkable.

Mrs. S. C. Willard, of Libertyville, Ill., was cured of Blindness caused by Cataracts on both eyes. Ira Merchant, Bloomington, Ill., says, "Dr. Oneal's treatment for Cataracts is wonderful."

Have cured thousands. No knife. No pain. No risk. Write to-day. New illustrated book, and professional opinion free. Describe your case carefully. **Dr. Oren Oneal**

Suite 220, 52 Dearborn St., CHICAGO

Photographic reproduction reduced of an old-time advertisement of Oren Oneal in the heyday of his eye-quackery.

Dentifirm.—This, Willard claimed, was "something absolutely new to the dental profession—a massage preparation for the gums of rare medicinal, as well as unusual cleansing qualities." The federal chemists found that it was a mixture of glycerin, starch, borax, chalk and soap flavored with oil of cloves and colored with a red dye!

Quoting from the solicitor's memorandum:

". . . The treatment contains a small amount of emetin, one of the constituents of ipecac, which in recent years has been brought forward as efficacious in the treatment of pyorrhea. A difference of opinion exists among the profession as to the value of emetin applied subcutaneously by injection into the arm or by the use of a blunt needle forcing the solution into the pus pockets which are found about pyorrheal teeth. The Willard treatment does not contemplate the use of emetin in either of these ways. Instead, a small amount of emetin is put in the 'dentifirm' paste with which the patient massages his gums. The expert witnesses agreed that even were emetin possessed of value its administration in such small doses as are contained in the Willard treatment and in the manner prescribed would have no effect."

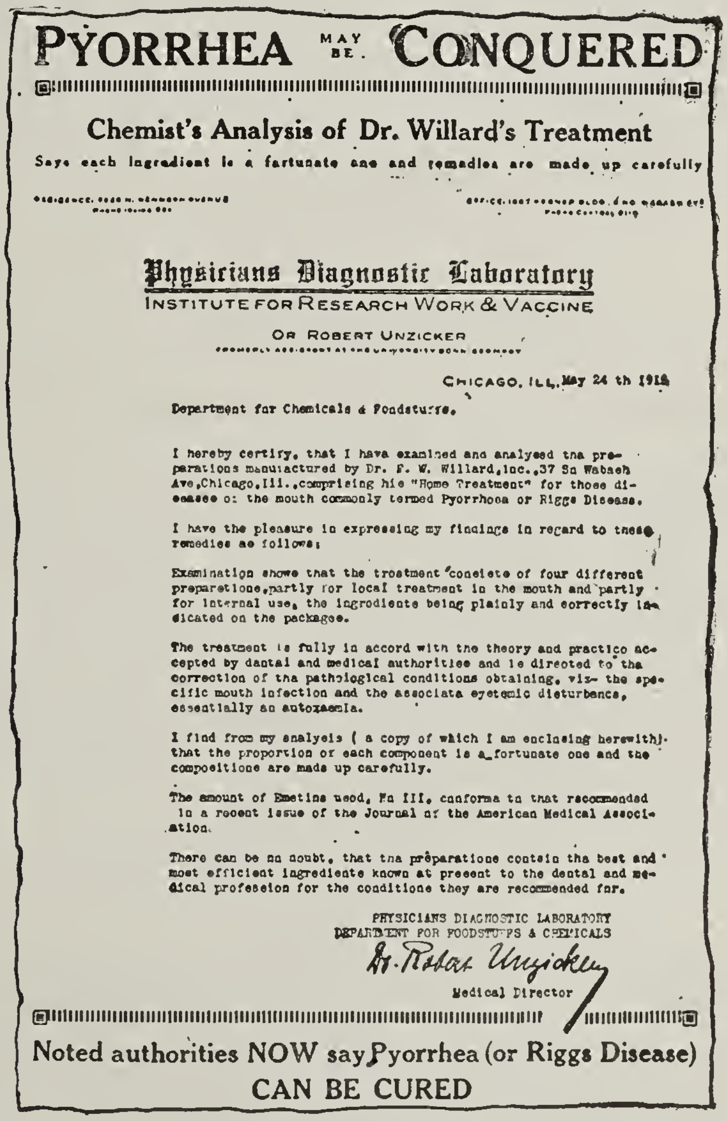
The government called oral surgeons, pathologists and dentists, all of whom agreed that Willard's home treatment administered by the patient himself at his home would be ineffective to cure or relieve pyorrhea. An interesting feature of the government's investigation was the documentary evidence collected by Inspector D. F. Angier of the Chicago division, who, as readers of The Journal will remember, has done particularly valuable work in investigating other medical mail-order frauds. In the course of his investigations of the Willard concern Inspector Angier wrote to Willard, under various names, describing various mouth disorders, none of which indicated pyorrhea in any form. In reply to all of his inquiries, the inspector received in every case the booklet "How to Save Your Teeth, A Home Treatment for Pyorrhea" which has already been quoted from. He also received the customary form letters and circular matter soliciting orders for the Willard treatment.

In one instance the inspector sent $1 for a "trial order" of the "treatment." The treatment was sent and thereafter Mr. Angier received a series of form letters urging him to purchase the full treatment which was offered at $4, instead of the usual $5. In the particular instance in which this "trial treatment" had been sent, Willard had already acknowledged in a letter to Inspector Angier that the case described was not one of pyorrhea but a condition which the Willard treatment was not claimed to benefit. To quote further from the solicitor's memorandum:

"All of the letters received by the inspector in the course of the correspondence were signed 'F. W. Willard, M.D., D.D.S.,' and even the form-letters have a decidedly personal tone calculated to lead the patient to believe that they were written by Dr. Willard. Dr. Willard on cross-examination stated that he had no knowledge of the letter in which a case was diagnosed as a mild case of pyorrhea and it appeared as a matter of fact that a rubber stamp signature was used. The rubber stamp was so excellent an imitation of Dr. Willard's signature that he himself on cross-examination was unable to state whether letters had been actually signed by him or stamped. There is no doubt that in all cases the patient thought he was receiving a personal letter from Dr. Willard, and further that it was the intention of both the owners of the concern and Dr. Willard to create the impression that the patient was receiving his personal attention and professional advice.

SUMMARY

The whole scheme is well described toward the end of the solicitor's memorandum thus:



PYORRHEA MAY BE CONQUERED

Chemist's Analysis of Dr. Willard's Treatment

Says each ingredient is a fortunate one and remedies are made up carefully

Physicians Diagnostic Laboratory
INSTITUTE FOR RESEARCH WORK & VACCINE
Dr Robert Unzicker

Chicago, Ill. May 24 th 1916

Department for Chemicals & Foodstuffs.

I hereby certify, that I have examined and analysed the preparations manufactured by Dr. F. W. Willard, Inc., 37 So Wabash Ave, Chicago, Ill., comprising his "Home Treatment" for those diseases of the mouth commonly termed Pyorrhoea or Riggs Disease.

I have the pleasure in expressing my findings in regard to these remedies as follows;

Examination shows that the treatment consists of four different preparations, partly for local treatment in the mouth and partly for internal use, the ingredients being plainly and correctly indicated on the packages.

The treatment is fully in accord with the theory and practice accepted by dental and medical authorities and is directed to the correction of the pathological conditions obtaining, viz- the specific mouth infection and the associate systemic disturbance, essentially an autoxaemia.

I find from my analysis (a copy of which I am enclosing herewith) that the proportion of each component is a fortunate one and the compositions are made up carefully.

The amount of Emetine used, No III, conforms to that recommended in a recent issue of the Journal of the American Medical Association.

There can be no doubt, that the preparations contain the best and most efficient ingredients known at present to the dental and medical profession for the conditions they are recommended for.

PHYSICIANS DIAGNOSTIC LABORATORY
DEPARTMENT FOR FOODSTUFFS & CHEMICALS
Dr. Robert Unzicker
Medical Director

Noted authorities NOW say Pyorrhea (or Riggs Disease)
CAN BE CURED

One of the traditions of mail-order quackery is that some sort of an analytical report should be published endorsing the "treatment" advertised. The Willard-Oneal concern held to the tradition. Here is a reproduction, greatly reduced, of a self-styled "analysis" of the Willard treatment issued by one "Dr. Robert Unzicker" who did business under the imposing title "Physicians Diagnostic Laboratory." So far as our records show, Unzicker is not a physician.

"In summary, it may be said that the respondents are selling through the mails a worthless home treatment for pyorrhea to any one who will buy it, irrespective of whether or not he has pyorrhea, or, if he has pyorrhea, irrespective of whether or not it has reached that incurable stage which they admit exists; that in order to increase their business they are leading persons suffering from minor mouth disorders to believe themselves to be afflicted with pyorrhea, claiming it to be a 'loose term,' whereas in fact it has a definite medical significance; that the public has already been defrauded of several hundred thousand dollars through the operations of the respondents; and finally that if prompt steps are not taken to prevent further use of the mails by the respondents the public will not only be further defrauded, but those suffering from pyorrhea will be discouraged from securing proper treatment which might save the teeth if taken in time."

From the memorandum it seems that Willard and Oneal made a strenuous effort to continue taking in the $75,000 annually and submitted to the postoffice department a new set of advertising urging that they had completely modified the claims previously made. They stipulated that if permitted to continue in business they would not advertise their treatment as for pyorrhea or Riggs' disease nor use the mails to solicit money for the sale of a pyorrhea treatment. The solicitor of the Postoffice Department called attention to the fact that under the stipulations suggested, the Willard treatment could still be advertised and sold through the mails provided no mention was made of pyorrhea or Riggs' disease. As Willard-Oneal had claimed throughout the hearing that the "Willard Treatment" was specially designed for the relief of pyorrhea, the suggested stipulation was a virtual admission that its sale for such a purpose was fraudulent. The solicitor pointed out that it was difficult to understand why it should be deemed valuable for any other purpose than the one for which it was claimed to be specially prepared. The memorandum closed with the following recommendation:

"After a careful consideration of all of the circumstances of this case I am convinced that it is one in which the protection of the public demands the issuance of a fraud order . . . I find that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and therefore recommend that a fraud order be issued against the names appearing in the caption of this memorandum."

The fraud order was issued, Dec. 28, 1916.

Correspondence

Compulsory Health Insurance Unnecessary as a Public Health Measure

To the Editor:—In view of the fact that the propaganda for compulsory health insurance is made to rest largely on the assumption, which, however, is quite erroneous, that the health progress of countries under social insurance has been more pronounced or effective than the corresponding health progress of countries which have not established at least compulsory health insurance, such as the United States, Canada and Australia, or any one of the great South American republics, it may interest your readers to know that during the last twenty years the sanitary progress of the cities of New York and Berlin has been as follows:

Comparing the period 1888-1892 with the period 1908-1912, since there are no trustworthy data of a later date for the city of Berlin, it appears that the general death rate of New York decreased from 25.8 per thousand to 15.5, or 10.3 per thousand, equivalent to 39.9 per cent. The death rate of Berlin during the same period decreased from 20.9 per thousand to 15.1, or 5.8 per thousand, equivalent to 27.8 per cent. The average death rate of both cities during the period 1908-1912 was practically the same. It would therefore seem entirely erroneous to claim that the sanitary progress of the largest city of Germany was to a measurable extent affected by compulsory health insurance.

The mortality from pulmonary tuberculosis in the city of New York decreased from 32.4 per 10,000 during the first five years of the twenty-year period to 18.1, or 14.3 per 10,000, equivalent to 44.1 per cent. The corresponding decrease in the pulmonary tuberculosis death rate of Berlin was from 28.3 per 10,000 to 17.9, or 10.4 per 10,000, equivalent to 36.7 per cent. The actual as well as the relative decrease in the pulmonary tuberculosis death rate was therefore more pronounced in the city of New York, *without* compulsory health insurance, than in the city of Berlin, where practically the entire wage-earning population is subject not only to the provisions of the compulsory health insurance law, but also to the even more drastic provisions of a compulsory invalidity insurance law. It may be said in this connection that very little, indeed, has been done by sickness insurance societies in the direction of the prevention and cure of tuberculosis among wage earners. What has been done in this direction has been almost exclusively in connection with invalidity insurance, for the obvious reason that the comparatively short period during which medical attendance is provided would be of little, if any, real value in connection with the treatment of chronic or prolonged diseases.

The mortality from typhoid fever, which is perhaps the most sensitive index of sanitary progress, decreased in New York City from 2.5 per 10,000 to 1.1, or 1.4 per 10,000, equivalent to 56 per cent. The corresponding decrease in the typhoid fever death rate of the city of Berlin was from 1.4 per 10,000 to 0.3, or 1.1 per 10,000, equivalent to 78.6 per cent. The actual reduction in the typhoid fever death rate of the city of New York was therefore greater than the corresponding reduction in the typhoid fever death rate of Berlin, which, however, has now been reduced so low that the mortality is practically negligible. However, it requires to be considered that the city of New York has had to assimilate an enormous immigrant population, aside from the fact that large numbers annually go on vacation and contract typhoid fever in unsanitary resorts, etc. It is a safe assumption that a large portion of deaths from typhoid fever in the city of New York at the present time are cases contracted outside of the city.

An equally sensitive index of effective sanitary progress and control is the mortality from diphtheria and croup. The death rate from these diseases in the city of New York decreased from 13.3 per 10,000 to 3.2, or 10.1 per 10,000, equivalent to 75.9 per cent. The corresponding decrease in the death rate of Berlin was from 8.3 per 10,000 to 3.3, or 5.0 per 10,000, or 60.2 per cent. The mortality from diphtheria and croup is now almost exactly the same in the two cities, and it may safely be asserted that the reduction has been achieved in both cities without any reference whatever to compulsory health insurance.

A large amount of additional statistical and other evidence can be brought forward to prove that the sanitary or public health progress of the German Empire has not been in advance of corresponding progress made in this country or Canada or Australia. Since the death rate is practically proportionate to serious sickness rate, it is a safe conclusion that the general health conditions of this country, with particular reference to wage earners, are, broadly speaking, more satisfactory at the present time than at any time in the past, and that therefore the establishment of compulsory health insurance as a public health measure is wholly unnecessary. Frederick L. Hoffman.

Statistician, Prudential Insurance Company, Newark, N. J.

Blood Transfusion

To the Editor:—In your answer to the inquiry of M. Y. D. regarding blood transfusion in The Journal, Nov. 25, 1916, it was stated that "in November, 1666, according to the diary of Samuel Pepys, blood transfusion from one dog to another was performed." I should like to amplify your perfectly correct quotation for the benefit of M. Y. D. and others interested in the subject.

It was in February, 1665, that Richard Lower, while working in Thomas Willis' laboratory at Oxford, transfused blood from one animal to another. Lower was "that expert anatomist" who had assisted Willis in his dissections of the brain and had drawn, with Christopher Wren, the later famous architect, some of the remarkable plates for Willis' celebrated book "Cerebri Anatome." It is thought that Wren first suggested the transfusion experiments following some infusion experiments which he had done in the Oxford laboratory.

Lower's demonstrations were carried out before several of the Oxford doctors and a few months later before the Royal Society in London. An account of Wren's early experiments with the help of Robert Boyle, the physicist, is found in No. 7 of the *Philosophical Transactions of the Royal Society* for Dec. 4, 1665, and Lower's transfusion before the Royal Society in No. 20, Dec. 17, 1666. Lower transfused first from vein to vein and later from carotid to jugular by the aid of a quill, using sheep for demonstration purposes. During that same year M. Denis and M. Gayant performed similar experiments in France. A letter from M. Denis is published in No. 25, May 6, 1667, of the *Transactions.*

Interesting discussions on the dispute which arose at the time as to the priority of transfusion are also found in the *Transactions* for May 6 and Oct. 21, 1667. It seems certain that as early as 1660 Wren, Lower and Boyle had carried out, at Oxford, experiments on infusion and later on transfusion of blood. Boyle injected opium (through a quill into a vein), stupefying an animal. It was not, however, until May 17, 1665, that a public demonstration of transfusion was held at the Royal Society in London. The Royal Society notes that "a Benedictine Fryer discoursed of it at M. de Monmours, ten years ago," but there is no more evidence to strengthen this French claim. The report of the Royal Society wisely concludes, "But whoever the Parent be, that is not so material as all that lay claim to this child should joyn together their efforts and cares to breed it up for the service and relief of human life, if it be capable of it; and this is the main thing aimed at and sollicited in this Discourse."

"In accordance with this sound advice transfusion experiments proceeded, and were soon carried out on human subjects. For instance, on November 23, 1667, transfusion was practiced in a medical case on one Mr. Arthur Coga at Arundel House, London, in the presence of 'considerable and intelligent persons,' by Dr. Lower and Dr. King, the blood of the sheep being used. Their report states that 'the man after this operation as well as in it found himself very well, and hath given his own Narrative under his own hand enlarging more upon the benefit he thinks he hath received by it than we think fit to own to as yet'" (Gotch, "Two Oxford Physiologists, Lower and Mayon," Oxford, 1908). The carotid of a sheep was connected to a vein in Coga's arm by a silver tube. The full report appears in the *Philosophical Transactions,* No. 30, Dec. 9, 1667.

Henry Viets, M.D., Oxford, England.

Lack of Efficient Teaching in Urology

To the Editor:—I have read, with interest and approval, Dr. Irvine's "Notes on the Teaching and Treatment of Syphilis" (The Journal, Dec. 30, 1916, p. 1987). I agree with him that medical colleges are not preparing their graduates to combat syphilis effectively, and that a social injustice is thereby perpetuated.

In urology, a like condition exists. In over ten years' service at the North Hudson Hospital, I have not found one intern who was really competent to treat gonorrhea or to use the catheter. And most of them came from New York medical schools, which certainly do not lack material for teaching clinical urology.

These men are familiar with the cystoscopic appearances of the bladder, and know the indications for and technic of such operations as nephrectomy and prostatectomy. They have been taught major procedures which few of them will ever have occasion or desire to perform, but not how to meet the every-day urologic problems of a general practice.

Not a few recent graduates, therefore, progressive in everything else, even syphilis, treat urethral disease as their forefathers did. For gonorrhea they prescribe the same old balsamics and gastro-irritants and the same astringent injections, spoiling their patients' stomachs and laying the foundations for infiltrations and strictures, but not actually curing the disease.

This is not the fancy of an alarmist. It is a sober estimate of existing conditions, based on a fair sized urologic practice. In the cities, conditions are better than formerly, owing to the great recent development of urology. Many city practitioners habitually refer their urethral patients to the urologist, and many patients go to him directly.

The safe and proper technic of urethral instrumentation and irrigation are a matter of manual training, to be acquired by plenty of actual work done under expert supervision. The genito-urinary clinics of our large medical centers offer more than enough material for practice.

The responsibility for this lack of training lies with the colleges. C. L. DeMeritt, M.D., Hoboken, N. J.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF CEREBRAL HEMORRHAGE

To the Editor:—One of my patients, a woman, aged about 68, has partial paralysis of the left side due, I think, to cerebral hemorrhage. I should like to know the latest accepted treatment of this condition.

G. M. H., M.D., Lancaster, Ky.

Answer.—It is exceedingly difficult to advise regarding the treatment of a person without more complete details of history and physical findings, since each patient presents a special problem. Presumably this patient is partially paralyzed from "cerebral hemorrhage" with no other complications.

This is the commonest cause of the condition described by our correspondent. Embolism or thrombosis of cerebral arteries may also give a similar result. In general the treatment should consist of rest in bed immediately following the attack. The bowels should be moved if necessary with a mild cathartic. Good nursing care is important and adds to the comfort of the patient. In the days immediately following the onset of paralysis, the position of the patient should be changed from side to side at intervals. The use of inflated rubber rings and cotton pads will assist in preventing pressure necrosis of the skin of the back, heels, etc. Later in the course, massage and passive motion will aid in preventing contractures.

Other special features of the individual case may call for changes or additions in treatment. Arteriosclerosis is frequently accompanied by cardiac hypertrophy and increased blood pressure, and, in plethoric persons, bleeding has sometimes been advised to reduce blood pressure. Cerebral hemorrhage may, however, occur in persons in whom arteriosclerosis is not accompanied by greatly increased pressure. The possibility of syphilis as a cause of the arteriosclerosis should be investigated, and when it is found, iodids and later mercury are indicated. Small doses of iodids are often advised in nonsyphilitic arteriosclerosis.

Other causes of hemiplegia of central origin, such as tumors, in a person over 60, usually give rise to additional symptoms and physical signs which will be discovered in the course of the routine examination which should be made of every patient, no matter what the complaint.

While cerebral hemorrhage with resultant hemiplegia may often result fatally in the first attack, the patient may recover the use of the extremities to a surprising degree, and by living a quiet life with moderation in all respects, may exist in comfort for years.

INCOMPATIBLE DISEASES

To the Editor:—Can you give me the title of any books or articles on diseases incompatible to each other; that is, diseases which cannot exist in the human body at the same time? F. W. S.

Answer.—The following is a list of articles on this subject:

Gerhardt, D.: Ueber günstige Beeinflussung chronischer Erkrankungen durch interkurrente Infectionskrankheiten, *Mitt. a. d. Grenzgeb. d. Med. u. Chir.,* 1912, **25**, 578-586.
Hutchinson, J.: Hunterian Lecture on the Laws of Partnership in Disease, *Lancet,* London, 1891, **2**, 860-864.
West, S.: Chorea Cured by Typhoid Fever, *St. Barth. Hosp. Rep.,* 1886, **22**, 224.
Moran, J. F.: Antagonism of Erysipelas in Disease, *Virginia Med. Month.,* 1894-1895, **5**, 59-66.
Bury, J. S.: Cases Illustrating the Apparent Beneficial Effect of One Disease on Another, *Med. Chron.,* 1907, **46**, 277-280.
Dufour, L.: Antagonisme entree la diphtérie et la fièvre typhoïde, *Normandie méd.,* 1897, **12**, 440.
Discussion of Beneficial Effects of One Disease on Another, *Chir. Jour.,* 1898, **12**, 17, 57.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Connecticut: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Illinois: Chicago, Feb. 21-23. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

Kansas: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Vermont: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

Arizona July Report

Dr. John Wix Thomas, secretary of the State Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 5-6, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 11, of whom 8 passed, including 1 osteopath, and 3 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, Los Angeles	(1916)	79.5
University of California	(1916)	80.6
Bennett Medical College	(1914)	78.1
Northwestern University	(1914)	85.6
Rush Medical College	(1915)	82
John A. Creighton Medical College	(1916)	75.7
University of Virginia	(1912)	79.4
FAILED		
Arkansas Industrial University	(1884)	51.6
University of Louisville	(1916)	73.2
Baltimore Medical College	(1913)	66.6

Utah July Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports the oral and written examination held at Salt Lake City, July 5-6, 1916. The total number of subjects examined in was 19; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 5, all of whom passed, including 1 osteopath. Five candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Rush Medical College	(1916)	87
University of Illinois	(1916)	87
Barnes Medical College	(1911)	76
Washington University	(1916)	81.9

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of Colorado	(1914)	Colorado
George Washington University	(1910) (1911)	Dist. Colum.
Iowa College of Physicians and Surgeons	(1892)	Nebraska
University of Virginia	(1897)	Idaho

New York September Report

Mr. H. H. Horner, Chief, Examinations Division of the New York State Board of Medical Examiners, reports the written examination held at Albany, Buffalo, New York and Syracuse, Sept. 19-22, 1916. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 146, of whom 89 passed and 57 failed, including 1 osteopath. Fourteen candidates were licensed through reciprocity, three were granted reregistration licenses, and 1 candidate was licensed because of eminence and authority in the medical profession. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
University of Alabama	(1909)	1
Yale University	(1912) (1916)	2
Georgetown University	(1914)	1
Johns Hopkins University	(1910,2) (1911) (1914)	4
University of Maryland	(1915,2) (1916,2)	4
Harvard University	(1914) (1916)	2
Detroit College of Medicine	(1911)	1
Albany Medical College	(1914,2) (1915,3) (1916,4)	9
Columbia University	(1909) (1914,2) (1915,3) (1916,7)	13
Cornell University	(1914) (1915,2) (1916,3)	6
Fordham University	(1913) (1915,2) (1916,4)	7
Long Island College Hospital	(1915) (1916,5)	6
New York Homeopathic Medical College and Flower Hospital	(1914,2) (1915,4) (1916,5)	11
Syracuse University	(1916)	1
University and Bellevue Hospital Medical College	(1913) (1914) (1915,3) (1916,3)	8
University of Buffalo	(1915) (1916,2)	3
Jefferson Med. Coll. of Philadelphia	(1912) (1913) (1916,2)	4
University of Pennsylvania	(1916)	1
Woman's Med. Coll. of Pennsylvania	(1914) (1915)	2
University of Vermont	(1915)	1
University of Toronto	(1914)	1
McGill University	(1915)	1
FAILED		
Chicago College of Medicine and Surgery	(1914)	1
Illinois Medical College	(1898)	1
Northwestern University	(1915)	1
University of Louisville	(1914)	1
Tulane University of Louisiana	(1911)	1
Baltimore Medical College	(1913)	1
College of Physicians and Surgeons, Baltimore	(1912)	1
University of Maryland	(1916)	1
Harvard University	(1913)	1
Tufts College	(1905) (1915)	2
University of Michigan Medical School	(1909) (1916)	2
Albany Medical College	(1912) (1914) (1915) (1916)	4
Columbia University	(1914) (1915,2)	3
Fordham University	(1913) (1914) (1916,3)	5
Long Island College Hospital	(1915)	1
New York Homeopathic Medical College and Flower Hospital	(1914,3) (1915,5) (1916,4)	12
New York Med. Coll. and Hosp. for Women	(1913) (1915)	2
Niagara University	(1898)	1
University and Bellevue Hospital Medical College	(1916)	1
University of Buffalo	(1914)	1
Jefferson Med. Coll. of Philadelphia	(1908) (1912) (1916)	3
Medico-Chirurgical College of Philadelphia	(1915) (1916)	2
Woman's Medical College of Pennsylvania	(1916)	1
University of Vermont	(1912) (1916)	2
University of Toronto	(1916)	1
University of Bonn, Germany	(1889)	1
University of Naples, Italy	(1905)	1
Syrian Protestant College, Beirut	(1912)	1
University of St. Joseph, Beirut	(1894)	1

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of Maryland	(1914)	New Jersey
Boston University	(1900)	New Jersey
Fordham University	(1915)	New Jersey
N. Y. Homeo. Med. Coll. and Flower Hosp.	(1893) (1915)	New Jersey
	(1915)	Virginia
Syracuse University	(1913)	Delaware
Cleveland Homeopathic Medical College	(1905)	Ohio
Starling-Ohio Medical College	(1914)	Ohio
Western Reserve University	(1904)	Ohio
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1906)	Virginia
Medico-Chirurgical College of Philadelphia	(1904)	New Jersey
University of Virginia	(1915)	Virginia
University of Palermo, Italy	(1902)	Michigan

Stronger Tests for Drugless Healers

The Illinois State Board of Health has ruled that drugless healers are to be given the same examination as physicians, except in surgery, obstetrics, materia medica and therapeutics. Drugless healers are not authorized by law to practice operative surgery or obstetrics, nor are they to use drugs or medicines internally in their practice. Examination papers on "practice" are to be graded by members of the various schools of healing selected by the state board of health for that particular purpose. Formerly drugless healers were given a comparatively simple examination in anatomy, chemistry, physiology, pathology and histology, symptomatology, and hygiene. The examination now covers seven groups of subjects: anatomy; chemistry, etiology and hygiene; physiology and neurology; pathology and bacteriology; physical diagnosis, ophthalmology and otology, and pediatrics; gynecology, laryngology, rhinology and medical jurisprudence; and practice.

New Jersey and Chiropractic Colleges

The Department of Public Instruction of New Jersey states that the New York School of Chiropractic, located in New York, and supposedly operating under a New Jersey charter, has not been chartered or registered in New Jersey, and that the New Jersey College of Chiropractic, located at Newark, N. J., although chartered in the state, was, on May 1, 1915, refused permission by the state board of education to grant degrees.

Book Notices

The Treatment of Diabetes Mellitus. With Observations on the Disease Based on 1,000 Cases. By Elliott P. Joslin, M.D., Assistant Professor of Medicine, Harvard Medical School. Cloth. Price, $4.50 net. Pp. 440, with illustrations. Philadelphia: Lea & Febiger, 1916.

"In writing this book," the author says, "I have tried to record those facts which have proven of service to me in the treatment of diabetes," and it is in this sense that the title gives a true index of the scope of the work; for the writer has by no means limited himself to the discussion of those things which in a narrower sense would be classified under the heading of treatment. It represents in reality a summation of the work done by Dr. Joslin and his co-workers on the subject of diabetes. "For the benefit of my patients," he adds, "it has seemed worth while to summarize my work with them during the last eighteen years, and I have honestly tried in these pages to let the 400 fatal cases tell their useful lessons to the 600 living."

Whereas in addition to such able and well known foreign treatises as those of Naunyn, Lépine and von Noorden, there have appeared within the last four years three other volumes on diabetes from the pens of American writers, while a fourth is in course of preparation, making in all five American books on diabetes within as many years, one may properly ask what new or special phase of the subject or what improvement in the method of exposition this one is designed to present. "I would not have wished to write a book on diabetes three years ago," says Joslin; "today it is a pleasure and an inspiration because the improvement in treatment is beyond question. The introduction of fasting and the emphasis on physical exercise by Dr. F. M. Allen, of the Rockefeller Institute for Medical Research, has decidedly changed the outlook for this class of patients. It is encouraging to be able to report that during the last year the mortality of my patients was approximately 20 per cent. lower than for the previous years." A fresh presentation of the subject of treatment, with particular reference to the use of inanition and exercise, as taught by Allen, is, then, the distinguishing feature of this book.

There are seven sections: the first (sixty pages), after preliminary definitions and distinctions between diabetic and other forms of glycosuria, in which prominence is given to the views of Allen, is devoted to statistics relating to diabetes. Conditions relating to diabetes within the United States receive a fuller exposition in this section than they have yet had elsewhere, and some new ground is covered. It will be found of value particularly to American readers for reference purposes. The second section of the book (seventy-seven pages), entitled "Important Factors in the Treatment of Diabetes," consists of subsections devoted to a variety of subjects, such as: "Naunyn's Conception of Diabetes Mellitus"; "Allen's Hypothesis: Diabetes—A Weakness of the Pancreatic Function"; "Is the Tendency of the Diabetic Glycosuria to Increase?"; "If the Urine of the Diabetic Patient is Sugar-Free, the Tolerance for Carbohydrates usually Improves"; "Hyperglycaemia" (twelve pages), based largely on original observation and recent American literature; "Blood Fat" (five pages), written by Prof. W. R. Bloor of the Harvard Medical School, and "Metabolism in Diabetes" (thirty pages), containing a discussion of the total metabolism in diabetes, observations on the respiratory quotient, and a consideration of contingent topics based on the studies of Benedict and Joslin on individuals in the fasting and diabetic states. This section ends with a chapter on acidosis. In the sense that all obtainable knowledge of diabetes may prove of service in the treatment of cases, the material of this section bears on treatment, some of it directly. But it is of interest more especially from the standpoint of physiology. Some features of this section will be referred to again. The third section is on methods of examining the urine, blood and respirations. The fourth section (twenty-eight pages) is devoted to principles of dietetics with special reference to diabetes. The fifth section (130 pages) takes up the treatment proper.

The use of inanition and the views of Allen are fully presented, with many citations of cases. The sixth section, referred to in the preface as a "diabetic's primer," has a content indicated by the following captions: "What Every Diabetic Should Know"; "Directions for Nurses in Charge of Diabetic Patients"; "A Diabetic History Chart for the Use of Institutions and Physicians"; "Chart for Dietary and Urinary Records"; "Actual Diets Employed to Render Patients Sugar-and-Acid-free"; "Hospital Treatment"; "Ambulatory Treatment," etc. The last section contains food and diet tables, recipes, menus, methods of recording hospital diets, and tables of equivalents.

The book as a whole forms a compact, well printed volume written in an intimate, readable style. It is interesting to note a transition in the character of the writer's work from the earlier to the later periods; for the first part of the book, patterned unmistakably after Naunyn and reflecting a time in the development of American medicine when statistical clinical studies of the Oslerian type prevailed, contrasts noticeably with the latter sections, based largely on the yield of an intensive experimental study. If in the past American writers have had just cause to complain of a neglect of their work by foreigners, they will have none here. The American literature receives all the credit due it, not to say more. That diabetes implies a weakness of the pancreatic function is an idea ascribed to Allen.

The discussion of treatment based largely on the extended use of inanition and the emphasis on physical exercises by Allen is full, clear and illumined by many original comments based on a wealth of clinical material, handled with system and scrupulous exactness of detail. It is a significant contribution to clinical medicine. Noteworthy are the specific directions for the graduated increase of diets without causing recurrence of symptoms in cases of severe diabetes which have been rendered sugar-free by fasting. The method of building up first the carbohydrate of the diet, then the protein, then the fat, the emphasis laid on the importance of finding and not exceeding the tolerance for fat, and of keeping the total food allowance within narrow enough limits will doubtless explain to many who have failed to keep patients with severe diabetes free of symptoms why they have failed. On the other hand, out of 184 cases treated in twenty-four years by fasting, there were thirty-one fatalities, twenty-one of the patients dying in typical coma, the rest with complications such as coma and gangrene, 1; uremic coma, 1; appendicitis, 2; carbuncle, 1; pulmonary embolism, cancer, anuria, tuberculosis, each 1; cardiac, 2. Dr. Joslin, however, does not admit that in any of these the fasting treatment, properly carried out, hastened the end. In this connection it should be said that fasting practiced by other clinicians, and even by some who are not open to criticism on the score that they have not carried it out intelligently, has nevertheless been observed to shorten life in a certain small fraction of cases. It will doubtless continue to be felt by some that human individuals in certain conditions can be injured or killed by withholding food and that if such persons, in addition to their other ailments, should happen to have a deficient pancreatic function besides, they may still be injured by fasting. This might be said to apply to some pluriglandular complexes with goiter and to all end-stages of inanition itself. It is to be regretted that in this book the writer has not set out with equal clearness, over against the indications for inanition, those situations in which it is no longer of any value or in which it may perhaps prove to be contraindicated.

The sections devoted to topics of interest chiefly from scientific points of view are useful especially because they contain many new and valuable clinical data and convenient collections of the recent published work of American writers.

This book will enable any physician who has diabetic patients under his care, and who will carry out the directions given, to obtain better results with his cases than are obtained by ninety-nine out of a hundred practitioners at the present time. It may be placed in the hands of nurses and patients with the result that the physician will receive intelligent cooperation and execution of his general orders, relieving him and his patients of annoyance and loss of time. It will thus perform a high humanitarian service. It is, moreover, a storehouse of data for the investigator to draw on when desired, and there will be few persons interested in diabetic metabolism from any standpoint at all who may not learn something of value from reading it through.

Social Medicine, Medical Economics and Miscellany

Quackery in Switzerland

In 1914, Dr. H. Hunziker of Basel sent out a question blank to several hundred physicians in Switzerland asking for data on the quacks in their vicinity—the numbers, names, former occupations, the diseases they claim to treat in particular, their remedies, whether their clients are natives or tourists, and whether they treat by correspondence. He reports in the *Correspondenz-Blatt für schweizer Aerzte*, Sept. 23, 1916, that most of the blanks were returned, and he comments on the data thus obtained. They show that in the different cantons there are from 0.08 to 6.04 quacks per 10,000 inhabitants. Two of the cantons place practically no restrictions on the practice of medicine, and one has 134.6 quacks to every hundred physicians. In the whole country there are 198 known quacks to 2,500 registered physicians, that is, 7.4 professional quacks to every hundred physicians. The laws in regard to the practice of medicine and advertising and sale of proprietaries differ widely in the different cantons, which renders it particularly difficult to combat evil practices. Important progress was realized in 1900, when a central committee was organized to pass on proprietaries. To date, eleven cantons have joined this organization. The central committee consists of a physician, a pharmacist and a chemist. They are appointed by the public health authorities of the canton of Zurich, and have a laboratory at Zurich where they examine all secret medicines and pharmaceuticals sent in for the purpose by the cantonal boards of health. They are tested for possible injury to health, suitable composition, fraud in advertising in labels and circulars, and selling price as compared with the value. The report on each is distributed to each of the cantonal boards of health and also to the national public health service. Up to April, 1916, they had thus reported on 921 proprietaries. The reports are published in the official weekly bulletin for Switzerland, the *Sanitarisch Demographische Wochenbulletin*. Hunziker calls on the medical societies of the cantons to watch for neglect or lax enforcement of existing regulations on these evils, "unpleasant as the task may be. We must bend our efforts further to have the gaps in the existing laws filled up. From one canton which puts no restraint on these practices, the whole country is flooded with the quacks' circulars. By looking up the past records of the quacks, means can often be found to drive them out of the country. It is the duty of the state to protect its citizens against fraud."

He outlines further a plan for a propaganda, enlightening the public by lectures, press articles, pamphlets, etc. "We must not wait for such opportunities, we must make them. We physicians are the leaders of the people in hygienic questions. It is our duty to enlighten them in the field of care of the health. People long for general information on such matters and they have a right to it, and if we do not supply it the quacks will. The hygiene commission of the Swiss *Gemeinnutzige Gesellschaft* has decided to issue a pamphlet on quacks and the fight against them. In conclusion, Hunziker advocates founding some central office where quacks' advertisements and literature can be collected and used for propaganda purposes, placed at the disposal of physicians. Here should be collected data about quacks, their former lives and records in general. The medical society in each canton should appoint some member who should collect all data on quack practices and examine newspapers, etc. The advertisements of quacks outside the canton should be sent to the central office for further investigation. Some quacks advertise in papers outside their own canton, and nothing is known in their home town of their practices. The board of health of Basel has offered to serve as the central antiquack office. He adds, "A weapon has finally been found against registered physicians who stoop to cooperate with quacks. Nothing is so detrimental to the prestige of the profession as this. The right to practice medicine was recently withdrawn by the Basel court from a physician who was working with a quack, and the court of appeals has confirmed the decision."

Industrial Pensions in Sweden

Regulations for the inauguration of the largest private pension project in the history of Sweden were promulgated, Nov. 19, 1916, at a meeting of the superior board of managers of Swedish industrial associations and various chambers of commerce, according to U. S. Consul B. M. Rasmussen at Göteborg (*Commerce Reports*, Jan. 2, 1917).

Men pay 10 per cent. of their salaries for their own pensions and 6 per cent. for family pension. Men from 21 to 34, women from 18 to 30, and new employees under 47 and 42, respectively, are required to insure themselves. Men are eligible to full pensions at 62, when they are to be paid 60 per cent. of the salary received at the age of 47, no pension being computed on a salary higher than 5,000 crowns ($1,340). Those persons joining the association between 34 and 42 may receive the full pension at 63 and 65, respectively, provided they reached their maximum salaries at 42. Irrespective of the age of joining the association or of receiving the maximum salary, pensioners may receive the full pension by paying premiums required in excess of the fixed maximum dues. All male members, whether married or single, are obliged to contribute to the family pension fund. A family pension is computed at 25 per cent. of the head of the family up to 5,000 crowns. Children surviving both parents are entitled to a pension up to 18. A member when he reaches the pension age, unmarried and active, is to be reimbursed for all sums he has contributed to the family pension fund.

As women live longer than men, their premium is 12 per cent. They are entitled to full pension at 57, provided they reach their highest compensation before 38. Membership is compulsory for all employees of concerns whose owners are members. Employees may be exempted if they already carry life insurance and are unable to pay additional dues.

Primary Sarcoma of Pancreas

In the *Clinical Journal*, Nov. 22, 1916, H. M. Fletcher cites a case of primary round-cell sarcoma of the pancreas with metastases occurring in a boy, aged 17, who was admitted to the hospital with the following history: Four months previously he suffered with pains in his chest and thighs; but he had not been away from military duty on that account. Three weeks prior to admission he was affected with left facial paralysis, which was preceded by a feeling of numbness on that side of the face. A week before admission the pains in the chest and thighs became much worse; the patient was constipated, but there was neither headache nor vomiting. His past history was good; he had suffered from no serious illness. The diagnosis was pleurisy. Fletcher felt that the patient's condition was due to something much more serious than a slight attack of pleurisy coinciding with Bell's palsy. He came to the conclusion, wrongly as it proved, that he was suffering from acute general tuberculosis with tuberculous meningitis. This diagnosis appeared to explain the general symptoms, such as pyrexia, headache and vomiting, and also the facial paralysis. The diagnosis of tuberculous meningitis was apparently confirmed by the examination of the cerebrospinal fluid, and by the blood count associated with an increase of lymphocytes. The postmortem examination proved it to be a case of primary sarcoma of the pancreas. The meningeal symptoms were due to a minute hemorrhagic secondary growth in the dura, involving the bone. There were also secondary growths in the kidneys, parietal bone, orbital plate, dura mater, glands of the neck and axilla.

Medicolegal

What Deemed "Personal Injury" to Employee—Erysipelas After Frostbite

(Larke vs. John Hancock Mut. Life Ins. Co. et al. (Conn.), 97 Atl. R. 320)

The Supreme Court of Errors of Connecticut affirms a judgment sustaining an award under the workmen's compensation act in favor of the claimant whose husband had been in the employ of the company soliciting insurance and collecting insurance premiums. There was a finding that the unusual exposure of the man's employment to the weather caused a frostbite producing lesions of the face, through which the germ of erysipelas entered and that disease developed, from which he died. The Court says that the first question for decision was whether the frostbite was a personal injury "arising in the course of and out of his employment." The conclusion is that it was. The Court thinks that the lesion, whether produced by a frostbite or a blow, must be held to be a personal injury within the workmen's compensation act. In either case the injury would be the result of an untoward mishap. If the term "personal injury" be given its narrowest construction and confined to injuries of accidental origin, it must be held to include any form of bodily harm or incapacity, whether arising by direct contact, or lesion caused by external violence or physical force, or untoward mishap. An attempt to frame an all-embracing definition so as to include all injuries arising in the course of one's employment would probably prove its inadequacy under the changing conditions of time. In a general way, sufficient for this case, and perhaps helpful in the consideration of other cases, the Court may say an injury to an employee is said to arise in the course of his employment when it occurs within the period of his employment, at a place where he may reasonably be, and while he is reasonably fulfilling the duties of his employment, or engaged in doing something incidental to it. An injury which occurs in the course of the employment will ordinarily arise out of the employment, but not necessarily so. The term "arising out of," in this act, points to the origin or cause of the injury. Speaking generally, an injury arises out of an employment when it occurs in the course of the employment and as a proximate result of it. If the primary injury arises out of the employment, every consequence which flows from it likewise arises out of the employment. The chain of causation may not be broken. Every injurious consequence flowing from it is a part of this chain. It was immaterial that erysipelas does not ordinarily result from frostbite; it was enough if in this instance it was caused by it. All physical consequences and disease result from an injury when there is a causal connection between them.

Revocation of License for Conviction of Offense Involving Moral Turpitude

(State Board of Medical Examiners vs. Harrison (Wash.), 159 Pac. R. 769)

The Supreme Court of Washington finds no merit in the appeal of the defendant and affirms a judgment of the superior court affirming an order of the state board of medical examiners, which order revoked the license of the defendant to practice medicine as an osteopath within that state. The Court says that it appeared that a complaint was filed with the board charging that the defendant had been convicted of an offense involving moral turpitude in that she had been indicted and convicted in the United States District Court at Seattle for "knowingly, by means of the United States mail, giving notice and information" to certain persons named "when, how, and by whom and by what means an abortion could and would be done and performed and produced." The statute provides at Section 8397, Rem. & Bal. Code of Washington, that: "Whenever any holder of a certificate herein provided for is guilty of unprofessional conduct, as the same is defined in this chapter, and said unprofessional conduct has been brought to the attention of the board granting said certificate, in the manner hereinafter pointed out . . . it shall be their duty to, and they must, revoke the same at once, and the holder of said certificate shall not be permitted to practice medicine and surgery, or osteopathy, . . . in this state." Section 8397½ provides that: "The words 'unprofessional conduct,' as used in this chapter, are hereby declared to mean: First. The procuring, or aiding or abetting in procuring a criminal abortion. . . . Fifth. Conviction of any offense involving moral turpitude, in which case the record of such conviction shall be conclusive evidence. . . ." The defendant contended that the provision that a conviction of any offense involving moral turpitude shall be conclusive evidence is void unless it shall be construed to mean that the state board of medical examiners or the courts may inquire into the facts and circumstances attending such former conviction for the purpose of ascertaining if the offense for which the person was so convicted is one involving moral turpitude. The defendant contended that this provision is a rule of evidence, and not of what is termed substantive law; and from this it was argued that it is the duty of the Court to hear the evidence and determine as a question of fact, irrespective of the former conviction, whether the accused is really guilty of an offense involving moral turpitude. But whether the statute under consideration is a declaration of substantive law or a rule of evidence, the Court holds is of no importance, for the Court is satisfied that the legislature has no power to declare either a rule of law or a rule of evidence in a case of this kind. The Court is satisfied that the legislature had the power and authority to pass the statute under consideration, and that it was the duty of the state board of medical examiners, when the conviction was admitted, to cancel the defendant's certificate. In such a case as this there is no discretion, either in the board or in the Court, as to the penalty. The statute provides that it shall be the duty of the board to revoke the license to practice medicine in the state. That is the only penalty. It was also argued that the term "moral turpitude," as used in the statute, is so vague and uncertain as to render the law unreasonable and void; but those words are capable of accurate definition, and are well understood, as was determined in re *Hopkins,* 54 Wash. 569, 103, Pac. R. 805.

Death From Accidental Septic Poisoning

(Merrick vs. Travelers' Insurance Co. (Mo.), 189 S. W. R. 392)

The Kansas City (Mo.) Court of Appeals affirms a judgment in favor of the plaintiff, the widow of a practicing dentist who died while insured by the defendant under an accident policy which was stated to cover "septic poisoning, the result of external inoculation through accidental contact with septic matter." The court says that the evidence of the plaintiff disclosed that the insured was apparently in good health, but had been afflicted for two weeks or more with a slight cold and its attendant inflammation of the nasal mucous membrane, though the cold and inflammation had almost disappeared at the time of his alleged infection. He was working in his office on the teeth of a patient who was suffering from a virulent and advanced attack of pyorrhea, when the patient suddenly coughed with explosive violence, ejecting a spray of saliva into the insured's face. The next day the insured and the plaintiff attended a matinee, and on leaving the theater he complained of a headache. After returning home, the pain, which was in the forehead just above the nose, seemed to increase and extended around to the ear. He slept little that night. The next day he dressed, but reclined all day and suffered from the pain, which did not abate. The next morning, which was Monday, he went to the office to keep an appointment, but returned home at 1 o'clock in a taxicab and was suffering intensely from the pain in his forehead and ear. He went to bed and had the family physician called. Constantly but gradually he grew worse and died about three months after he became bedfast. Epidemic spinal meningitis was prevalent in the city, and the insured exhibited many symptoms of that disease, and the attending physician certified that it was the cause of his death. The symptoms of the insured also were similar to those of certain syphilitic attacks. The plaintiff's evidence, however, dealt with every possible cause of diseases manifested by the symptoms of the one in question, and definitely excluded from the sphere of reasonable inference all other causes than that alleged, namely, that virulent germs which were a part of septic matter were accidentally brought into the nasal passage, where by natural processes they thrived, multiplied and found their way to the brain, producing a condition which resulted in the death of the insured. To sustain her burden of proof, the plaintiff was not required to adduce uncontradicted opinion evidence, but only such evidence as would seem reasonable to the common understanding, consistent with itself and its basic facts, and which, if accepted, would exclude any other conclusion than that the alleged cause of the fatal disease was the actual proximate cause. To say that the plaintiff did not sufficiently prove her cause would be to hold, in effect, that no liability based on the stipulation quoted could be proved if the experts of the respective parties disagreed. The court did not err in sending the case to the jury.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

February, LXXV, No. 2

1 Complement Fixation in Abortions of Women, with Special Reference to B. Abortus (Bang) and B. Abortivo-Equinus. P. F. Williams and J. A. Kolmer, Philadelphia.—p. 193.
2 *Traumatic Separation of Symphysis Pubis. R. M. Beach, Brooklyn.—p. 203.
3 Treatment of Contracted Pelves; Pubiotomy; Report of Cases. A. J. Rongy, New York.—p. 208.
4 Method of Determining Dilatation of External Os During Labor by Means of External Examination. W. E. Welz, Detroit.—p. 221.
5 *Rectal vs. Vaginal Examination in Labor. S. E. Moore, Minneapolis.—p. 225.
6 Complete Rupture of Uterus at Full Term without Hemorrhage or Shock; Recovery of Both Mother and Child. T. E. Neill, Washington, D. C.—p. 235.
7 Interstitial Pregnancy; Report of Case. I. S. Stone, Washington, D. C.—p. 239.
8 Malignant Leiomyomas of Uterus. F. Warner, Columbus—p. 241.
9 *Case of Hemangioendothelioblastoma in Pregnancy. S. Graves and J. W. Price, Jr., Louisville, Ky.—p. 250.
10 Diverticulitis of Descending and Pelvic Colon. J. W. Keefe, Providence, R. I.—p. 252.
11 Technic of Abdominal Hysterectomy. J. F. Baldwin, Columbus.—p. 263.
12 *Inguinal Hernia Attached to Cord, Undescended Testicle, Uterus, Tubes and Broad Ligaments. E. D. Clark, Indianapolis.—p. 273.
13 Absence of Muscular Tone an Important Etiologic Factor in Postoperative Ileus. R. R. Huggins, Pittsburgh.—p. 278.
14 Chronic Intestinal Stasis; Case Reports. W. S. Bainbridge, New York.—p. 284.

2. **Traumatic Separation of Symphysis Pubis.**—The obstetric history of Beach's patient was interesting. The first labor was dry and instrumental and was followed by three normal deliveries. The fifth was dry and instrumental causing a third degree laceration, which was repaired three months later. The sixth and seventh labors were normal but the eighth was a forty-eight hour labor which was terminated by forceps. Following this delivery the patient was in bed for sixteen days, suffered extreme sacral pain on motion and was unable to walk for three months after the delivery. This labor was two and one-half years before the ninth or present one. After the patient eventually became able to walk, she remained in fair health except for some backache after a hard day's work, or on rotary motion of the thighs. During the last pregnancy, before coming to the hospital, she had no unusual symptoms and considered herself normal. Admission examination showed a 40 cm. fundus with a normal left occipito-anterior position, head at the brim. Vaginal examination showed that the ends of the pubic bones were so widely separated that four fingers could be placed in the interval. Labor progressed normally terminating at the end of thirteen hours in the spontaneous birth of a 9¼ pound baby. Following the delivery the ends of the pubic bones came together to within about 3 cm. of each other. The puerperium was absolutely uneventful. She was up on the thirteenth day, was soon walking without the least discomfort, and went home on the eighteenth day.

5. **Rectal vs. Vaginal Examination in Labor.**—Rectal examination alone, or when combined merely with abdominal palpation in pregnancy and labor, as a substitute for vaginal examination in parturition, in Moore's opinion, is not compatible with an intelligent management of childbirth. But the rectal route with abdominal palpation in pregnancy and parturition, and the vaginal examination in pregnancy, subject to the rule, "When in doubt . . . resort to the vaginal route," can be used in the majority of labors without necessitating any vaginal examination during labor. Keep out of the vagina in labor except when necessary to do otherwise. The author recommends primary vaginal examination in all cases first seen in labor and in all cases of delayed labor, and of course in cases in which operative interferences has been indicated, and to use the rectal route as an adjunct to a primary vaginal examination, thus avoiding numerous vaginal examinations, which should always be condemned. The vaginal examination should be made before rupture of the membranes, the cervix being dilated, as diagnosed per rectum, and get the benefit of the autogenetic douche of liquor amnii. Rectal examination and abdominal palpation in pregnancy and labor should be more thoroughly taught in medical schools.

9. **Hemangioendothelioblastoma in Pregnancy.**—This is a report of a tumor of the upper jaw which repeatedly grew larger during gestation, became smaller after parturition and recurred after removal.

12. Abstracted in The Journal, Oct. 28, 1916, p. 1325.

American Journal of Physiology, Baltimore

January, XLII, No. 2

15 *Studies in Experimental Glycosuria. Retention of Dextrose by Liver and Muscles and Influence of Acids and Alkalies on Dextrose Concentration of Blood. J. J. R. Macleod and M. E. Fulk, Cleveland.—p. 193.
16 Response of Vasomotor Mechanism to Different Rates of Stimuli. C. M. Gruber, Philadelphia.—p. 214.
17 Effect of Temperature Changes on Rhythm in Human Electromyogram. A. Forbes and W. C. Rappleye, Boston.—p. 228.
18 *Bile Pigment Metabolism. Bile Pigment Output and Blood Feeding. G. H. Whipple and C. W. Hooper, San Francisco.—p. 256.
19 *Id. Influence of Fresh Bile Feeding on Whole Bile and Bile Pigment Secretion. C. W. Hooper and G. H. Whipple, San Francisco.—p. 264.
20 *Id. Influence of Bile Constituents on Bile Pigment Secretion, Taurocholic, Glycocholic and Cholic Acids and Bile Fat. C. W. Hooper, San Francisco.—p. 280.
21 Effects of Partial and Complete Occlusion of Blood Vessels on General Blood Pressure in Man. B. L. Elliott, Washington, D. C.—p. 290.
22 Effect of Rotation and of Unilateral Removal of Otic Labyrinth on Equilibrium and Ocular Reactions in Kittens. A. L. Prince, Boston.—p. 308.
23 Studies on Bioluminescence. Chemistry of Light Production in Japanese Ostracod Crustacean, Cypridina Hilgendorfii, Muller. E. N. Harvey, Washington, D. C.—p. 318.
24 Id. Chemistry of Light Production by Fire-Fly. E. N. Harvey, Washington, D. C.—p. 342.
25 Id. Light Production by Japanese Pennatulid, Cavernularia Haberi. E. N. Harvey, Washington, D. C.—p. 349.

15. **Dextrose Retention.**—When dextrose is injected by way of the portal vein into anesthetized dogs in amounts which are below the tolerance limit (about 0.8 gm. per kilogram an hour), there occurs a rapid increase in the percentage of blood sugar. This rise continues until a certain level is attained, after which the blood sugar remains practically constant. The time at which the constant level is attained varies with the rate of injection. When the behavior of the sugar concentration is compared in blood drawn from the portal vein, vena cava and iliac veins during moderate dextrose injections, it has usually been found that there is very little difference. During the injection of large amounts of dextrose the H-ion concentration of the blood, as determined by the colorimetric method, very commonly becomes increased. When alkali (sodium carbonate) is injected intravenously in sufficient amount to lower the H-ion concentration of the blood, in animals in which the blood sugar per-

centage is initially high (etherization and operative manipulation in sugar fed dogs), there is a very distinct decrease in blood sugar, but by comparison of the curves which represent this in the portal vein, vena cava and iliac vein, it cannot be shown whether the liver or the muscles are primarily responsible for the increased retention.

The injection of sodium carbonate solution or of hydrochloric acid at intervals into the portal vein during the continuous injection into another branch of the same vein of a dextrose solution does not disturb the relationship in sugar concentration normally existing in blood taken from portal vein, vena cava and iliac vein, nor do such injections cause any alteration in the level of the curves, whether these be rising or stationary. When dextrose is injected at a rate below the tolerance limit, along with sufficient alkali to cause a distinct increase in p_H of the blood of the portal vein and vena cava, the blood sugar does not rise to such a degree as it does when the dextrose solution is neutral or acid in reaction.

18. **Bile Pigment Output and Blood Feeding.**—The flow of bile and the secretion of bile pigments in the dog are not influenced by the ingestion of fresh blood, freshly laked red cells, cooked or digested blood.

19. **Effect of Feeding Bile on Bile Secretion.**—Feeding fresh bile to bile fistula dogs causes an almost constant cholagogue action, with a fall in the output of bile pigments. These experiments exclude the possibility of bile pigment absorption from the intestine.

20. **Effect of Feeding Bile Constituents.**—Taurocholic acid given by the mouth has a strong cholagogue action, but little influence on the secretion of bile pigments in bile fistula dogs. Glycocholic acid has a moderate cholagogue action but a strong inhibiting effect on bile pigment secretion. Cholic acid has little if any cholagogue action, but may decrease somewhat the bile pigment secretion in the bile fistula dog. Bile fat (ether extract) has no cholagogue action, but has a strong inhibiting effect on the secretion of bile pigments.

Annals of Surgery, Philadelphia

January, LXV, No. 1

26 Fractures of Lower Extremity or Base of Radius. L. S. Pilcher, Brooklyn.—p. 1.
27 *Volkman's Ischemic Myositis and Contracture. A. S. Taylor, New York.—p. 28.
28 Gunshot Injuries of Peripheral Nerves and Their Treatment; Report of Cases. H. Fischer, New York.—p. 56.
29 *Carcinoma of Breast. J. C. Oliver, Cincinnati.—p. 66.
30 *Autogenous Fascial Reconstruction of Bile Duct; Report of Case. N. Ginsburg and J. Speese, Philadelphia.—p. 79.
31 Splenectomy for Repeated Gastro-Intestinal Hemorrhages. D. C. Balfour, Rochester, Minn.—p. 89.
32 Enterostomy for Ileus; Report of Cases. C. N. Dowd, New York. —p. 95.
33 *Temporary Colostomy. H. A. Shaw and J. Hunt, Seattle.—p. 105.
34 Case of Fibroma of Small Intestine Resulting in Intussusception. J. E. James, Jr., and S. W. Sappington, Philadelphia.—p. 109.
35 Case of Gunshot Wound of Carotid Artery. E. G. Alexander, Philadelphia.—p. 115.
36 Case of Stab Wound into Right Auricle of Heart. C. F. Nassau, Philadelphia.—p. 119.
37 Case of Stab Wound into Left Ventricle of Heart. J. F. Jones, Philadelphia.—p. 120.
38 Cases of Infectious Arthritis. W. J. Merrill, Philadelphia.—p. 122.
39 Acidosis in Surgical Conditions. J. H. Austin, Philadelphia.—p. 126.

27. **Ischemic Myositis.**—The value of the elastic traction method of overcoming the cicatricial contracture in these cases is endorsed by Taylor. A brace is made on a plaster-of-Paris model of the forearm so as to fit smoothly. It is applied without lacing it so tightly as to interfere with the circulation. Elastic finger traction is applied up to the point of moderate discomfort. The apparatus is left on continuously except for two intervals of an hour each, morning and afternoon. During these periods, the whole extremity is immersed in hot water for twenty minutes, kept as hot as bearable by constant addition of hot water. If nerve involvement is present the heat must be less and the attendant's hand should be used as a guide. After the immersion, massage and vigorous passive motion is used, and, finally, attempts at voluntary motion encouraged. When the contractured tissues have been well stretched, so as to permit a good degree of passive extension of fingers and wrist simultaneously, the apparatus is left off during the day so as to encourage active motion and use, and then worn during sleep to avoid recurrence of the contracture. As the tendency to recurrence disappears the apparatus is used less and less until it is finally discarded. The child is systematically trained to use and develop all the muscles which have survived.

29. **Carcinoma of Breast.**—An analysis of 100 consecutive cases of carcinoma of the breast was made by Oliver. Four patients were under 3 years of age and 14 were under 40; 17 patients were over 60; 67 patients were between 40 and 60 years of age. In 56 patients the disease was in the right breast; in 43 in the left breast. The actual number of cases which have survived the three-year period, is 41. The known dead are 65, and in 4 the result is unobtainable. Of those living, 1 is alive twenty-one years after operation; 3, fourteen years; 3, fifteen years; 1, thirteen years; 1, twelve years; 1, ten years; 3, eight years; 5, seven years; 3, six years; 3, five years; 3, four and a half years; 3, four years; 5, three and a half years; 1, three and a quarter years; 2, three years. Twenty-two of the successful patients knew of the existence of the disease for nine months, or less, previous to operation, while 12 gave a history extending over from one to twelve years. The recurrences after operation exhibit a wide range. In 14 cases the metastases were internal; 7 had secondary deposits in the spine; 2 in the mediastinum; 1 in the brain; 1 in the skull; 1 in the lower jaw and one in the sternum and supraclavicular fossa. Nine cases had purely local recurrences, and 8 had local and internal recurrences. The other breast was secondarily involved in one patient. Oliver recommends systematic postoperative Roentgen-ray treatment.

30. **Reconstruction of Bile Duct.**—In the case cited by Ginsburg and Speese during the performance of a cholecystectomy the common duct to which the cystic duct was parallel, was caught in the forceps applied to the cystic duct, and both structures were divided. Satisfactory healing of the incision took place, except for the establishment of a biliary fistula. The patient made a good operative recovery. At a second operation it was found that division of this structure had taken place half a centimeter below the junction of the right and left hepatic ducts, with some loss in continuity of the duct wall. Since apposition of the two ends of the bile duct was impossible, a T-shaped rubber tube was inserted into the proximal and distal ends of the bile duct and fixed by catgut sutures. About 2 inches of the duct needed reconstruction, and this was accomplished by enveloping the rubber tube with a section of posterior rectus sheath fascia, including the peritoneum, taken from the region of the wound. The fascial surface of the transplant was placed in contact with the rubber tube, and both ends were carefully sutured to and around the proximal and distal ends of the bile duct, and also to the wall of the duodenum. After a week the distal end of the T-tube broke away at the junction of the fascial transplant with the distal end of the common duct, and was impinging on the wall of the duodenum, as was determined at a third operation. A small thick-walled rubber tube, slightly less in diameter than that of the common duct itself, was substituted for the T-tube, and the bile duct reconstructed around this tube, carefully suturing the transplant to the distal portion of the bile duct as well as to the wall of the duodenum. Four months since the successful reconstruction of the duct was accomplished, the rubber tube has not been passed, and the patient has not suffered from any symptoms suggestive of biliary colic.

33. **Temporary Colostomy.**—The technic devised by Shaw and Hunt is as follows: Incision, exploration, etc., are just the same as in any type. Choice of dealing with the gut, that is, single barrelled, double barrelled or simple attachment of the gut to the peritoneum, is simply a matter of judgment; after such decision, grasp the gut with a crushing clamp. Within the bite of the crushing forceps is interposed a piece of dentist's rubber dam, the same width as the proposed stoma and about 4 inches long. The parietal peritoneum is carefully circumstitched around the gut. Next apply another crushing forceps parallel and distal to the first, then cut

between, cauterize with phenol and apply a Kerr basting stitch, the ends of which are brought out through the abdominal wall and tied over gauze. This stitch is to be removed when necessity calls for a patent stoma. At the end of thirty-six hours, union between the parietal and visceral peritoneum is complete and the basting stitch may be cut close to the skin on one end and pulled out at the other. The rubber acts as a guide to the stoma, which sometimes remains sealed after the stitch is removed, due to the crushing of the forceps; the introduction of the gloved finger easily overcomes this. The subsequent treatment would be that following any type of colostomy, depending on the individual case.

Archives of Ophthalmology, New Rochelle, N. Y.

January, XLVI, No. 1

40 Present Status of Sclerocorneal Trephine Operation for Relief of Glaucoma. W. R. Parker, Detroit.—p. 1.
41 Ocular Anaphylaxis. Anaphylactic Theory of Sympathetic Ophthalmia. A. C. Woods, Philadelphia.—p. 8.
42 Present Status of Operation for Extraction of Cataract in the Capsule. A. Knapp, New York.—p. 27.
43 Three Cases of Unusual Vitreous Opacities. H. H. Stark, El Paso, Texas.—p. 38.
44 Traumatic Transplantation of Cilia into Anterior Chamber. H. L. Begle, Detroit.—p. 47.
45 Is After Cataract More Frequent After Operations for Immature Cataract? T. Heyl, Munich.—p. 53.
46 Keratectomy. C. Foroni, Genoa.—p. 57.

Arkansas Medical Society Journal, Little Rock

January, XIII, No. 8

47 Plastic Surgery of Nose and Eyelids; Report of Cases. L. H. Lanier, Texarkana.—p. 155.
48 Apparatus for Transfusion of Blood by Sodium Citrate Method. N. Mumey, Little Rock.—p. 158.
49 Nephrolithiasis. J. P. Runyan, Little Rock.—p. 161.
50 Eclampsia. J. W. Melton, Slocum.—p. 163.

Boston Medical and Surgical Journal

January 25, CLXXVI, No. 4

51 Group of Injuries in Modern Warfare. J. W. Churchman, New Haven, Conn.—p. 113.
52 Jejunal Ulcer; Two Cases Treated by Resection and End-To-End Anastomosis of Jejunum. E. P. Richardson, Boston.—p. 118.
53 Vaginal Delivery After Cesarean Section; Report of Cases. N. R. Mason, Boston.—p. 127.
54 Reasons for Reentry of Hospital Patients. E. B. Young, Boston.—p. 133.

Canadian Medical Association Journal, Toronto

January, VII, No. 1

55 *Pyloric Stenosis in Infants. W. E. Gallie and L. B. Robertson, Toronto.—p. 1.
56 Tuberculosis Often of Secondary Importance to Other Pathologic Conditions. C. D. Parfitt, Gravenhurst.—p. 10.
57 Blood Transfusion. C. K. P. Henry, Montreal.—p. 18.
58 Treatment and Management of Congenital Syphilis. G. E. Smith, Toronto.—p. 27.
59 Modern Treatment of Syphilis. L. W. Harrison.—p. 31.
60 Antituberculosis Work in Small City. F. C. Neal, Peterborough.—p. 44.
61 Fallacies in Localization of Foreign Bodies by Roentgen Ray. W. H. Eagar, Halifax, N. S.—p. 51.

55. **Pyloric Stenosis in Infants.**—During the past two years sixteen cases of undoubted pyloric stenosis have been treated surgically in the hospital for sick children in Toronto. Of these sixteen cases, eleven recovered, a mortality of 31.2 per cent. Of the five infants who died, one died of hemorrhage; one died sixty hours after operation with no relief of the symptoms because of incomplete operation; a third patient who died three days after operation was a very desperate case on admission, there having been absolute constipation for five days and vomiting of all the food. This patient ceased vomiting after the operation but had evidently passed the possibility of recovery before operation; the fourth case was a prostrated, premature baby which had practically no chance from the beginning. It died about twelve hours after operation. Necropsy showed hypostatic congestion of the lungs, nephritis and colitis. The fifth died three days after operation, in spite of the relief of vomiting, of general weakness. Of the eleven patients who recovered, two died subsequently, of other conditions. The first died six weeks after the operation of acute enterocolitis. All the symptoms of pyloric stenosis were relieved by the operation and the case was a favorable one for complete recovery until the intestinal infection developed. The second patient died of pneumonia and empyema about a year after the operation. The relief of the pyloric obstruction had been complete and recovery perfect. At 14 months of age he appeared to be a normal baby. At necropsy the pyloric enlargement was found to persist although the ratio of its size to that of the neighboring intestine was slightly smaller. The remaining nine patients are alive and well, apparently suffering no ill effect from their pathologic condition or from the operation.

Indiana State Medical Association Journal, Fort Wayne

January, X, No. 1

62 Workmen's Compensation Law in Its Relation to Practice of Medicine. H. S. Landers, Indianapolis.—p. 1.
63 *Diagnosis in Certain Gastric Disorders. H. Miller, South Bend.—p. 10.
64 *Necessity of Coordinating Methods in Definite Diagnosis of Pulmonary Tubercular Lesions. F. B. Wynn, Indianapolis.—p. 15.
65 *Roentgen Ray Diagnosis in Pulmonary Tuberculosis. R. C. Beeler, Indianapolis.—p. 18.

63, 64 and 65. Abstracted in The Journal, Oct. 28, 1916, p. 1327.

Journal of Bacteriology, Baltimore

January, II, No. 1

66 Colorimetric Determination of Hydrogen-Ion Concentration and Its Applications in Bacteriology. W. M. Clark and H. A. Lubs, Washington, D. C.—p. 1. To be continued.
67 Soil Flora Studies. H. J. Conn, Geneva, N. Y.—p. 35. To be continued.
68 *Influence of Milk and Carbohydrate Feeding on Character of Intestinal Flora. Diet vs. Bacterial Implantation. T. G. Hull and L. F. Rettger, New Haven, Conn.—p. 47.
69 Coccidia in Subepithelial Infections of Intestines of Birds. P. B. Hadley, Providence, R. I.—p. 73.
70 Bacterial Disease of Wragg Cherry. W. G. Sackett, Fort Collins, Colo.—p. 79.

68. **Influence of Milk on Intestinal Flora.**—The most important factor in determining the character of the intestinal flora according to Hull and Rettger is the diet. Lactose, milk and mixed grains (wheat, oats, etc.) are specific articles of diet which exert such an influence. Lactose, when fed in sufficient quantities (2 to 3 gm. daily), brings about a complete transformation of the flora of white rats within two to three days; milk requires a longer time, and does not bring about a complete change. Milk and lactose together form the most practical and effective diet, at least for man. Grain feeds tend to increase the number of aciduric bacteria, but their influence is comparatively small. Milk undoubtedly owes its beneficial action to the lactose which constitutes almost half of the solid matter present. The explanation of this action must lie in the fact that the lactose is absorbed slowly from the intestine. On several occasions it was found by the authors in the feces of rats that had been supplied with it as a part of their diet. The raw grains are also probably acted on slowly, or at least some of the intermediate carbohydrate products are not immediately absorbed. Bread, on the other hand, which contains cooked starch does not foster the development of the aciduric bacteria, because it is digested quickly, and no available sugar remains in the intestine long enough to be attacked and utilized by this group of bacteria.

Meat or other high protein diet increases the indol-producing bacteria and other organisms of the so-called "putrefactive" type; cornstarch appears to foster the amylolytic group of intestinal organisms, while in a few experiments grain feed seemed to favor the development of what appeared to be fusiform bacilli. The reaction of the intestine remained independent of the character of the intestinal flora. The acidity was highest in the duodenum, as a rule, and lowest at the ileocecal valve.

Journal of Cutaneous Diseases, Boston

January, XXXV, No. 1

71 *Rare Form of Scleroderma. A. Ravogli, Cincinnati.—p. 1.
72 Follicular Type of Eczema Seborrheicum. W. B. Trimble, New York.—p. 11.
73 Fissure of Lip; Device for Its Treatment. W. A. Pusey, Chicago.—p. 16.
74 *Elephantiasis Nostras; Report of Case. J. A. Elliott, Ann Arbor, Mich.—p. 17.
75 Case of Epidermolysis Bullosa, Showing Loss of Elastic Tissue in Apparently Normal Skin. R. S. Weiss, St. Louis.—p. 26.
76 Histopathology. W. J. Heimann, New York.—p. 28.

71. **Rare Form of Scleroderma.**—The scleroderma in Ravogli's case, he says, was probably due to peripheral neuritis. The system was affected by a form of diathesis, which had disturbed the equilibrium of the internal secretions, a sudden change of temperature due to exposure to wet and cold acted as a determining cause.

74. **Elephantiasis Nostras.**—A large majority of the cases of elephantiasis nostras, Elliott says, are due to the streptococcus of Fehleissen. The primary changes are in the blood vessels rather than in the lymphatics. The secondary changes are lymph stasis, edema, a marked hypertrophy of collagen with an infiltrate of small round cells and some polynuclear leukocytes. Leprosy and acute scleroderma are to be considered in the differential diagnosis. The streptococcic origin of the disease suggests that the local measures might well be augmented by antistreptococcic serum in the treatment of the disease.

Journal of Laboratory and Clinical Medicine, St. Louis

January, II, No. 4

77 *Application of Typhoidin Test in Group of Nurses and Physicians. F. P. Gay and A. R. Lamb, San Francisco.—p. 217.
78 Cardiac Aneurysms; Report of Cases. P. G. Woolley, Cincinnati. —p. 221.
79 *Occurrence of Immature Polynuclear Leukocytes in Circulating Blood in Pulmonary Tuberculosis and Other Infectious Diseases. A. M. Burgess, Providence, R. I.—p. 240.
80 *Simple Method of Plotting Charts. J. R. Williams, Rochester, N. Y.—p. 247.
81 Macrophages in Feces in Acute Dysentery. K. M. Lynch, Charleston, S. C.—p. 251.
82 Pathologic Effects of Atmospheres Rich in Oxygen. H. T. Karsner, Cleveland and J. E. Ash, U. S. Army.—p. 254.
83 *Blood Pressure in Aged. L. M. Bowes, Chicago.—p. 256.
84 Demonstration of Treponema Pallidum in Cerebral Cortex of Congenital Syphilitic Child. C. E. Kiely, Cincinnati.—p. 260.
85 Machine for Shaking Blood Mixing Pipettes. G. G. Little, Rochester, Minn.—p. 264.
86 Modification of Noguchi Test. N. E. Williamson, Stockton, Calif.—p. 266.
87 Id. N. E. Williamson, Stockton, Calif.—p. 268.

77. **Application of Typhoidin Test.**—A survey of the percentage of positive results obtained by Gay and Lamb in a study of 154 individuals shows that 75 per cent. of those individuals that had recovered from typhoid (twelve) gave a positive reaction. The negative reactions bear no relation to the date of the antecedent disease, since two cases twenty-two years previously were both positive. From 75 to 40 per cent. of those that had been vaccinated against typhoid (121) also reacted positively and in general in decreasing correspondence with the lapse of time since immunization. Of twenty-one presumably normal individuals, three, 14.28 per cent., gave a positive typhoidin reaction. Whatever may be the eventual understanding of a positive typhoidin test, the authors point out that use of its absence as an indication for revaccination certainly errs on the side of safety in detecting those individuals who in spite of typhoid vaccination do not show indications of a reaction to the typhoid bacillus, and who are, therefore, presumptively those particular individuals who under ordinary conditions of infection will be found to be the least protected ones.

79. **Immature Polynuclear Leukocytes.**—The presence of a high percentage of immature polynuclear leukocytes in the circulating blood (Arneth's "shift to the left"), Burgess states, is evidence of excessive loss of polynuclear leukocytes from the blood stream, and an attempt on the part of the bone marrow to make good the loss. It does not indicate toxemia, nor is it an index of the patient's resistance to infection. Leukocytosis, on the other hand, is evidence of toxemia and of direct stimulation of the bone marrow by certain toxins. A moderate leukocytosis may exist without causing an appreciable change in the Arneth picture. In pulmonary tuberculosis the demand for leukocytes indicated by a "shift to the left" means necrosis and extension of the lesion. In early stages of the disease this may be of considerable value in immediate prognosis, and even, at times, in diagnosis. In advanced disease which is slowly progressing, as the demand for leukocytes apparently varies from time to time, the count appears to be useless in estimating the prognosis. In rapidly progressing tuberculosis the unmistakable clinical evidence of activity renders the study of the blood picture superfluous. In nontuberculous disease the evidence of excessive mobilization of leukocytes may be of value in doubtful cases to determine the presence of large collections of pus.

80. **Simple Method of Plotting Charts.**—The salient features of the method described by Williams are: The printing on standard sheets of cross section paper all the fixed words and characters which will be common to all charts. This usually can best be done by having them first drafted, and zinc etchings and plates or electros made therefrom. The printing on gummed paper of all the common words and characters which the plotting of a given set of data will require. These to be of the proper size and spacing to fit in the chart so as to give uniformity. The printing of several types of cross hatching on gummed stock so that it may be similarly used. The use of a photographic trimming board to smoothly and correctly cut the words, characters and hatching used and the attachment thereto of a scale to facilitate calculations and to minimize errors.

83. **Blood Pressure in Aged.**—There were 100 women and fifty men examined by Bowes in this series. The systolic and pulse pressures increased to the age of 85 and then decreased. The diastolic pressure did not vary much after the age of 70. The blood pressure was higher in women except after the age of 90. There were a few who had very high blood pressures without symptoms. They were going about their everyday duties in apparently perfect health. There were some who simply complained of morning headache, slight vertigo, numbness or tingling of the hands and feet. A third group presented the more severe symptoms of nephritis, aortic regurgitation, cerebral hemorrhage and arteriosclerosis. There were twenty-two who had systolic pressures of 200 mm. of mercury or over. Thirteen had arteriosclerosis alone, three had cardiac lesions, two had nephritis, two had cerebral hemorrhage and cardiac lesions, one cerebral hemorrhage, and one nephritis and a cardiac lesion. The highest systolic pressure was 270 mm. of mercury. This was a case of nephritis. There were twenty-eight who gave diastolic pressures of 100 or over. Sixteen had arteriosclerosis alone. Seven had cardiac lesions, two had cerebral hemorrhage and a cardiac lesion, two cardiac lesions and nephritis, and one had cerebral hemorrhage. There were thirty who had pulse pressures of 100 or over. The highest pulse pressure was 150, observed in a case of aortic regurgitation. Sixteen had cardiac lesions, seven arteriosclerosis alone, three cerebral hemorrhage, three nephritis and one had nephritis and a cardiac lesion. All cases of nephritis had very high blood pressures. The systolic, diastolic and pulse pressures were high in all cases of cerebral hemorrhages. A low pulse pressure was associated with myocarditis or a failing heart; and a sustained pulse pressure of 100 or over usually resulted in myocarditis or a failing heart. In most cases of bronchitis there was a failing heart with lowering blood pressure. Obesity did not seem to influence the blood pressure.

Medical Record, New York

January 27, XCI, No. 4

88 Paratyphoid as Observed During Epidemic in 14th N. Y. Infantry While on U. S. Service at Mexican Border, 1916. C. W. Berry, Brooklyn.—p. 135.
89 Study in Mental Retardation in Relation to Etiology. B. T. Baldwin, Swarthmore, Pa.—p. 141.
90 *Modified Method in Tuberculin Therapy. W. Meyer, West Hoboken, N. J.—p. 147.
91 Multiple Sclerosis Due to Repeated Inhalation of Carbon Monoxid in Furnace Gas; Report of Two Cases. W. J. McGurn, Boston. —p. 149.
92 Reflex Cough. A. B. Bennett, Jr., Washington, D. C.—p. 151.
93 Scorbutus in Ten Months' Old Baby Treated by Transfusions of Citrated Maternal Blood. G. A. Rueck, New York.—p. 152.
94 Most Efficient Anaphrodisiac (Magnesium Sulphate). W. J. Robinson, New York.—p. 153.

90. **Modified Method in Tuberculin Therapy.**—The method described by Meyer consists of the simultaneous administration of three different tuberculins, namely, Koch's old tuberculin (T. O.), Koch's bacillary emulsion (B. E.) and Denys' bouillon filtrate (B. F.).

Pennsylvania Medical Journal, Athens

January, XX, No. 4

95 Support of Stomach After Beyea Gastropexy. Report of Cases. T. T. Thomas, Philadelphia.—p. 241.
96 *Hospital Organization in Rural Pennsylvania. H. L. Foss, Danville.—p. 247.
97 *Clinical Interpretation of Wassermann Test. J. A. Lichty, Pittsburgh and J. H. Whitcraft, Wilksburg.—p. 252.
98 *Modern Diagnosis and Results Clinically, Serologically and Sociologically of Syphilis. B. A. Thomas, Philadelphia.—p. 254.
99 *Treatment of Syphilis by Salvarsan Controlled by Wassermann Reaction. J. D. Wilson, Scranton.—p. 266.
100 Cerebellar Abscess; Symptoms and Differential Diagnosis. P. D. Kerrison, New York.—p. 271.
101 Infective Sinus Thrombosis. R. Butler, Philadelphia.—p. 277.
102 Temporosphenoidal Abscess. G. W. Mackenzie, Philadelphia.—p. 279.
103 Some Tendencies of Workmen's Compensation Law. G. W. Wagoner, Johnstown.—p. 289.

96. Abstracted in The Journal, Nov. 4, 1916, p. 1395.

97, 98 and 99. Abstracted in The Journal, Oct. 14, 1916, p. 1181.

Southern Medical Journal, Birmingham, Ala.

January, X, No. 1

104 *Cui Bono; Physician and His Ideals. M. L. Graves, Galveston, Texas.—p. 1.
105 Physician's Work for Naval Preparedness. C. T. Grayson, Washington, D. C.—p. 6.
106 Utilization of Dispensary in Medical Teaching. W. S. Elkin, Atlanta, Ga.—p. 12.
107 Classification and Relations of Cardiovascular Renal Disease. L. F. Barker, Baltimore.—p. 22.
108 Syphilis and Baby. L. R. DeBuys, New Orleans.—p. 29.
109 Infectiousness of Tuberculosis. T. D. Coleman, Augusta, Ga.—p. 33.
110 Uniform Laws for Southern States. O. Dowling, Shreveport, La.—p. 40.
111 Statistical Study of Intestinal Helminthiasis. D. G. Willets, Washington.—p. 42.
112 School Inspection by County Health Officer and How to Secure Correction of Defects. D. E. Sevier, Asheville, N. C.—p. 49.
113 Excision of Upper Jaw. J. W. Price, Jr., Louisville, Ky.—p. 55.
114 *Extraperitoneal Cesarean Section. W. Kohlmann, New Orleans.—p. 58.
115 New Device for Reestablishing and Maintaining Suspended Respiration. J. H. Pierpont, Pensacola, Fla.—p. 61.
116 More Radical vs. Conservative Operation on Pelvic Organs. C. N. Cowden, Nashville, Tenn.—p. 63.
117 Plaster-of-Paris Technic in Fractures. R. W. Knox, Houston, Texas.—p. 69.
118 Thrombosis of Lateral Sinus; Report of Case of Spontaneous Rupture. A. C. Lewis, Memphis, Tenn.—p. 72.

104 and 114. Abstracted in The Journal, Dec. 23, 1916, p. 1967.

Tennessee State Medical Association Journal, Nashville

January, IX, No. 9

119 Subconjunctival Injections of Mercury Cyanid in Ocular Therapy. E. L. Jones, Cumberland, Md.—p. 345.
120 Occurrence of Malignancy in Gastro-Intestinal Tract. H. T. Brooks, Memphis.—p. 354.
121 Gonorrhea in Woman. J. E. Hall, Nashville.—p. 358.
122 Hysteria of Alleged Traumatic Type. S. R. Miller, Knoxville.—p. 363.
123 Hygiene of Eye. E. Orr, Nashville.—p. 366.
124 Surgery of Gall Passages. C. N. Cowden, Nashville.—p. 368.
125 Rectal Feeding. G. M. Niles, Atlanta, Ga.—p. 374.

Texas State Journal of Medicine, Fort Worth

January, XII, No. 9

126 *What Has Become of High Blood Pressure Cases. R. W. Baird, Dallas.—p. 349.
127 Fumigation of Ships. R. L. Wilson, Galveston.—p. 351.
128 Rewards of Obscure Physician. M. M. Carrick, Dallas.—p. 353.
129 Defects of Sight and Hearing that Retard Mental Development. E. H. Cary, Dallas.—p. 356.
130 Is Diagnosis and Conservative Treatment of Fractures About to Become A Lost Art? B. Saunders, Fort Worth.—p. 358.
131 Physician's Duties and His Relation to Community. J. B. McKnight, Carlsbad.—p. 361.
132 Publicity in Public Health Work. W. F. Thomson, Beaumont.—p. 363.

126. **What has Become of High Blood Pressure Cases.**—The record of 125 patients with systolic blood pressure 160 mm. and over is analyzed by Baird. Fourteen patients with nephritis, 33 with cardiovascular disease and 28 with cardiac disease are living. Fifty are dead. The causes of death were nephritis, 15; cardiovascular disease, 3; cardiac disease, 18; apoplexy, 8, and undetermined 6. Of those dead, 36 per cent. died during less than one year of observation, and in the next two years 22 per cent. of them died, and all but a very small per cent. die within five years. Patients dying from cardiac dilatation showed a maximum blood pressure of 260 with an average of 190. In the Bright's cases the average was 215, systolic.

United States Naval Medical Bulletin, Washington, D. C.

January, XI, No. 1

133 Prevention of Venereal Diseases at Naval Training Station, Norfolk, Va. C. E. Riggs.—p. 1.
134 Complement Fixation Reaction on Board Ship. W. W. Cress.—p. 15.
135 Syphilis Record. G. F. Cottle.—p. 21.
136 Marines Wounded During Drive on Santiago, Santo Domingo. H. F. Strine.—p. 29.
137 Strychnin-Stovain Spinal Anesthesia. E. P. Huff.—p. 34.
138 Diseases Incident to Submarine Duty. R. W. McDowell.—p. 44.
139 Uncinariasis in Cuba. R. Spear.—p. 50.
140 Ear Disease in Service. G. B. Trible.—p. 53.
141 Treatment of Gastric Ulcer. W. A. Brams.—p. 58.
142 Slop Chute and Garbage Bin for Battleships. W. H. Bell.—p. 67.
143 Preliminary Report on Pathology of Narcotic Addiction. C. F. Stokes.—p. 64.

Wisconsin Medical Journal, Milwaukee

January, XV, No. 8

144 Recent Advances in Study of Heart Disease and Their Significance to General Practitioner of Medicine. F. W. Peabody, Boston.—p. 255.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

January 6, I, No. 2923

1 Early Diagnosis and Treatment of Syphilis. J. H. Sequeira.—p. 1.
2 Diseases of Male Urethra. F. S. Kidd.—p. 3.
3 *Disappearance of Malignant Tertian Crescents from Blood Following Intravenous Injection of Tartar Emetic. L. Rogers.—p. 6.
4 Roentgen Ray Diagnosis of Gas in Tissues. J. D. Morgan and G. Vilvandré.—p. 8.
5 Detection of Gas in Tissues by Roentgen Rays. H. Black.—p. 9.
6 *Keeping Qualities of Therapeutic Serums. A. T. MacConkey.—p. 10.
7 Chemical Factors Involved in Growth of Meningococcus. D. J. Lloyd.—p. 11.
8 Morphin-Hyoscin Method of Painless Childbirth. A. F. Martin.—p. 12.
9 Monomorphic Trypanosome Found in Blood of Native of Gold Coast. J. W. S. Macfie.—p. 12.
10 Significance of Lymphatic Glands Situated on Anterior Surface of Atlas. A. E. Maylard.—p. 13.
11 *Death After Salvarsan. M. D. Wadia.—p. 13.

3. **Treatment of Malaria by Tartar Emetic.**—An apyrexial case of malaria showing numerous crescents in the blood treated with tartar emetic intravenously is cited by Rogers. On the fourth day 4 cg. of tartar emetic were given intravenously; 8 cg. on the fifth and eighth days, respectively, and 12 cg. on the eleventh day. A case is cited of acute malignant tertian infection yielding to quinin, with subsequent appearance of numerous crescents, which disappeared after two intravenous injections of 8 cg. tartar emetic, one on the second and one on the ninth day. Rogers is of the opinion that quinin should be used to check the malarial paroxysms, while tartar emetic should subsequently be given intravenously, in the hope that it may prove of value in destroying the extracorpuscular stages of the malarial parasites, and so prevent relapses, and greatly lessen the infectiveness of the patient to malaria-bearing mosquitoes, by killing the crescents of the malignant tertian variety and the corresponding resisting forms of the other types of malaria. Two additional cases are cited.

6. **Keeping Qualities of Therapeutic Serums.**—The question of the loss of antitoxin which occurred in samples of diphtheria antitoxin which had been in commerce for various periods was investigated by MacConkey. The average period during which these serums were on the market was about two and a half years, and the average loss in unitage during that period was about 23 per cent., or about 10 per cent. per annum. Nothing is known about the conditions under which these serums were stored while in commerce, but it is obvious that the rates of deterioration varied greatly. MacConkey

concludes that unless one knows how serum has been stored the putting on the label of a time expiry limit tells nothing, and may lead to a false sense of security. Kept under similar conditions, tetanus antitoxin loses its strength at about the same rate as diphtheria antitoxin. The loss which occurs on keeping is in the number of units only. The quality of the antitoxin remains the same, but the quantity is less. This decrease can easily be remedied by giving larger doses.

11. **Death After Salvarsan.**—Wadia's patient was given 0.5 gm. of salvarsan intravenously. He died thirteen days afterward. After a severe illness the symptoms suggesting acute yellow atrophy or phosphorus poisoning, but both were negatived by the fact of there being enlargement of the liver throughout, and also, as to the former, by the absence of leucin and tyrosin in the urine. Wadia suggests that there must have been a storage of arsenic in the liver, giving rise in all probability to acute fatty degenerative changes in the cells.

Edinburgh Medical Journal

January, XVIII, No. 1

12 Causation of Naegele and Robert Pelves. D. B. Hart.—p. 4.
13 *Prognosis in Disseminated Sclerosis; Duration in Two Hundred Cases of Disseminated Sclerosis. B. Bramwell.—p. 16.
14 Dr. Pascal Rougon: Zola's Study of Savant. J. B. Adams. —p. 23.
15 Case of Sporotrichosis. D. M. Greig.—p. 42.
16 Case of Suture of Perforating Wound of Heart. J. Fraser.—p. 47.
17 Simulation of Acute Appendicitis by Suppuration at Abdominal Inguinal Ring, Following Gonococcal Affection of Ductus Deferens. J. W. Dowden.—p. 49.

13. **Prognosis in Disseminated Sclerosis.**—In 200 cases analyzed by Bramwell the results up to the present date are as follows: 106 of the 200 patients have died; 64 patients are known to be still alive, and in 30 cases the result is not known. Of the 64 patients known to be still alive, 42 are much worse, 12 are in *statu quo*, 7 are greatly improved and 3 quite well. The average duration of the disease in 170 (fatal and nonfatal) cases is, up to the present date, twelve years and one month. In 1 patient the duration of the disease was thirty-seven years, and in no less than 14 cases the disease has lasted for more than twenty-five years. In the 106 cases in which the disease proved fatal the average duration was ten years and eight months; the shortest duration was seven months, and the longest duration was thirty-seven years. In 23, or 21.6 per cent., of the 106 fatal cases, the disease terminated in less than five years; in 54, or 50.9 per cent., of the 106 fatal cases in less than ten years; in 78, or 73.5 per cent., of the 106 fatal cases, in less than fifteen years; and in 92, or 86.7 per cent., of the fatal cases, in less than twenty years. Bramwell cites the histories of two patients in whom a permanent cure seems to have taken place, and of 2 patients in whom the disease lasted, respectively, for thirty-seven and thirty-four years.

Indian Medical Gazette, Calcutta

December, 1916, LI, No. 12

18 Surgery at Siege of Kut. C. H. Barber.—p. 441.
19 Sandfly Fever and Dengue. W. L. Harnett.—p. 444.
20 General Paralysis of Insane in Federated Malay States. W. F. Samuels.—p. 453.
21 Present Day Glaucoma Operations. B. P. Banaji.—p. 455.
22 Intravenous Injection of Eusol. C. Barry.—p. 457.
23 Case of Pellagra at Alipore Jail. J. Roy.—p. 458.
24 Case of Kala-Azar Treated by Intravenous Injections of Tartar Emetic. T. Jackson.—p. 459.
25 Serum for Diagnostic Purposes. D. J. Asana.—p. 459.
26 Blackwater Fever. J. N. Dutt.—p. 460.

Medical Journal of Australia, Sydney

December 9, 1916, II, No. 24

27 Cerebrospinal Fever in Military Camps and Country Hospitals of New South Wales. W. S. Brown.—p. 487.
28 Treatment of Thirty-Five Cases of Cerebrospinal Meningitis. R. E. Nowland.—p. 489.
29 Administrative and Epidemiologic Aspects of Cerebrospinal Fever. W. G. Armstrong.—p. 492.
30 Etiology and Epidemiology of Cerebrospinal Fever. J. B. Cleland. —p. 496. To be continued.

December 16, 1916, No. 25

31 Id. J. B. Cleland.—p. 516.

Lancet, London

January 6, I, No. 4871

32 Conditions which Govern Growth of Bacillus of "Gas Gangrene" in Artificial Culture Media. A. E. Wright.—p. 1.
33 Orthopedic Methods in Military Surgery. D. M. Aitken.—p. 10.
34 *Six Cases of Ameba Histolytica Carriers Treated with Emetin Bismuthous Iodid. C. G. Imrie and W. Roche.—p. 17.
35 Surface Tension and Wassermann Reaction. V. B. Nesfield.— p. 18.
36 Traumatic Hernia of Diaphragm Proving Fatal Seven Months After Wound. C. P. Symonds.—p. 18.
37 Blood Changes in Gas Poisoning. J. Miller and H. Rainy.—p. 19.

34. **Ameba Histolytica Carriers.**—Emetin bismuthous iodid was administered by Imrie and Roche in doses of 3 grains on twelve successive nights to six patients. When given immediately after a light supper its administration was always followed with nausea and in some cases vomiting. These undesirable symptoms were least in evidence when the patients received the drug with water at 10 p. m. Five of the patients ceased to pass *Entameba histolytica* in the active or encysted form forty-eight hours after the institution of treatment. The sixth patient continued to pass cysts for six days, after which the microscopic findings were negative. These observations have a greater significance when it is remembered that four of the patients had previously received a course of emetin hydrochlorid, despite which they continued to pass the entameba in its active or encysted stage.

Bulletin de l'Académie de Médecine, Paris

December 19, 1916, LXXVI, No. 50, pp. 519-570

38 *Chloridimeter. (Chlorurimètre.) Agasse-Lafont, Douris and Hayem.—p. 521.
39 *Relations between Erythematous Lupus and Inherited Syphilis. E. Gaucher.—p. 529.
40 War Deafness. (Recherches expérimentales et histologiques sur la commotion du labyrinthe.) Prenant and Castex.—p. 535.
41 Extraction of Foreign Body in Right Bronchus under Intermittent Radioscopy. M. Cazin.—p. 537.
42 *Infant Welfare Work in Paris. (De la protection de l'enfance pendant la deuxième année de guerre dans le camp retranché de Paris.) A. Pinard.—p. 540.

December 26, No. 51, pp. 571-593

43 *Bedside Estimation of Chlorids in the Urine. (Sur la chlorurimétrie clinique.) C. Achard.—p. 572.
44 *Syphilis after Two Years of War. E. Gaucher and Bizard.—p. 575.
45 The Oculocardiac Reflex after War Wounds of the Skull. (Le réflexe oculo-cardiaque et les troubles subjectifs des trépanés.) P. Sainton.—p. 583. See Paris Letter, p. 384.
46 Gas Gangrene; Statistical Study. G. Gross.—p. 586.
47 Operative Cure of Cicatricial Stenosis of the Larynx. E. J. Moure.—p. 591.

38. **Chloridimeter.**—An instrument for bedside use is described with which the chlorid content of the urine or other fluid can be easily estimated with the usual chemical tests. The chloridimeter is a glass tube, graduated in two divisions. The tube is filled to the lower mark U with the urine and then to the mark R with the reagent. They are mixed by reversing the stoppered tube a few times. The tube is graduated from 1 to 20 above the mark R. The second reagent (29.075 gm. silver nitrate and distilled water Q. S. for 1,000 gm.) is added a little at a time. It tints the fluid red, but this disappears as the contents are mixed. By adding more and more the red tint becomes more pronounced and more durable. The figure marked at the point reached by the fluid when the tint has become stable is the index of the chlorid content in grams per liter of the fluid being analyzed. The first reagent is a mixture of 2 gm. potassium bichromate; 3 gm. acetic acid; 10 gm. sodium acetate, and distilled water Q. S. for 1,000 gm. The same tube is graduated, besides, like the Esbach tube and is used in the same way to determine the albumin content. (See abstract 43 below.)

39. **Erythematous Lupus.**—Gaucher presents evidence to show that this affection may be of purely tuberculous origin, or due solely to inherited syphilis, or it may be of tuberculous origin on a soil of inherited syphilis.

42. **Welfare Work for Young Children, and Infantile Mortality in Paris District.**—Pinard reviews the work that has been done to promote infant welfare during the second year of the war, devoting over forty pages to the various measures enforced and the statistics of the last three years. They

show that 50 per cent. more children were abandoned in 1916 than in 1914, while the number of births was 50 per cent. less. The high wages paid in the munitions factories he regards as responsible in large measure for this state of things, and he declares that the only remedy is to forbid factory work for every pregnant woman, every nursing mother, and every woman who has borne a child within six months. The infant mortality under 1 year of age is lower than in previous years.

43. **Chloridimeter.**—Achard describes perhaps the simplest form of chloridimeter, and emphasizes the advantages of bedside examination of the urine which he has been preaching, he declares, for fourteen years. His chloridimeter is a test tube and he uses always 3 drops of the 20 per cent. solution of potassium chromate and 5 c.c. of the standard solution of silver nitrate. The urine is then added until the reddish brown tint veers to a clear yellow. The tube is graduated to show the amount of urine required for this color reaction. By thus modifying the usual technic, letting the urine be the variable quantity, the test is rendered much simpler and much more convenient, he says, without detracting from its reliability. The urine can be diluted if exceptionally concentrated, or the nitrate solution can be diluted if the reverse prevails, calculating to allow for this. (See abstract 38 above).

44. **Venereal Disease After Two Years of War.**—Gaucher and Bizard say that just before the war, in a series of 3,000 patients in their service, 10 per cent. were syphilitic. In the first sixteen months of the war this proportion had increased to 16⅔ per cent., and in the last eight months to 25 per cent. of 2,300 patients. This last series of 600 syphilitics includes 219 civilians, thirty-seven under 20 years of age, and fourteen between 50 and 59, with one each of 64 and 66. Among the soldiers those over 25 furnish the largest contingent. Among 222 women with recent syphilis during the first eight months of 1916, more than two thirds were married, and in a large proportion of cases the first symptoms were noted soon after the husband's brief visit home. A third of these women were over 30 years old, further testimony to the probability of infection having occurred under legitimate conditions.

Gaucher emphasizes also the extraordinary prevalence of gonorrhea in both men and women, and expatiates on the necessity for enlightening the public as to its dangers, and, last but not least, on the necessity for teaching physicians to diagnose and treat it properly. He has been appalled at the ignorance of the dangers of venereal disease which has been revealed by inquiry among the young men examined. A number of instances are cited showing further that syphilitic eruptions and other lesions in both men and women had long been given futile treatment on a mistaken basis, throat lesions, leg ulcers, alopecia, which subsided at once under specific measures. The negative statements of patients should never be heeded. He insists that every physician should take a course of training in some service for syphilography, especially now that there is reason to fear that syphilis is going to be carried into the remotest villages. He pleaded with the authorities a dozen years ago to have a course in skin diseases and syphilis included in the fourth year of the medical course. All agreed with him as to its advisability, but nothing was done, he remarks, "as it is the custom in France to take no steps to prevent evil, and to wait until it is done before seeking to remedy it." He adds that the war alone is not responsible for this increase in syphilis; it has only precipitated it.

Lyon Médical, Lyons

December, 1916, CXXV, No. 12, pp. 513-560

48 The Chemical Industry in France and in Germany. P. Garnal.—p. 513. Concluded.

Paris Médical

December 30, 1916, VI, No. 53, pp. 561-576

49 Extraction of Projectiles. (L'extraction des projectiles sur le front.) G. Réchou.—p. 562.
50 *Pneumococcus Infections in African Troops. (La pneumococcie chez les tirailleurs de l'Afrique occidentale. Observations cliniques et thérapeutiques.) G. Boyé and G. Clarac.—p. 568.
51 Shiny White Lichen Planus. (Lichen porcelainé.) H. Gougerot.—p. 571.
52 Spontaneous Cure of Shell Vesicorectal Fistula with Retention Catheter and Wide Infrarectal Drain. (Fistule vésico-rectale par éclat d'obus guérie par des moyens simples.) A. Bœckel.—p. 573.

50. **Pneumococcus Infections and Abuse of Cola.**—Boyé noticed that the native troops from western Africa suffered exceptionally from extreme cardiovascular weakness during pneumonia. He traced this to the lack of cola nut which they take habitually at home, often in excessive quantities. The pneumococcus infections were mild, and as soon as he allowed the men a certain amount of cola nut they rapidly recuperated. Chronic cola intoxication was thus demonstrated to be responsible for the cardiac instability, and by giving them this stimulant to which they were accustomed, they were tided past the danger point.

Berliner klinische Wochenschrift

November 27, 1916, LIII, No. 48, pp. 1285-1308

53 *Ulcerative or Suppurating Colitis. R. Ehrmann.—p. 1285.
54 *New Finger Made from Rib Engrafted in Abdominal Wall. (Ein neues Operationsverfahren zum Ersatz von Fingerverlusten.) H. Neuhäuser.—p. 1287.
55 *Hyperleukocytosis with Internal Hemorrhage. (Die Leukocytenreaktion nach inneren Blutungen.) H. Dold.—p. 1290.
56 *Advantages of Repeated Lumbar Puncture in Treatment of Epidemic and Other Meningitis. (Beiträge zur Pathologie und Therapie der Hirnhautentzündung, insbes. der epidemischen Genickstarre.) H. Mühsam.—p. 1293.
57 Recent Research on the Heart. (Neuere Arbeiten über Herzdiagnostik mit bes. Berücksichtigung der praktisch verwendbaren Methoden.) F. Geppert.—p. 1298.

53. **Ulcerative Colitis.**—Ehrmann discovered some connection with dysentery in all but one of his cases of ulcerative colitis. Either agglutination tests, the anamnesis or the necropsy findings gave conclusive evidence in this respect. In several of the cases blood had long been passed in the stools at certain periods. In some of the cases the infection had been mainly with the Flexner or Y bacillus, and yet the suppurating and ulcerating colitis was as grave as in the cases traceable to true dysentery.

54. **Making a New Finger.**—Neuhäuser extols the advantages of a method with which a strip of a rib is transplanted into a fold of abdominal skin, and this in turn is sutured to the stump of the lost finger. The hand can thus be fastened to the abdomen with the minimum of discomfort, while the results, when the new finger was cut away from the abdominal wall, were satisfactory in the case described, with illustrations.

55. **Leukocytosis with Internal Hemorrhage.**—Dold has confirmed on dogs and rabbits the rise in the numbers of leukocytes when internal hemorrhage has occurred. This leukocytosis is manifest even with relatively slight internal hemorrhage. It reaches its height in from eight to twenty-four hours, and has entirely subsided by the end of the fourth day. He explains this leukocytosis as due to absorption of leukocyte-attracting products from the disintegration of albumin in the extravasated blood. He thinks that it is destined to be quite an aid in diagnosis of internal hemorrhage.

56. **Treatment of Meningitis.**—Mühsam states that the mortality was 56 per cent. in his numerous cases of epidemic meningitis in which intraspinal serotherapy was applied by the usual technic. On the other hand, it was only 5 per cent. in the numerous cases in which daily lumbar puncture was done, withdrawing large amounts of fluid, up to 100 c.c. at a time. He never witnessed any serious mishaps from it. Mixed infection was quite common. He adds that he is not allowed to give his figures, but that the numbers are large enough to warrant decided statements as to the value of thus evacuating the noxious fluid in these cases.

Deutsche medizinische Wochenschrift, Berlin

December 7, 1916, XLII, No. 49, pp. 1501-1532

58 *The Coordinated Reflexes of the Human Lumbar Spinal Cord. Böhme.—p. 1501.
59 Monocyte Leukemia? Bingel.—p. 1503. To be continued.
60 Acute Nephritis in the Troops. Rostoski and Pantaenius.—p. 1505. To be continued.
61 The Blood Picture after Radiotherapy of Uterine Cancer. (Die Bewertung des Blutbildes nach Bestrahlung beim Uteruskarzinom.) F. Heimann.—p. 1507.

62 *Elimination of Uric Acid in Disease of Glands with an Internal Secretion. (Ueber Harnsäureausscheidung bei einigen Fällen von Blutdrüsenerkrankungen.) J. Nowaczynski.—p. 1510. Commenced in No. 48,—p. 1478.
63 Astringent Action of Aluminum Formate. A. Loewy.—p. 1512.
64 Occupation Therapy for Soldiers with Nervous Affections. (Arbeitstherapie für nervenkranke Soldaten.) P. Jolly.—p. 1514.
65 Diaphragm for Stereoscopic Roentgenography. (Blende zur Anfertigung stereoskopischer Röntgenaufnahmen.) K. Lossen.—p. 1517.
66 Five-Day Fever Described in 1904 as "Relapsing Influenza." (Zur Frage der Febris wolhynica—His.) E. Apolant.—p. 1518.

58. **Coordinated Reflexes.**—Böhme's experience has apparently demonstrated that the motor reflexes in the legs are alike in man and in animals, the coordinated reflexes in particular. A particularly instructive case of myelitis is described which left the boy of 8 with complete paralysis of the left leg and also of the right except that it can be flexed a very little at the hip. There is also paralysis of the rectum and bladder sphincters. This condition has persisted for five years to date. The tendon reflexes are exaggerated, and there are occasionally involuntary movements of the legs. On stroking the sole, the hip and knee become flexed, with dorsal flexion of foot and toes, and this same coordinated reflex movement of whole sets of muscles can be elicited when the skin of the leg or of the lower abdomen is irritated. With gentle stroking the reverse reflex movement is elicited. A strong stimulus causes flexion, a weak stimulus extension. The extension reflex is tonic; the limb remains in the extension position even when it has been passively induced. The other leg becomes slightly flexed as the one leg becomes extended, and vice versa. Eliciting with strong irritation the flexion reflex in one leg, induces extension in the other. With the patient lying on his back, both legs fully extended, application of the electric current to the sole of one foot causes flexion of this leg and, a trifle later, of the other also. With both legs flexed, gently stroking one sole causes rapid and extreme extension of both legs. The crossed and double reflex movements and coordinated reflexes observed in this case throw light on the mechanism of crippling contracture, etc. They also suggest treatment of paralysis by eliciting coordinate movements instead of merely stimulating the separate muscles. Böhme suggests practicing the limb with reflex flexion and contraction. Study of the arm reflexes in the animal kingdom has shown that those which are no longer needed for man have been lost. In four-footed animals the front legs require the same reflex phenomena as the hind legs, but in man, as he does not use his arms in walking, the arm reflexes differ essentially from the leg reflexes. There are no crossed reflexes in the arms, while the leg reflexes in man seem to be identical with those in animals, and their retention indicates some biologic importance.

62. **Organ Therapy of Disease of Endocrine Glands.**—Nowaczynski investigated in particular the elimination of uric acid in seven cases of exophthalmic goiter, dystrophia adiposogenitalis or Addison's disease, under organ therapy. No essential influence on the elimination of uric acid under these conditions could be detected. In a few cases there was increased elimination, but the material is too small for conclusions.

Medizinische Klinik, Berlin

December 3, 1916, XII, No. 49, pp. 1275-1302

67 Perforation of Unicornus Uterus during Removal of Placenta. O. v. Franqué.—p. 1275.
68 *Diabetes in Children. (Diabetes mellitus im Kindesalter.) H. Kleinschmidt.—p. 1277.
69 War Wounds of the Skull. (Ueber Schädelverletzungen im Gebirgskriege.) E. Rychlik and A. Löwenstein.—p. 1279.
70 Paratyphoid A; Thirty-One Cases. (Paratyphus A.) J. Schmautzer.—p. 1282.
71 Diagnosis of War Wounds of the Abdomen. (Diagnostik der Bauchschüsse.) K. Hanusa.—p. 1284.
72 Optochin in Pneumonia. A. Stühmer.—p. 1286.

68. **Diabetes in Children.**—In the course of the last three years Kleinschmidt has had fourteen diabetic patients between the ages of 2 and 14 years, nine boys and five girls. Only two of the children were from well-to-do families and only one was from a Jewish family. In five of the cases the diabetes was kept under control and the children look well; they have been under observation for from three to twenty months. In two other cases the diabetes was of a moderately severe type, but in the seven others it was very severe. In children the transition from the mild to the severe type occurs more rapidly than in adults. In some of the cases the diabetes had not been recognized until after this transition had occurred. There was a history of diabetes in the progenitors in two cases and of obesity in one. Treatment has to be strictly individualized as the key to success is quantitative regulation of the diet, calculating at 70 the calories required for a year old child and 35 calories per kilogram for an adult.

For the qualitative regulation he calculates 2 gm. albumin per kilogram for older children and 3 gm. per kilogram for younger children, giving it in the form of meat, egg and cheese, with abundance of vegetables and fruit and at first 100 gm. bread or potatoes or oatmeal, making up the rest of the calories with fat, preferably butter. When the child is taking this diet regularly, it is easy to determine its tolerance of carbohydrates by testing the limits of tolerance. This is best done in an institution; the limit once established, the treatment of the mild types can be continued at home under regular control of the urine. One girl of 6 was able to take, along with the vegetables and fruit, 150 gm. bread and 100 gm. potato; another of 7 takes 30 gm. oat flakes, 50 gm. bread and 50 gm. potato. Others have been able to bring the tolerance to a high point. There was no glycosuria in one girl of 11 even after test ingestion of 420 gm. wheat rolls with 50 gm. grape sugar.

The children seemed to be thriving after the tolerance had been determined and the level kept below this. They attended school part of the time and stood well in their studies. Some of them increased in weight by several pounds, but two showed no increase, and the temperature was sometimes inclined to be subnormal. But none of the children lost the tendency to glycosuria; it returned on the slightest provocation even after weeks or months, brought back by a fright, disappointment about a journey, or a bad school report, but most frequently by some slight intercurrent catarrhal affection, parotitis or diarrhea. It was easy to restore the tolerance again, but the accumulation of such disturbances must gradually permanently reduce the level of tolerance. Hence a tendency to even slight catarrh of the upper air passages must be regarded as a serious complication for diabetes in children. In three of his cases measles had a decidedly unfavorable effect; in one, the diabetes was first discovered after measles. In a case reported by Naunyn, varicella entailed fatal acidosis, and in Starck's case whooping cough had this effect, but in one of Kleinschmidt's cases the girl of 7 passed through severe hemorrhagic uremic nephritis without return of the glycosuria. This child had a suppurating skin affection, besides the diabetes.

In the severe forms, vegetable days and oatmeal days sometimes prove of benefit, but the oatmeal failed completely in the case of one child between 2 and 3. He gave sodium bicarbonate or sodium or potassium citrate whenever the urine was found acid. The acidity of the urine is a simple and exact gage of the acidosis, and thus of the danger threatening the child. In six of his cases it proved impossible to render the urine alkaline, even with 40, 60 or 80 gm. of the alkali, and coma soon followed. In this stage no influence was apparent even from intravenous injection of a 5 per cent. solution of sodium bicarbonate. Aside from the alkali, he knows of no effectual drug treatment of diabetes. Whether diabetes is liable to develop later in life when children have shown alimentary glycosuria or transient glycosuria during an infectious disease or as a symptom of myxedema, is still a question. He has so far seen no tendency of the kind in cases long under observation.

Münchener medizinische Wochenschrift, Munich

November 28, 1916, LXIII, No. 48, pp. 1685-1716

73 The Pituitary Body as Regulator of Diuresis and of the Specific Gravity of the Urine. H. Bab.—p. 1685. To be continued.
74 *Treatment of Secondary Anemia by Intragluteal Injections of Nondefibrinated Blood. H. Köhler.—p. 1688.
75 Combating a Cholera Epidemic. Bofinger.—p. 1689.

76 *Prevention and Treatment of Whooping Cough. (Zur Verhütung und Behandlung des Keuchhustens.) E. Doernberger.—p. 1691.
77 *Combating Venereal Diseases. (Bekämpfung der Geschlechtskrankheiten.) L. v. Zumbusch and A. Dyroff.—p. 1692.
78 Treatment of Erysipelas with "Quartz Lamp." (Behandlung des Erysipels mit der Quarzlampenbestrahlung.) F. König.—p. 1701.
79 Early Treatment of Abdominal Wounds. (Beobachtungen und Resultate bei frühzeitig eingelieferten Bauchschüssen.) Oberst.—p. 1702.
80 The Tendency to Scoliosis after Amputation of an Arm or Leg. (Ueber skoliotische Haltung einseitig Amputierter.) P. Erlacher.—p. 1705.
81 Treatment of Acute Dysentery. (Zur Behandlung der akuten—dysenterischen—Darmentzündungen im Kriege.) A. Plehn.—p. 1707.
82 Obscure Febrile Affections. (Ueber unklare fieberhafte Erkrankungen.) E. Becher.—p. 1708.
83 Optochin in Pneumonia; Ninety Cases. B. Leick.—p. 1710.
84 "Five-Day Fever"; Two Cases. E. Scheube.—p. 1712.
85 Gaseous Abscess of the Brain; Two Cases; Recovery. E. Rychlik.—p. 1713.
86 Immobilizing Dressing for Fractured Femur. (Transportverbände bei Oberschenkelfrakturen.) S. Weil.—p. 1714.
87 Technic for Examining the Blood in Malaria. H. Lipp.—p. 1715.

74. **Intragluteal Injections of Blood in Secondary Anemia.**—Köhler has only two cases to report, but the benefit was so prompt and permanent and the technic so simple that he commends the measure for general adoption. No attempt was made to defibrinate the blood. The donor was the sister in one case. A single injection answered the purpose here; the reds had dropped to 1,188,000 and the hemoglobin to 20 per cent. after constant losses of much blood at the first menstruation. By the fifth week after the intragluteal injection of blood the figures were 4,320,000 and 65 per cent. The other was a maternity case with septic streptococcus endometritis, reds 1,100,000, hemoglobin 15. Eight injections were made at four-day intervals, to a total of 150 c.c. of blood. In two months the reds ran up to 3,276,000, the hemoglobin to 50, and the improvement progressed afterward.

76. **Whooping Cough.**—Doernberger remarks that nothwithstanding the recommendations by the manufacturing chemists of dozens of remedies, ending in "in," "on" and "ol," claimed to be specifics for whooping cough, with testimonials as to their efficacy signed by reputable physicians and distributed broadcast, still as ever, the best means of relief, not cure, is pure air free from dust and soot. But this is hard to get, in the homes of the poor, and health resorts are more and more disinclined to receive whooping cough cases, to say nothing of the danger of contagion of others in cars and trains on the way to health resorts. He suggests as a useful measure that a certain part of some public park be fenced off for whooping cough children and their attendants. Roof gardens have also been proposed. He cites the placards in use in Havana to show that certain places regard whooping cough seriously. The public health service there posts a notice on the bill boards stating that whooping cough is epidemic in a certain district, and warning against it, especially for young children, also giving directions for the children affected. The placard on the whooping cough house also gives directions for preventing contagion of others.

77. **Necessity for Including Venereal Diseases Among those Requiring Compulsory Notification and Compulsory Treatment.**—This communication was translated nearly in full for the Social Medicine and Medical Economics Department, January 27, p. 306. Zumbusch is professor of skin diseases and syphilis at the University of Munich and Dyroff is professor of state and constitutional law (*Staatsrecht*) there.

Zeitschrift für Tuberkulose, Leipzig

November, 1916, XXVI, No. 5, pp. 321-400

88 *Detection and Treatment of Tuberculosis in Children. (Erkennung und Heilung der Tuberkulose im Kindesalter.) J. Hollos.—p. 321.
89 *Changes in Blood Picture under Influence of Induced Pneumothorax. (Wirkung des künstlichen Pneumothorax auf das Blut der Tuberkulösen.) M. Gutstein.—p. 336.
90 Indications from Medical and Social Standpoints for Sanatorium Treatment of Pulmonary Disease. (Wer gehört—vom ärztlichen und sozialen Standpunkt betrachtet—in die Lungenheilstätte?) Litzner.—p. 367.
91 Cure of Lupus under Phototherapy. (Beitrag zur Lupusbehandlung mit künstlicher Höhensonne.) W. Kaufmann.—p. 370.

88. **Detection and Treatment of Tuberculosis in Children.**—Hollos emphasizes that the treatment of tuberculosis in children must include prevention of repeated infection as well as measures to strengthen the resisting powers besides systematic specific treatment. Every child known to be exposed to tuberculosis can be regarded as already infected. The more sensitive to toxic influences the child's organism, the greater the production of antibodies, and hence the tuberculous process does not spread so rapidly, but the various functional disturbances from the toxins are more pronounced. Such children are frail but they may live their whole life without the tuberculosis becoming manifest. Only when in consequence of unhygienic conditions, alcoholism, measles or pregnancy, the immunity is lowered is the tuberculosis able to get the upper hand. Sad examples of this are found in the soldiers with previously latent tuberculosis who return from the front with pulmonary phthisis.

Latent tuberculosis in children is often revealed by defects in development. The previously normal appearing child begins to grow thin and pale, the skin and muscles feel flabby, and the bones are inclined to soften and bend. The mind often develops precociously and the children are known as good scholars, while others are correspondingly backward. Children with latent tuberculosis "catch cold" readily, eczema and pruritus are frequent and there may be periods of some difficulty in breathing, with or without bronchial catarrh. Pains at different points are also instructive; by simulating appendicitis they have been known to lead to an unnecessary operation. Owing to the influence of the tuberculosis toxins on the genital organs, the picture of puberty may differ entirely from normal. These toxins can act on the glands with an internal secretion either to irritate them to exaggerated functioning or to inhibit their functioning, which explains why one child may grow tall and spindling under their influence while another may be short and stout. There may be extreme emaciation or there may be obesity, premature or long retarded puberty, frequent profuse menstruation or the menses may not commence until the sixteenth or eighteenth year or later and then occur at long and irregular intervals. In boys, early and repeated pollutions and sexual nervousness at puberty should arouse suspicion of latent tuberculosis.

All these disturbances in tissues and functions which are induced by tuberculous infection in the growing child, form as a whole the clinical picture of Stiller's "universal asthenia." Others call it the "lymphatic temperament." All seem to regard it as an inherited, congenital predisposition, a substandard constitution, when in fact it is merely the sum total of the disturbances induced by tuberculous infection during childhood. It is not a congenital anlage and an inherited body frame, but it is the results of the insidious sapping of an acquired disease. And this, he reiterates, is under our control if we recognize and attack it early enough with specific treatment.

89. **Influence of Artificial Pneumothorax on the Blood.**—Gutstein gives the minute details of his examination of the blood of twenty tuberculous patients being treated with induced therapeutic pneumothorax. In favorable conditions the number of reds rapidly and materially increased and the hemoglobin percentage also increased, but more slowly, while the total white count was reduced but the lymphocytes and eosinophils increased in numbers. These were the findings with a successful pneumothorax free from complications. When there were complications, these changes were not observed or the reverse was noted, the hemoglobin declining while hyperleukocytosis and lymphopenia developed. These changes in the blood picture are instructive for the prognosis. It should be guarded when the blood shows hyperleukocytosis with lymphopenia and the hemoglobin percentage is dropping.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 17, 1916, XXXVII, No. 101, pp. 1585-1600

92 Pulsating Hematoma and Operative Treatment. G. Campora.—p. 1588.
93 *Treatment of Frozen Limbs. (Pei nostri congelati.) T. Silvestri.—p. 1592.

December 21, No. 102, pp. 1601-1616

94 *Epidemic of Hemorrhagic Disturbances in the Troops on Active Service. (Sindromi emorragiche ad insorgenza epidemica tra le truppe operanti.) P. D. Siccardi.—p. 1605.

December 24, No. 103, pp. 1617-1632

95 Epidemic Jaundice. (Sull'eziologia dell'ittero epidemico.) M. Ascoli and S. Perrier.—p. 1618.

93. **Freezing Injuries.**—Silvestri remarks that freezing injuries are the scourge of the troops in winter, and that every effort must be made to relieve at brief intervals the troops exposed to freezing temperatures, and have them move about, as keeping still favors freezing. Freezing of the first or second degree he has found always heals spontaneously, regardless of what local measures may be applied. They may relieve the suffering, however. This is not always proportionate to the gravity of the injury but depends more on the man's sensitiveness to pain. Everything should be avoided —bandages, etc.—that tend to have the limb kept still. Massage, possibly with some sedative salve, and movements—these are the sovereign means of cure, supplemented when needed by scarification of the blisters, application of an absorbing powder, an extremely light protecting dressing and raising the foot, if there is much edema, with early active exercise. The men should not be allowed to stay in bed during the day; movement is the best of all measures, and although it may be painful at first, it soon relieves the suffering and hastens the cure. It is not enough to advise the men to keep up and about; they must be made to do it. With freezing of the third degree, the dressing must also be light, permitting ample access of air. The limb should be raised but not covered. Silvestri has found calcium salts very useful in treatment of severe freezing, with or without strychnin to improve vasomotor tonus. Both should be given freely but he warns against giving antitetanus serum in case of freezing of the second and third degrees.

94. **Hemorrhagic Affections in the Italian Troops.**—Siccardi noticed last summer the epidemic appearance of a transient hemorrhagic diathesis among the troops serving at the highest altitude among the mountains. Whatever affection the men might be having, a hemorrhagic character was strikingly evident. Hemorrhagic scurvy formed 2.5 per cent. of the cases, and a "hemorrhagic parascurvy," as he calls it, formed 42 per cent. The symptoms were the same as in true scurvy, but the general health was not impaired and in 29 per cent. there was no stomatitis. In 51 per cent. of the cases there was typical exanthematous purpura. The course in all the cases was benign. Rest and dieting seemed to be all that was necessary. Defective ventilation of the underground shelters, the cold and damp, wet feet, wet clothes, and the unbalanced diet easily explain the tendency to these troubles. Rest, dry warmth and change of diet soon restored normal conditions as a rule. Bacteriologic tests were constantly negative except in a small group of 0.5 per cent. who presented infectious hemorrhagic skin lesions with typhoid plus paratyphoid B in some cases. Of the total number of men with this hemorrhagic tendency, 4 per cent. were in the frozen limb group, weak, but with no signs of sepsis.

Pediatria, Naples

November, 1916, XXIV, No. 11, pp. 641-704

96 *Improved Technic for Intubation for Stenosis of the Larynx. (Terapia delle stenosi laringea col metodo Bellotti-Isonni modificato.) L. Leto.—p. 641.

97 *Study of the Meningococcus in a Recent Epidemic of Meningitis. (Comportamento morfologico e biologico dei meningococchi di Weichselbaum, isolati durante l'epidemia di meningite cerebrospinale scoppiata in Palermo nell'anno 1915-1916.) G. Rutelli.—p. 650.

98 Multiple Cerebral Tuberculomas. A. Corica.—p. 660.

99 *The Hemolyzing Power of Certain Preparations of Antimony Used in Therapeutics. G. Caronia.—p. 667.

96. **Improved Technic for Intubation with Stenosis of the Larynx.**—With Leto's modification of the Isonni technic, a long, curved needle is worked through the thyrohyoid membrane a few millimeters below the margin of the hyoid. The forefinger in the pharynx serves as guide to the needle and obviates any injury of the throat. As the needle enters the throat it is drawn out through the mouth, and the long silk thread it brings with it is fastened to the laryngeal tube. The tube is then easily introduced, aided by pulling on the silk coming out through the thyrohyoid membrane below. The silk is then tied over a strip of gauze fastened like a cravat around the throat. The tube is thus held firmly in place. In one of the four cases of membranous croup described in which intubation was done by this technic, the tube had to be worn for six weeks. The silk became macerated during this period but the procedure was easily repeated. Nothing was found to suggest injury from the introduction of the needle, not even in the one case that came to necropsy.

97. **Epidemic Meningitis.**—Rutelli isolated Weichselbaum's meningococcus in thirty-seven of the nearly eighty cases of meningitis in a recent epidemic at Palermo, and he tabulates the morphologic and biologic peculiarities of the coccus and various features of the disease. They demonstrate that the meningococci in various epidemics differ biologically in certain respects, showing that antiserums should be made from the special strain involved. Only when the antiserum is made from the patients' own meningococci can it be depended on to be actually effectual in a given epidemic.

99. **Correction of Hemolyzing Property of Antimony.**—Caronia reports experiments which show that the pronounced destruction of the blood corpuscles liable with intravenous injection of preparations of antimony can be prevented by addition of salt. He advises using a weak solution of the antimony preparation, not over 0.5 or 1 per cent., in a 0.7 or 0.75 solution of sodium chlorid. He experimented mostly with antimony and potassium tartrate.

Policlinico, Rome

December, 1916, XXIII, Medical Section No. 12, pp. 409-448

100 Organic Nervous Disturbances Following War Wounds of the Brain. (Sindromi nervose organiche consecutive a lesioni—da proiettili—del cervello.) G. Mingazzini.—p. 409.

101 *Painful Subcutaneous Nodules with General Depression. (Ricerche cliniche sopra un caso di "adipositas dolorosa"—morbo di Dercum.) F. Alzona.—p. 429.

December, Surgical Section No. 12, pp. 353-392

102 *Correction of Congenital Pseudoarthrosis of the Tibia. G. Serafini.—p. 353.

103 *Urea Test of Kidney Functioning. (La prova dell'azoturia come metodo di esame della funzioni renale.) E. Pirondini.—p. 368.

104 Interscapular-Thoracic Amputation for Primary Epithelioma of the Head of the Humerus. (Contributo clinico all'amputazione interscapulo-toracica ed istopatologico ai tumori epiteliali primitivi delle ossa.) N. Giannettasio.—p. 371.

101. **Adiposis Dolorosa.**—Alzona reports what he classes as a case of Dercum's disease in a soldier of 26 in the trenches. During the last seven months small, very painful bunches have developed at various points under the skin, sparing only the face, upper arms and shoulders. The appearance of each of the small swellings is preceded by a period of pain in the region and the pain persists. The man tires readily and has pains in the lumbar and heart region. His mother and one brother are epileptics and the man himself has had attacks and has passed through typhoid twice. Epinephrin and atropin displayed slight if any action, but pilocarpin accelerated the heart beat and induced nausea, general malaise and profuse salivation and sweating. The metabolic findings under each of these drugs are tabulated and compared with those reported in other cases of the kind. Few if any have been studied at such an early stage.

102. **Pseudarthrosis of the Tibia.**—The bones refused to heal after a fracture of the tibia just above the ankle in a girl of 6, and by the age of 16 the foot swung outward almost at a right angle from the leg. The pseudarthrosis prevented any use of this foot. The fibula curved but was intact. A broad wedge was cut out of it and the tibia was resected above and below the pseudarthrosis. With this operation approximately normal conditions were restored and the leg can now be used normally with a high sole. He regards the trouble as of congenital origin as nothing else explains the complete lack of consolidation, and the fracture occurred with such slight trauma that it was almost spontaneous.

103. **Urea Test of Kidney Functioning.**—Pirondini called attention two years ago to the valuable information to be derived by experimental azoturia. He gives for the test 300 c.c. of distilled water in which have been dissolved 10 gm. of urea. (The test was described in The Journal, 1915, **65,** 835.) He here reports the details of four cases in which this test gave most instructive findings, harmonizing with the Ambard index throughout. One of the cases had forensic interest, the woman claiming large damages for alleged cantharidin poisoning of the kidney. The azoturia test showed normal conditions in the kidneys, confirming other findings.

Revista de la Asociacion Medica Argentina, Buenos Aires

November, 1916, XXV, No. 144, pp. 459-586

105 *Local Anesthesia for Operations on the Neck. (Anestesia local regional e infiltrativa en las operaciones de cuello.) J. M. Jorge.—p. 459.
106 Sarcoma of the Iris. (Caso de leucosarcoma del iris.) R. Argañaraz.—p. 471.
107 Delivery at Term with Uterus Pseudo-Didelphys. (Embarazo a termino en un utero bicornio bicervical.) E. A. Boero.—p. 485.
108 Sensory Hemiplegia. (Hemiplejias sensitivas.) M. R. Castex and N. D. Rosso.—p. 495. Continuation.
109 Serum Reactions in Leprosy. (Investigaciones serologicas en la lepra.) A. Sordelli and G. Fischer.—p. 558.
110 Hematometra in One Side of Double Uterus. (Hematometria unilateral.) O. L. Bottaro.—p. 570.

105. **Local Anesthesia for Operations on the Neck.**—Jorge comments on the gratifying way in which local anesthesia is extending its scope in the surgical services. He prefers as a rule the infiltration technic, the patient under the influence of some sedative, but for operations on the neck the paravertebral technic has proved its superior advantages. The nerves forming the cervical plexus are blocked by injecting the anesthetic at two points on a line from the posterior margin of the mastoid to the lateral tubercle of the sixth cervical. The points are at the intersection of two horizontal lines, one passing along the inferior margin of the lower jaw, and the other passing along the most pronounced portion of the thyroid cartilage. The needle is pointed toward the anterior plane of the transverse processes, and 4 or 6 c.c. of the 1 or 2 per cent. novocain-epinephrin solution are deposited thus in the plexus zone. This nerve-blocking procedure has to be supplemented by infiltration anesthesia of the operation field. With this technic he has safely excised enormous goiters, congenital cysts and enlarged glands and excised the sternocleidomastoid muscle, extracted foreign bodies and resected cancers—a total of over 100 operations on the neck, some two hours long.

Siglo Medico, Madrid

December 9, 1916, LXIII, No. 3287, pp. 785-800

111 *Changes in the Blood Picture as a Guide in Prognosis. (La linea de resistencia de Sondern en la apendicitis.) L. Cardenal.—p. 785.
112 Endemic Malaria in Spain. E. Luengo.—p. 787. Concluded in No. 3288, p. 808.
113 The Ethical and the Vicious Press. (La buena y la mala prensa.) C. Juarros.—p. 791.

111. **Changes in the Blood Picture as Aid to Prognosis.**—Cardenal relates that his clinical experiences have confirmed the instructive bearing of Sondern's line of resistance in estimating the defensive forces of the organism during an attack of appendicitis, for example. He gives a typical chart, and reiterates that slight changes in the relative blood count indicate mild infection; a slight increase in the numbers of neutrophils, and of leukocytes in general, indicates a good organic resistance and mild infection; slight neutrophilosis and pronounced leukocytosis, mild infection and strong resistance; much neutrophilosis and much leukocytosis testify to severe infection but good defense; much neutrophilosis and slight leukocytosis, severe infection and low resisting powers. Any increase in the numbers of neutrophils with decrease of leukocytes is a sign of increasing gravity of the infection and reduction of the organic defenses. The larger the relative proportion of neutrophils, the greater the probability of pus production. None of his patients with neutrophilosis of 94½ per cent. recovered.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 2, 1916, II, No. 23, pp. 1985-2060

114 *Ringworm of the Beard. (Trichophyton rosaceum.) D. Muijs.—p. 1985.
115 *Why the Deaf Hear Better in Railroad Trains, etc. (Beter hooren in lawaai.) H. Burger.—p. 1992.

114. **Ringworm of the Beard.**—Muijs comments on the prevalence at Amsterdam of lesions in the beard for which the *Trichophyton rosaceum* is responsible. He gives a colored plate showing its growth on a culture medium of 4 per cent. peptone. He also tabulates the varieties of ringworm as published at Paris, Berlin, London and elsewhere. He has encountered fifty-six cases at Amsterdam in which this trichophyton was found in the beard. One man returned later bringing his son with beginning ringworm of the scalp, and two daughters with ringworm of the skin. This trichophyton was found in all. He also detected it in nine other cases, six of the scalp, two of the skin and one of the nails—a total of sixty-five cases. Five cases of this same ringworm of the beard have been reported at Paris, three at Parma, one at Hamburg and two at London—a total of sixty-seven in which the *Trychophyton rosaceum* has been found.

115. **Why the Deaf Hear Better in Railroad Trains.**—Burger argues that the deaf do not really hear better in the midst of noises, as is often assumed. Those with normal hearing hear so much less under these conditions that the hearing capacity of the more or less deaf profits in comparison. This suggests that it is improved by the racket, when in fact merely a lowering of the standard of hearing is responsible for the difference.

Hospitalstidende, Copenhagen

December 6, 1916, LIX, No. 49, pp. 1181-1204

116 Experimental Research on Suture of Bronchi and Drainage of the Pleura. F. Nielsen.—p. 1181. Concluded in No. 50.
117 *Fibrositis in the Legs. (Fibrositis extremitatum inferiorum.) P. Lorenzen.—p. 1193.

117. **Fibrositis in the Legs.**—Lorenzen has encountered comparatively frequently a typical clinical picture caused by infiltration of the connective tissue in the feet and also in the legs. The tenderness and pain may interfere with the use of the leg. The symptoms may resemble those from severe arteriosclerosis in the region. The pains are increased by functioning, and they may spread upward even beyond the legs, and there may be tonic contractions. In children and young people, functional disturbances predominate, either as a weakness or altered pose of the foot, with chilliness and sweating of the foot and other motor disturbances. The fibrositis may be palpated not only at the point of greatest tenderness but elsewhere on that leg and sometimes on both. The almost invariable valgus position of the big toe, or hammer toe, suggests that these deformities are always traceable to some form of this fibrositis. The frequent association with flatfoot is also suggestive of a causal connection.

The fibrositis may affect persons of all ages, and it is often mistaken for rheumatism, gout, varices, or merely flatfoot disturbance. Treatment applied on these mistaken premises is futile, while prompt recovery is the rule under local palpation and exercise of the tendons and muscles involved. A history of prolonged exposure of the feet to cold or dampness or overuse, alone or in combination, can usually be elicited. One of his child patients had been going barefoot during a long period of damp, bleak weather. A constitutional predisposition to nervous and joint troubles was more or less manifest in every case. Only a few had been relieved by heat and warmth, or by some special attitude of the foot. The infiltration can be palpated at various points in the foot, as he describes in detail, mostly along the flexor brevis digitorum or the extensor tendons of the big toe. Peritendinitis is the rule, and these changes can be traced for some distance. A few times he found a diffuse chronic swelling running around the foot, the ankle and lower part of the leg. The fibrositis may extend to the knee, and the veins are often varicose. There may be pain on pressure of the veins, but it can be traced to the tender muscle below. Sometimes distinct nodules can be felt on the sole, below the tuberosity of the calcaneum. Fibrositis in the neck, shoulders, arms and lumbar regions is more common, but even here it is liable to be erroneously diagnosed and treated.

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THE RELATION OF THE ACID-BASE EQUILIBRIUM OF THE BODY TO CARBOHYDRATE METABOLISM

AND ITS APPLICATION IN HUMAN DIABETES *

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A. THE RELATION OF THE ACID-BASE EQUILIBRIUM TO CARBOHYDRATE METABOLISM

Under normal conditions the content of blood sugar may be regarded as one of the body's constants. Transitory fluctuations may occur incident to ingestion of food, etc., but the variations encountered are confined within rather narrow limits. The exact mechanism controlling the constancy of the blood sugar content is unknown. It is well recognized, however, that a variety of agencies may temporarily throw out of equilibrium the blood sugar regulating mechanism producing either a state of hyperglycemia, with an accompanying glycosuria, or a condition of hypoglycemia in which sugar may or may not appear in the urine. The introduction into the organism of epinephrin may be cited as an example of the type of agents leading to the development of hyperglycemia and glycosuria. Phlorizin causes hypoglycemia with glycosuria, whereas hydrazin and phosphorus induce a diminished blood sugar content without the appearance of urinary sugar.

The mechanism regulating the level of blood sugar is peculiarly sensitive to disturbances in the acid-base equilibrium of the body. These may be manifested in either direction, namely, in conditions in which the equilibrium is overbalanced by excess of acid or deficiency of base (acidosis), or by circumstances leading to an overwhelming preponderance of base or temporary deficiency of acid (alkalosis). To avoid ambiguity it may be explained that the term "acidosis" is intended here to mean a disturbance in the acid-base equilibrium of the body whereby the introduction of, or the excessive production of, acid (ketogenic or otherwise) causes the withdrawal of base from the body. The term "alkalosis" is sufficiently clear to need no special definition.

Acid introduction or acid production in the body exerts a distinct influence on carbohydrate metabolism. This assertion is supported by the observation of Elias[1] that the ingestion of acid by dogs and rabbits leads to hyperglycemia and glycosuria. Elias[2] has also concluded that the so-called "hunger diabetes" of young dogs, as described by Hofmeister,[3] is in part, at least, a condition due to acidosis, as indicated by the lowered carbon dioxid content of the blood and of the alveolar air. In human diabetes also it is conceded that acidosis arises. This brief review of the literature on the subject makes it evident that the introduction of acid or the production of acid in the organism is associated with a disturbance of blood sugar content which is manifested in one direction, namely, blood sugar content is augmented.

On the other hand, a state of alkalosis is likewise potent in exerting an influence on carbohydrate metabolism, but this action is contrary to that of acidosis. That alkali introduction influences carbohydrate regulation in the body was demonstrated by Pavy and Godden,[4] who found that the glycosuria provoked by ether or chloroform disappears after the intravenous injection of sodium carbonate. Given by mouth or intravenously, sodium carbonate will abolish the hyperglycemia of "hunger diabetes"; and according to Elias,[2] the glycosuria will either entirely disappear or be greatly diminished. After removal of the pancreas, sodium carbonate introduced into the blood stream of the dog causes a diminution of the sugar excretion.[5] Murlin and Kramer[6] showed that under the influence of sodium hydroxid the respiratory quotient is increased in depancreatized dogs. In agreement with this finding are the results of Kramer and Marker,[7] who have stated that "sugar retained when sodium carbonate is administered to depancreatized dogs is not stored as glycogen nor is it eliminated by way of the saliva or the gastro-intestinal tract." These observations[8] indicate that alkali introduction facilitates sugar combustion in the depancreatized dog.

The explanation for the closely agreeing observations just cited probably lies in the effect which sodium carbonate exerts at times on the blood sugar content of normal animals. The intravenous injection of sodium carbonate may cause, although not invariably, a marked diminution in the blood sugar content[9] of rabbits. When blood sugar content is affected, the diminution is transient, the normal being regained within one or two hours. Moreover, the hyperglycemia and glyco-

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* From the Sheffield Laboratory of Physiological Chemistry, Yale University.

* Reported to the Society for Experimental Biology and Medicine, March 15, 1916. Compare Proc. Soc. Exper. Biol. and Med., 1916, **13**, 111.

[1] Elias: Biochem. Ztschr., 1912-1913, **48**, 120.

[2] Elias and Kolb: Biochem. Ztschr., 1913, **52**, 331.

[3] Hofmeister: Arch. f. exper. Path. u. Pharmakol., 1889-1890, **26**, 355.

[4] Pavy and Godden: Jour. Physiol., 1911-1912, **43**, vii.

[5] Murlin and Kramer: Jour. Biol. Chem., 1913, **15**, 365; 1916, **27**, 481.

[6] Murlin and Kramer: Jour. Biol. Chem., 1916, **24**, xxv; 1916, **27**, 517.

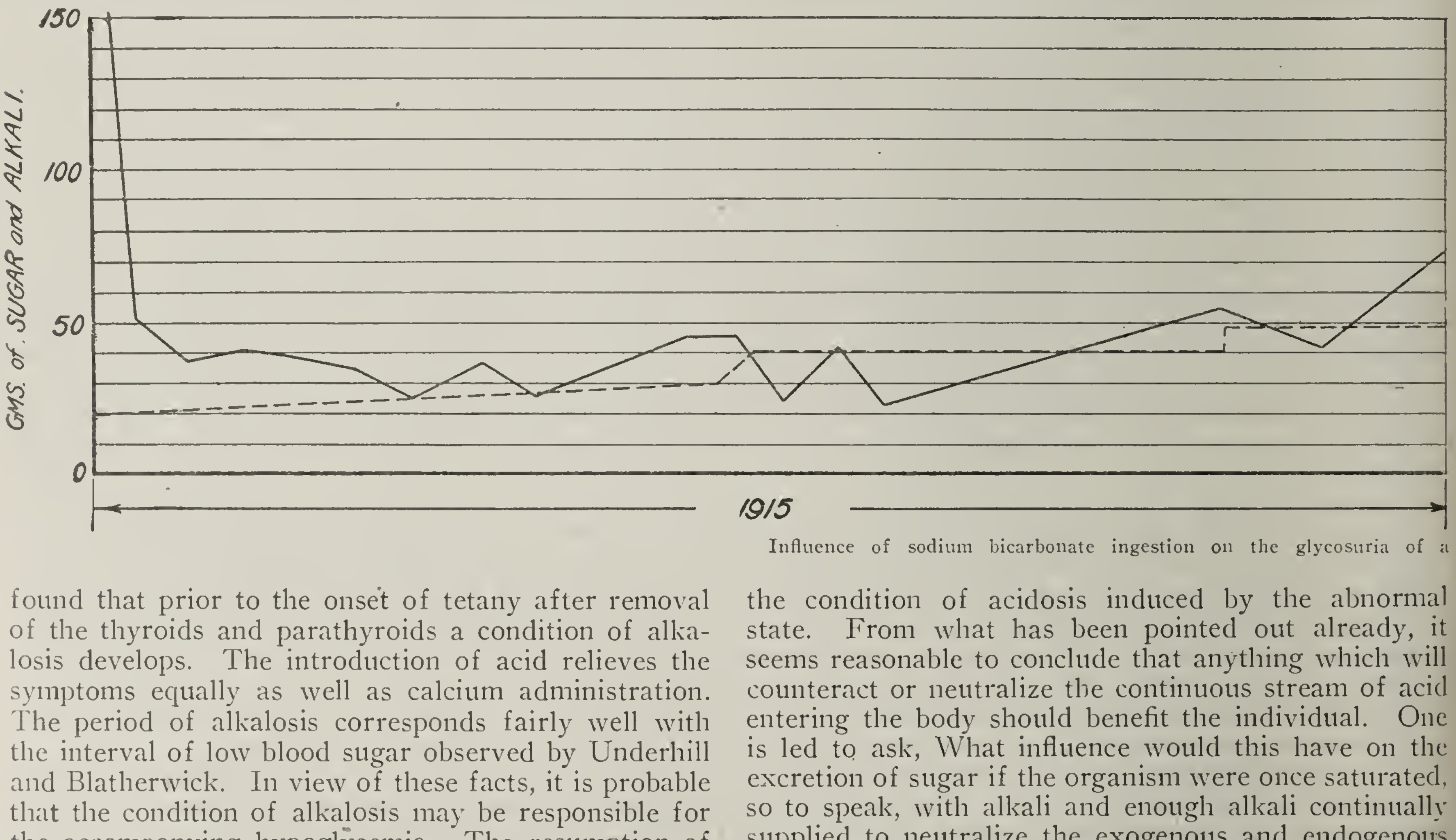
[7] Kramer and Marker: Jour. Biol. Chem., 1916, **29**, xxiv; 1916, **27**, 499.

[8] More recently Murlin and Craver (Jour. Biol. Chem., 1916, **28**, 289) have asserted that intraduodenal infusion of sodium carbonate in human diabetes causes a distinct reduction of glycosuria. On the other hand, similar treatment with sodium bicarbonate has the opposite effect.

[9] Underhill: Jour. Biol. Chem., 1916, **25**, 463.

suria provoked in rabbits by epinephrin[10] are both significantly decreased if sodium carbonate has been administered at suitable periods of time previous to epinephrin administration.

The regulation of blood sugar content would thus appear to be associated in part at least with the equilibrium between acids and bases in the body. Acid tends to increase blood sugar content; acid has an influence in causing sugar elimination. On the other hand, base or alkali tends to reduce the blood sugar content. These ideas fit in well with facts concerning other conditions associated with carbohydrate metabolism. Underhill and Blatherwick[10] have shown that previous to the tetany provoked by removal of the thyroid-parathyroid mechanism, blood sugar content may be greatly diminished. Calcium relieves the tetany and restores blood sugar to normal. In the disturbance of carbohydrate metabolism induced by epinephrin, calcium[11] causes a distinct change in the character of the curve of hyperglycemia, and markedly increases the amount of sugar appearing in the urine under the stimulus of epinephrin administration. In other words, calcium behaves in a manner analogous to hydrochloric acid. Wilson[12] and his co-workers had previously found that prior to the onset of tetany after removal of the thyroids and parathyroids a condition of alkalosis develops. The introduction of acid relieves the symptoms equally as well as calcium administration. The period of alkalosis corresponds fairly well with the interval of low blood sugar observed by Underhill and Blatherwick. In view of these facts, it is probable that the condition of alkalosis may be responsible for the accompanying hypoglycemia. The resumption of normal blood sugar content is induced by introduction of either calcium or hydrochloric acid, which have a common behavior in increasing blood sugar content under appropriate conditions. The introduction into the dog of the diamin, hydrazin, results in a transitory decrease in the percentage of sugar in the blood[13] with an accompanying increase of the respiratory quotient.[14] At the period of hypoglycemia, the excreted urine exhibits a strongly alkaline[15] reaction, probably owing to carbonates.



Influence of sodium bicarbonate ingestion on the glycosuria of a

These observations lead to the conclusion that a condition of acidosis facilitates the elimination of carbohydrate from the body, whereas in alkalosis there is a tendency to conserve carbohydrate.

B. THE APPLICATION OF THE IDEAS CONCERNING ACID-BASE EQUILIBRIUM TO HUMAN DIABETES

If the ideas reviewed above concerning acid-base equilibrium in its relation to carbohydrate metabolism are applied to human diabetes, one gains the following conception of its chemical pathology: Without reference to what may initiate the abnormal condition, a state of acidosis unquestionably develops and must tend to become aggravated, if anything, by the characteristic acid-producing foods of the conventional diabetic dietary. In general, meats and cereals are acid-producing foodstuffs; vegetables and fruits, on the other hand, usually yield an excess of base. Those foodstuffs which are richest in base-producing substances are forbidden to the diabetic individual because they contain relatively large quantities of carbohydrates. The conventional diabetic dietary, consisting largely of meats and other protein foods and fats, would therefore have a decided tendency to aggravate the condition of acidosis induced by the abnormal state. From what has been pointed out already, it seems reasonable to conclude that anything which will counteract or neutralize the continuous stream of acid entering the body should benefit the individual. One is led to ask, What influence would this have on the excretion of sugar if the organism were once saturated, so to speak, with alkali and enough alkali continually supplied to neutralize the exogenous and endogenous acid? These considerations have been put to the test in a human diabetic, aged 26 years, with a very severe type of diabetes.

Case 1.—A young university instructor had been aware of his condition for several months, and although he had received medical aid and was on a so-called "diabetic diet," his condition was steadily growing worse. He first came under my observation, Jan. 4, 1915, and at this time was excreting more than 150 gm. of glucose per day, although on a "diabetic diet." The urine contained large quantities of acetone and diacetic acid, and the subject was losing weight rapidly. The body weight, Jan. 4, 1915, was 146 pounds.

Dietetic Treatment.—By restriction of the diet to the point at which little or no carbohydrate was consciously ingested, in accordance with the suggestions of Joslin's dietary chart, the daily output of sugar was reduced to from 25 to 50 gm., acetone and diacetic acid always being present in relatively large quantities. Sodium bicarbonate in small amounts was given for the purpose of neutralizing the ketogenic substances in accordance with the usual therapeutic practice. After a year's interval, in spite of very stringent dietary restrictions, the sugar excretion suddenly increased to from 70 to 80 gm. daily. The progress of the subject during the period of a year may be seen from the chart.

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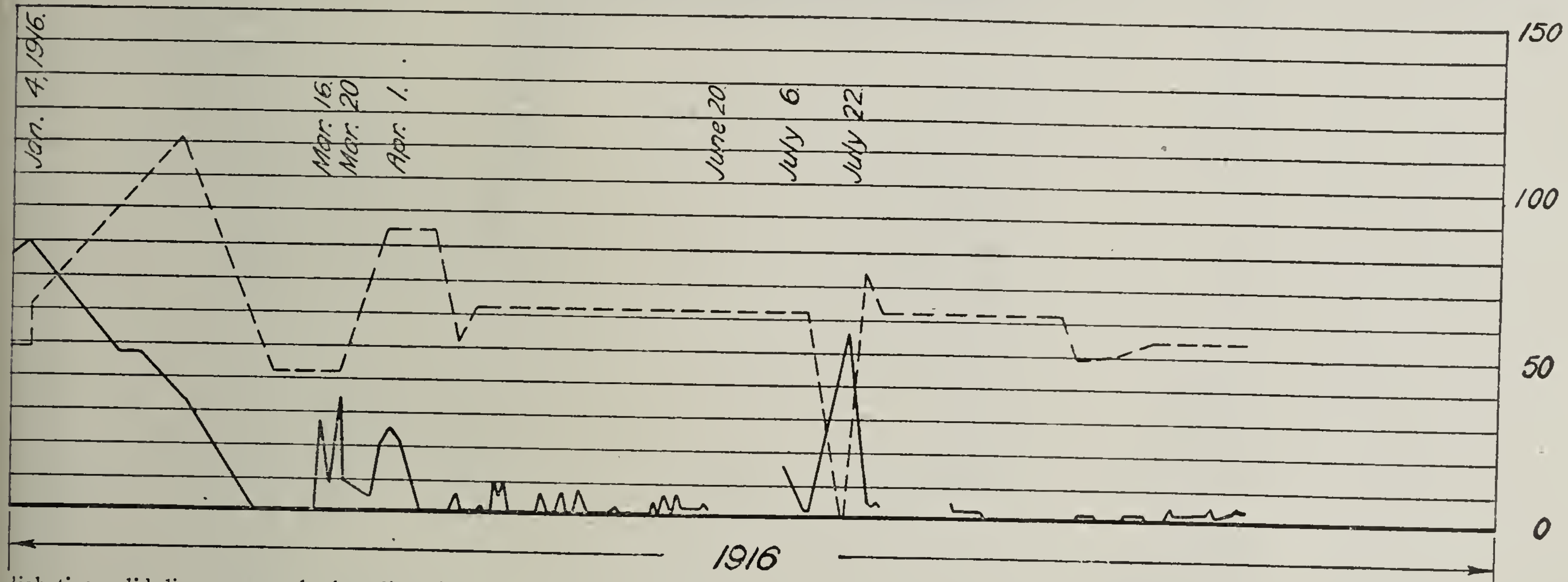
[10] Underhill and Blatherwick: Jour. Biol. Chem., 1914, **18**, 87; **19**, 119.
[11] Underhill: Jour. Biol. Chem., 1916, **25**, 447.
[12] Wilson, Stearns and Thurlow: Jour. Biol. Chem., 1915, **23**, 100. Wilson, Stearns and Janney: Ibid., 1915, **23**, 123.
[13] Underhill: Jour. Biol. Chem., 1911, **10**, 159.
[14] Underhill and Murlin: Jour. Biol. Chem., 1915, **22**, 499.
[15] Underhill and Bauman: Jour. Biol. Chem., 1916, **27**, 151.

The Influence of Large Doses of Sodium Bicarbonate on Sugar Excretion.—At this period (Jan. 4, 1916) of high sugar excretion, gradually increasing doses of sodium bicarbonate were given to a maximum of 120 gm. per day. This treatment resulted in *a gradual diminution of sugar output until the urine became sugar free* (see chart). The dosage of sodium bicarbonate was thereupon decreased at the rate of 7 gm. per day until the intake amounted to 42 gm. per day. Under these conditions the urine remained sugar-free for a period of seventeen days (see chart), during which interval the food ingested was augmented to the point at which about 10 gm. of carbohydrate in addition to that present in the previous strict diet were ingested daily. Acetone and diacetic acid were still present, but in greatly diminished amounts, and the urine was strongly alkaline in reaction. The volume of urine voided daily varied between 2 and 3 liters.

With the idea of determining the tolerance of the patient toward a large quantity of sugar, a portion of grapefruit was added to the diet. The quantity of sugar ingested amounted to 26 gm. As is apparent from the chart (March 16), an equivalent quantity of sugar promptly appeared in the urine but quickly fell to less than 10 gm. March 20, a second sharp rise may be noted, the sugar output being caused by the patient breaking over his diet and eating indiscriminately. The third sharp rise (see chart, April 1) in the output of sugar is associated with a severe attack of bronchitis. The patient was confined to his home for a period of thirty-one days during which it was deemed advisable to increase temporarily the intake of alkali. This had as a result a drop in sugar excretion to the zero point. From that period until June 20 the sugar output fluctuated from zero to 10 gm. per day. The break in the sugar curve represents a vacation period. In the period just previous to the June vacation, no strenuous attempt was made to keep the urine sugar-free. The larger figures represent either indiscretions in diet or are associated with particularly strenuous days in which nervous tension was unduly pronounced. On his return from vacation in July (July 6), the sugar excretion was approximately 15 gm., which by proper regulation of the diet quickly fell to 2 gm.



diabetic: solid line, sugar; broken line, intake of sodium bicarbonate.

The Influence of Alkali Withdrawal on Sugar Excretion.—In order to determine the influence of the alkali therapy on the sugar excretion from a different point of view, the patient was maintained on a constant diet on which never more than 2 gm. of sugar appeared in the urine, and the alkali was then gradually withdrawn. As may be seen from the chart, *glycosuria steadily increased as the alkali was decreased, until at the period* (July 22) *when no alkali was ingested nearly 60 gm. of sugar were excreted per day.* During this interval the patient was obliged to lie down most of the time, owing to great weakness, and on one occasion had a "fainting spell." At the solicitation of the family the experiment was carried no further, *alkali was again administered, the diet remaining unchanged, and, as may be seen from the chart, the sugar excretion fell rapidly to the zero mark.* The subject speedily regained his sense of strength and well being, which has been maintained to the present time (November 10).

The Degree of Acidosis of the Patient.—During the autumn of 1916 the chart shows a slight upward tendency of sugar excretion. This may be explained by the fact that the patient is receiving a relatively small alkali intake, 49 gm. per day. There is little doubt that with a larger daily ingestion of sodium bicarbonate the urine could be made sugar-free. The main reason that the alkali intake has not been increased is that 49 gm. of sodium bicarbonate just suffices to keep the urine near the point of neutrality. When the alkali was entirely withdrawn, a test was made to determine how much alkali was necessary in order to overcome the acidosis of the subject, that is, the amount of alkali sufficient to render the urine alkaline. Ingested at seven intervals during the waking hours, 49 gm. of sodium bicarbonate just yielded an alkaline urine. This is the minimum amount necessary to keep the urine at the point at which it is either faintly alkaline or faintly acid to litmus. When it is remembered that in normal man at most 15 gm. of sodium bicarbonate are sufficient to render the urine alkaline, it is evident that in the present instance a severe acidosis is present. Acetone and diacetic acid are always to be found in the urine, but not in large quantities.

Body Weight.—During the period of alkali administration, body weight of the subject has fluctuated between 124 and 135 pounds. The attack of bronchitis referred to above caused a loss of weight of about 10 pounds. At present (November 10) the body weight is 131 pounds.

Food Intake.—Calculation of the food intake shows the patient to be receiving approximately from 15 to 18 gm. of nitrogen and 2,400 calories.

Method of Alkali Administration.—Sodium bicarbonate dissolved in water is very likely to cause nausea and vomiting. If the alkali is dissolved in a little water and ordinary carbonated water is added, the mixture may be drunk with no bad effects. So far as can be discovered, the ingestion of large doses of sodium bicarbonate over a long period of time has caused no injury or untoward symptoms of any sort. In order to keep a stream of alkali entering the tissues more or less constantly, sodium bicarbonate is taken in seven equal doses at approximately equal periods during the waking hours. The urine secreted during the night remains alkaline.

THE INFLUENCE OF SODIUM BICARBONATE IN A MILD FORM OF DIABETES

The most striking effects of alkali administration in diabetes are encountered in the very severe cases, as might naturally be expected, because of the greater degree of acidosis. In patients with a well defined tolerance to carbohydrate, the influence of alkali treatment may be seen, however, and there is also some evidence of an increased tolerance under the treatment.

Case 2.—A Jewish woman, aged 42, with a history of diabetes of several years' standing, for a period of at least two years had had her dietary arranged by me in such a manner that on a typical strict diabetic diet the urine became sugar-free. Acetone and diacetic acid were never present. With the addition of three thin slices of baker's bread (weighing approximately 15 gm. each) the urinary sugar increased to between 2 and 3 gm. Four slices of bread during the day caused an output of between 18 and 21 gm. of sugar.

Slowly increasing doses of sodium bicarbonate (up to 50 gm.) on the strict diet plus three slices of bread maintained this patient sugar-free for a period of two days, at the end of which four slices of bread were given with an output of 5.4 gm. of sugar. With five slices of bread the sugar excreted amounted to 6 gm. Six slices of bread caused a urinary sugar excretion of 6.8 gm.—approximately one-third that usually put out on four slices of bread when no alkali was given. It is apparent from these data that the carbonate administration permitted a much greater tolerance than obtained when no alkali was given.

CONCLUSIONS

The ingestion of large doses of sodium bicarbonate has a marked influence in decreasing glycosuria in severe diabetes, and in maintaining the diabetic individual in a state of comparatively good health and vigor. This effect is ascribed to the neutralization of the exogenous and endogenous acid of the organism.

In mild diabetes there is evidence that carbohydrate tolerance may be significantly increased by large doses.

These conclusions are in harmony with experimental facts concerning the relation of acid-base equilibrium of the body to carbohydrate metabolism.

THE RELATIVE FREQUENCY OF THE VARIOUS CAUSES OF COMA *

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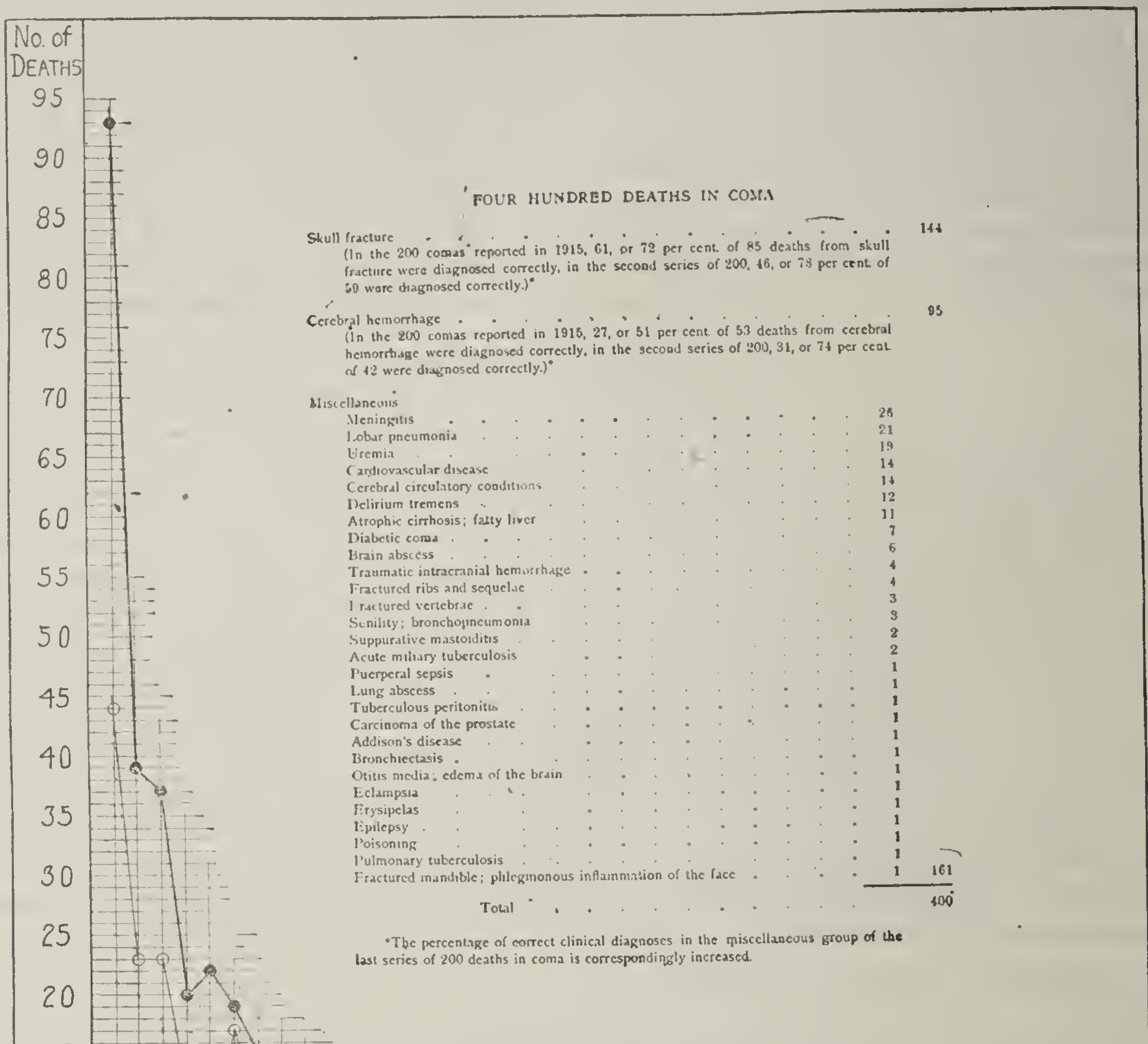
In 1915 we presented[1] the results of study of 200 deaths in coma, with special reference to the clinical diagnosis of uremia. During the past year we have been able to review the clinical records of an additional 200 persons dying in semiconsciousness or coma and, as in the first series, one of us (E. R. L.) has examined all the bodies. In grouping these 400 deaths in coma, the possibility of aiding diagnosis of the various forms of coma, particularly in the practice of large hospitals receiving a great deal of so-called emergency work, has been kept in mind. We further believe that a presentation of the diagnosis efficiency of clinicians in the Cook County Hospital, and especially the improvement since the first report, will compare favorably with similar statistics from other large hospitals admitting many persons in some degree of coma.

As in our first consideration, we think the conditions are best represented by charts which take into account not only the number of deaths, but also the time allowed for clinical study and the number of correct diagnoses.



FOUR HUNDRED DEATHS IN COMA

Skull fracture (In the 200 comas reported in 1915, 61, or 72 per cent. of 85 deaths from skull fracture were diagnosed correctly, in the second series of 200, 46, or 78 per cent. of 59 were diagnosed correctly.)*		144
Cerebral hemorrhage (In the 200 comas reported in 1915, 27, or 51 per cent. of 53 deaths from cerebral hemorrhage were diagnosed correctly, in the second series of 200, 31, or 74 per cent. of 42 were diagnosed correctly.)*		95
Miscellaneous		
Meningitis	26	
Lobar pneumonia	21	
Uremia	19	
Cardiovascular disease	14	
Cerebral circulatory conditions	14	
Delirium tremens	12	
Atrophic cirrhosis; fatty liver	11	
Diabetic coma	7	
Brain abscess	6	
Traumatic intracranial hemorrhage	4	
Fractured ribs and sequelae	4	
Fractured vertebrae	3	
Senility; bronchopneumonia	3	
Suppurative mastoiditis	2	
Acute miliary tuberculosis	2	
Puerperal sepsis	1	
Lung abscess	1	
Tuberculous peritonitis	1	
Carcinoma of the prostate	1	
Addison's disease	1	
Bronchiectasis	1	
Otitis media; edema of the brain	1	
Eclampsia	1	
Erysipelas	1	
Epilepsy	1	
Poisoning	1	
Pulmonary tuberculosis	1	
Fractured mandible; phlegmonous inflammation of the face	1	161
Total		400

*The percentage of correct clinical diagnoses in the miscellaneous group of the last series of 200 deaths in coma is correspondingly increased.

Chart 1.—Correct diagnoses in 400 deaths from coma: heavy line, deaths; light line, number correctly diagnosed. In this chart, twenty-one deaths in coma are not plotted; they occurred as follows: 6 on the eighth day, 3 on the ninth, 4 on the tenth, 1 on the eleventh, 1 on the twelfth, 1 on the thirteenth, 1 on the fourteenth, 1 on the seventeenth, 1 on the twenty-second, 1 on the twenty-eighth, and 1 on the thirty-first day. The clinical diagnoses were correct in eleven of these.

In Chart 1, the upper heavy line represents the number of deaths per four hour period, and the lower light line, the number of each of these groups receiving correct clinical diagnoses. Thus, it can be seen, ninety-three died within four hours after entrance into the hospital, and of these, forty-four, or 47.3 per cent., were correctly diagnosed clinically. Thirty-nine died between four and eight hours after admission, and twenty-three, or 58.9 per cent., of these received correct clinical diagnoses. Similarly, 230 died within twenty-four hours after admission, and of these, 127, or 55.2 per cent., received correct clinical diagnoses. Twenty-four died on the third day of observation, and of these thirteen, or 54.16 per cent., received correct clinical diagnoses.

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* From the Cook County Hospital.

* A report made at the regular monthly staff meeting, April 13, 1916.

[1] Bissell, W. W., and LeCount, E. R.: A Consideration of the Relative Frequency of the Various Forms of Coma, with Special Reference to Uremia, The Journal A. M. A., March 27, 1915, p. 1041.

The abrupt descent of both curves from the first four hours to the end of the third day is a most graphic expression of the high and rapid mortality of persons entering the Cook County Hospital in coma. From the fourth to the thirty-first day, eighty-four died, and of these, forty-nine, or 58.33 per cent., were diagnosed correctly.

The various causes of coma as determined by postmortem examination and the number of times each cause was found are tabulated in the center of the chart. From analysis of this chart it seems reasonable to conclude that more than half of the persons entering the Cook County Hospital in coma die during the first twenty-four hours after admission, but few live longer than one week, and, in this series at least, the accuracy of the clinical diagnosis is little affected by the element of time.

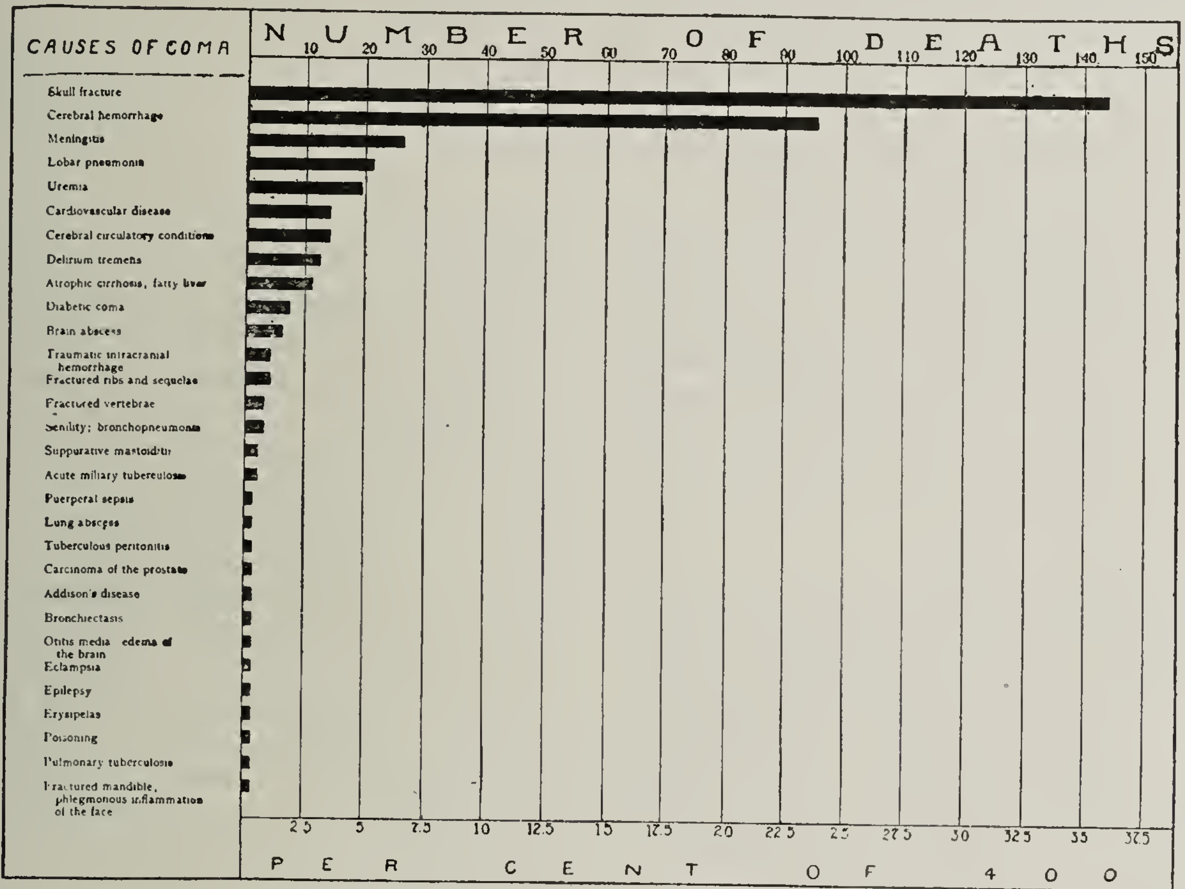

Chart 2.—Various causes of coma as determined by postmortem examination.

In reading in Chart 1 the list of causes of coma with conditions which also produced death, it is noticeable that we have listed none of the common poisonings, such as the corrosives, illuminating gas or morphin. Because either from history or obvious corrosion the vast majority of such persons enter the hospital with a diagnosis correctly made, we have omitted these instances of coma from consideration, and for like reasons we have not taken into account a rather large number of comas due to extensive and externally obvious injuries.

In Chart 2 we have arranged in order of frequency the various causes of coma as determined by postmortem examination. Reading from above downward, the lengths of the heavy black bars can be read in numbers, or, reading from below, in percentages of 400. Thus, 144, or 36 per cent., of these 400 persons entering the Cook County Hospital in coma which terminated fatally were comatose from skull fracture; ninety-five, or nearly 24 per cent., of these 400 from cerebral hemorrhage. It is most interesting to note that less than 5 per cent. of all these instances of coma were due to uremia, and it is similarly interesting to observe that, as a cause of coma, lobar pneumonia takes a position preceding uremia.

It is also apparent that 239, or 59.75 per cent., of these deaths in coma were due to skull fracture or cerebral hemorrhage, and of these, 165, or 69 per cent., received correct clinical diagnoses. The frequency with which skull fracture is observed with insignificant external injuries, and the common finding of bloody cerebrospinal fluid in persons comatose from spontaneous intracerebral hemorrhage lead us to believe that the diagnosis efficiency for skull fracture and cerebral hemorrhage is clinically very high.

We wish to emphasize the value of such reviews as this to stimulate resident and attending members of staffs of large hospitals to make accurate, rapid clinical diagnosis.

Passing of Tubercle Bacillus.—And, finally, however large you may make the tuberculous population of a given community if you subtract, as preventable causes, those cases born of the preventable contagious diseases, especially those specifically liable to be complicated by tuberculosis, those cases developed because of drug, drink, or other abuses, those developed as the result of unhygienic conditions and unsanitary surroundings, those developed because of food deficiency or irregularity or of faults of metabolism, those developed and spread by wilfulness, carelessness, or ignorance of known cases, those spread from unknown cases, those contracted because of the lack of those elements of culture demanded by modern society, those contracted because of the lack of proper quarantine of active cases, and those contracted from infected milk or other food supply, your tubercle will have petered out and passed away. The few remaining cases for whom one of these preventable causes could not be found will be so small as to be negligible. And if the reduction has been accomplished up to this point who is there to say that it cannot be entirely eradicated? Why not? Even more virulent diseases, more sturdy bacteria, have been eradicated.

There was a time when such diseases as smallpox, cholera, plague, and the like had far larger populations and far greater death rates than tuberculosis—and they are gone. Because the tubercle bacilli never attack the robust or unreenforced, every stride in the improvement of hygienic conditions, every improvement in physical condition and physical development, and every stride forward in preventive medicine will limit the range of operation of the tubercle bacillus. Who can still say that tuberculosis is not the most preventable, the least contagious, and the most amenable to cure?—H. M. Friedman, *Journal of the Outdoor Life*, December, 1916.

HEREDITARY DEFORMING CHONDRODYSPLASIA—MULTIPLE CARTILAGINOUS EXOSTOSES

A REVIEW OF THE AMERICAN LITERATURE AND REPORT OF TWELVE CASES *

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In the fall of 1914 a case of multiple cartilaginous exostoses, so called, appeared during my service at the Children's Hospital. With the permission of Dr. Lovett I investigated the case clinically and roentgenologically, and removed a strip of bone from across an affected epiphysis for pathologic study. The results of this investigation were presented in an article[1] published in May, 1915.

In reviewing the literature, I found that although the disease is generally considered rare, and textbooks in English give little or no place to it, more than 600 cases had been reported from all over the world, and about 350 articles had been written on the subject. The American literature I found to be very scanty.

As a logical sequence to my previous article, I proposed to discover if possible how frequent the condition really was in this country, and what its clinical and roentgenologic manifestations were. Accordingly I present herewith (1) a review of cases hitherto reported in the United States; (2) a report of a series of personal cases; (3) observations as to the character and occurrence of the disease based on these cases, and (4) conclusions.

REPORTED CASES

The first case reported in this country was by Gibney.[2] In 1875 he showed a boy of 13 who presented the typical picture. At 7 years he had been confined in bed for a long while with "acute rheumatism," and at 10 years he had recurring pain in his right hip. Gibney[3] presented this patient again in 1879. At this time he showed several new exostoses, and some of those formerly present seemed to have increased in size.

In 1876 in an article on the subject, Gibney[4] presented a family consisting of a Prussian of 34 who had many large irregular hyperostoses, with subluxation of one finger and left genu valgum. Over some of the hyperostoses the skin was cicatrized, representing ulceration from friction. The growths were said to have reached a maximum size at puberty, since which time many were said to have decreased in size. His father and brother were said to be affected, and his daughter of 11, son of 9, and daughter of 4 were presented as well defined cases. This is the first family reported in this country, and it is interesting because in the first generation there is one person affected, in the second two, and in the third three.

In 1889 Leidy[5] reported a case in an Irish girl of 25 who presented multiple bony tumors, those about the knee being unusually large, causing pain and interference in walking. There is no statement concerning heredity.

Wright,[6] in 1887, showed a boy of 11 presenting the typical picture.

Davis,[7] in 1905, reported two cases; one a man of 53, no hereditary history ascertained, presenting typical knock knee, curved and shortened forearms with displacement of the carpi, subluxation of a finger, pes valgus, rosary and enlargement of the spines of the seventh cervical and first and second thoracic vertebrae. He came under observation on account of suppuration of an exostosis of the femur. This case is interesting because during a year, under the observation of Dr. Davis, a small growth on the ramus of the left pubis diminished noticeably in size. The second case was a child of 3, with rosary, knockknee, etc. No family history was obtained.

In the discussion of this paper, Dr. H. L. Taylor reported a family in which the father was probably affected, a boy of 12, a girl of 10, and a boy of 8, definitely so. A. H. Freiburg described a case in a man of 80, who was operated on for popliteal aneurysm caused by friction of an exostosis. In this patient the family history went back three generations. Dr. D. D. Ashley reported a girl of 11 and a boy of 9 affected, with a history of the affection reaching back to include the mother, grandmother and great-grandmother.

In 1907, Ochsner and Rothstein[8] reported an interesting case of intraspinal exostosis. The patient was a man, aged 23, without known hereditary history, in whom the condition was noted at the age of 2; 108 exostoses were counted, including an unusual one on the left superior curved line of the occiput. The patient stated that these exostoses grew at the same rate as he did until the age of 19, when they stopped. At 14 he began to have incoordination of the lower extremities, which condition grew worse so that during the past year the upper extremities were involved and there was pain on the right side of the body on turning the head to the right. Rothstein diagnosed an exostosis within the spinal canal on the right side, and at operation his diagnosis was confirmed and an intradural pediculated tumor, which was flattening the cord, was removed from the anterior aspect of the right lamina of the second cervical vertebra. The operation was unfortunately followed by quadriplegia with loss of bladder and bowel function, from which condition the patient gradually improved, so that he was walking with crutches at the time of the report.

Clark and Atwood,[9] the same year, in a series of interesting neurologic cases, reported one as "a case of multiple enchondroma, one of which is growing from the sella turcica, causing pressure on the pituitary body." The patient was a boy of 17 with spastic

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

1. Ehrenfried, Albert: Multiple Cartilaginous Exostoses—Hereditary Deforming Chondrodysplasia, The Journal A. M. A., May 15, 1915, p. 1642.
2. Gibney, V. P.: Multiple Exostoses, Med. Rec., New York, 1875, **10**, 300.
3. Gibney, V. P.: Multiple Exostoses, Med. Rec., New York, 1879, **15**, 589.
4. Gibney, V. P.: Hereditary Multiple Exostoses, Am. Jour. Med. Sc., 1876, **72**, 73.
5. Leidy, Joseph, Jr.: An Unique Case of Multiple Exostoses, Tr. Path. Soc., Philadelphia (1887-1891), 1891, **14**, 5; Univ. Med. Mag., Philadelphia, 1888-1889, **1**, 230.
6. Wright, J. W.: Multiple Asymmetrical Spongy Exostoses, New York Med. Jour., 1887, **45**, 358.
7. Davis, G. G.: Multiple Cancellous Exostoses, Am. Jour. Orthop. Surg., 1905-1906, **3**, 234.
8. Ochsner, E. H., and Rothstein, T.: Multiple Exostoses, Including an Exostosis Within the Spinal Canal, with Surgical and Neurological Observations, Ann. Surg., 1907, **46**, 608.
9. Clark, L. P., and Atwood, C. E.: A Report of Cases of Landouzy-Déjerine Myopathy (Congenital), Thomsen's Disease, and Enchondroma of the Hypophysis, New York Med. Jour., 1907, **86**. 97.

quadriplegia, the same one described later by Oberndorf.

Withington,[10] in 1907, showed an Italian, aged about 35, who was suffering from acute articular rheumatism; multiple exostoses were found on examination, and were said to have existed since early childhood. No history of heredity was made.

Oberndorf,[11] in 1910, described in some detail the case already reported by Clark and Atwood. The boy was of German parentage, aged 19 years. No history of heredity was noted, but the father and mother were second cousins. The condition was first noted at 4 years, and the mother said that many growths had appeared and vanished spontaneously. One rapidly growing tumor over the precordium was removed at the age of 11 by McBurney, and the pathologic diagnosis of enchondroma was made. The boy suffered from acute rheumatism at the age of 12. He had a scoliosis with some apparent kyphosis and forty palpable masses. The hands and feet were increased in size and the finger tips were blunt and spadelike, suggesting acromegaly. Oberndorf considered this due to a growth in relation to the sella turcica causing pressure on the pituitary body. For the past three years the patient had suffered from a marked syringomyelia, and some months after his coming under observation died of inanition, complicated by bedsores.

Coon,[12] in 1912, reported the case of a boy of 15 without hereditary history. He presented an atypical picture. The deformities affected particularly the right leg and arm. The left limbs showed mild bony changes on Roentgen examination, but were practically without deformity. In the fingers of both hands, roentgenoscopy revealed chondromatous masses involving the metaphyseal ends of the phalanges; in the right forearm the shortening appeared in the radius, rather than in the ulna, where it usually occurs. The lower end of the radius showed typical broadening and striation of the metaphyseal extremity with distortion of the epiphyseal line. The same was true of the right shoulder, knee and ankle.

Boggs,[13] in 1913, reported the case of a man, aged 23, who was said to have been born with bony tumors, and whose father had bony tumors. Roentgenoscopy revealed the characteristic clinical picture, with a normal sella turcica. The patient had been blind for about a year, and the legs had become weak eight months before he came under observation. There was moderate double optic atrophy. The thyroid gland was not made out. The case was reported as one of multiple congenital osteochondromas with thyroid atrophy, degeneration in the acoustic and optic nerves, and muscular atrophy.

In 1913, Vaughan[14] emphasized the hereditary nature of multiple exostoses.

Carman and Fisher, in 1915,[15] reported the case of a man, aged 23, in whom no heredity was ascertained. It was noticed at birth that the arms were thick at the elbows and wrists. The bony tumors were not particularly noticeable until the age of 8, when they began to grow, and continued to increase parallel to skeletal development until about 22, when growth ceased. He came under observation on account of an irritation abscess over an exostosis on the clavicle. He was 5 feet 9 inches tall, and showed bony growths generally distributed, including the jaw, costochondral junction (rosary), and scapulae. He had scoliosis, relative shortening of the left arm and leg, moderate flatfoot, synostosis and clubbing of fingers and toes, and asymmetry of the toes. An exostosis within the pelvis was felt by rectal examination. The forearms were exceedingly deformed and short, the right showing the typical deformity in moderate degree and the left showing an exceeding degree of hyperostosis at the lower end of the shafts of the radius and ulna, with the hand dislocated inward and the upper end of the radius dislocated outward. The ulna being extremely short, the length of the relatively long radius was taken up by a spiral twist of the radius about the ulna.

Percy, in 1915,[16] reported a case of a boy of 17 of stocky build, in whom the first tumor was noticed at 4 years, and who presented growths on the upper arms, knees and legs. All the joints were enlarged, and the bones of the hands and feet were short, stubby and nodular. On the inner aspect of the right arm was a cauliflower chondro-osteoma the size of a cocoanut, which had grown markedly during the past three years. This was removed by operation. The boy's grandfather, who was born in Holland, was said to have been affected with the disease, and Dr. Percy investigated his descendants. He found that these numbered 113, of whom 26 were affected, 73 not affected and 14 unknown. Of those affected, 22 were males and 4 females. Transmission through affected males and females was about in the relative proportion of those affected, but in two cases the disease was transmitted through unaffected females. This family tree, which includes four generations, is the first tree worked out in this country, and deserves further serious study.

In the discussion of Percy's paper, Bevan stated that there were many cases on record in which multiple ossifying enchondroma had caused a spinal cord lesion. Ochsner stated that when animals have these enchondromas, a large proportion of the offspring have the same form of tumors. M. L. Harris described a typical case with generally distributed tumors. There was a large growth about the lumbosacral junction with paraplegia. Operative removal did not relieve the paralysis. Bedsores and gangrene developed, and the patient died.

In 1915 I presented a review[1] of the subject based on the study of about 600 cases reported in over 300 articles, and the particular pathologic study of a section removed from an affected epiphysis in a growing child. I stated the belief that the disease was a distinct clinical entity, characterized by (1) the occurrence of multiple, more or less symmetric cartilaginous and osteocartilaginous growths within and on the skeletal system, generally benign, and resulting from a disturbance in the proliferation and ossification of the bone-forming cartilage; (2) the occurrence of certain typical distortions and deformities of the skeleton, and (3) the demonstration of inheritance in a large proportion of cases. To avoid the confusion which exists at the present time as the result of the multiplicity of terms by which the disease is known, I suggested the descriptive name of hereditary deforming chondrodysplasia. The review included a consideration of the terminology, occurrence and distribution, heredity, pathology, etiology, symptoms and complications, and treatment.

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[10] Withington, C. F.: A Case of Multiple Symmetrical Exostoses, Boston Med. and Surg. Jour., 1907, **156**, 200.

[11] Oberndorf, C. P.: A Case of Multiple Exostoses Coupled with Syringomyelia, New York Med. Jour., 1910, **91**, 479.

[12] Coon, C. E.: Dyschondroplasia, Am. Jour. Orthop. Surg., May, 912.

[13] Boggs, T. R.: Multiple Congenital Osteochondromata with Degeneration of Cranial Nerves and Muscular Dystrophy, Bull. Johns Hopkins Hosp., 1913, **24**, 210.

[14] Vaughan, R. T.: Multiple Exostoses: A Hereditary Affection of he Bony Skeleton, Tr. Western Surg. Assn., St. Louis, 1913; abstr., The Journal A. M. A., Jan. 17, 1914, p. 231.

[15] Carman, R. D., and Fisher, A. O.: Multiple Congenital Osteohondromata, Ann. Surg., 1915, **61**, 142.

[16] Percy, N. M.: Multiple Chondro-Osteoma, Surg., Gynec. and Obst., 1915, **20**, 619.

Ashhurst,[17] in 1916, reported a series of thirteen cases. Two had previously been reported by Dr. Davis, and two Dr. Ashhurst had not seen but reported from hospital records. The first patient was a girl, aged 4 years, with typical deformities, including subluxation of the right radial head. Case 2 was a man of 20 who presented ulnar deviation of the carpi. Case 3 was a negress of 11 who had a short left forearm and double pes valgus. Case 4 was a boy of 17, in whom the left knee showed outward bowing and relative increase in length. Cases 5 and 6 were two brothers of 15 and 13 years; a younger brother was said to be affected. Case 7 was a boy of 14, who had paralysis of the left ulnar nerve evidently due to pressure of the bony mass in the neck. In this boy the midpoint was half way between pubis and umbilicus. Case 8 was a man of 30, in whom the exostoses were first recognized a year before, following an attack of rheumatism. Dr. Davis in this case removed an exostosis of the left femur which was pressing on the sciatic nerve. Case 9 was a girl of 7; Cases 10 and 11 were the cases reported by Dr. Davis; Case 12 was a boy of 16, and Case 13 a man of 34.

Marshall,[18] in 1916, reported a case in a young woman. This patient will be described later (Case 10).[19]

PERSONAL CASES

Case 1.—*History*.—Miss B. T., white, aged 11, entered the Children's Hospital, Nov. 6, 1914. She was born in Beverly, Mass. Father a French Canadian. Father, mother and six other children living and well. Detailed family history not obtained. She was an 8 months' baby, fourth child and very diminutive. Had breast milk for nine months followed by cow's milk and general table diet. She has always been a weak child. Began to walk at 19 months. Whooping cough the only disease of childhood. The deformity of forearm was first noticed at 6 months; it has become more and more prominent with time. The flatfoot has been noticed since the child began to walk.

Local: Patient stands with slight left dorsolumbar scoliosis, with both shoulders thrown forward, a mild degree of knock knee on each side, and the feet everted. She walks with a rather uncertain gait, throwing her weight on the inner side of the feet, especially on the right. The face is symmetrical, and shows no deformities. Motions at the right shoulder joint normal. The outline of the right elbow is distorted. The forearm can pronate, supinate, flex and extend normally, but the head of the radius is subluxed outward and is greatly increased in size over normal. Muscle power is good, however. Joint motions are free and there are no contractures. Both bones of the forearm are unusually short and to palpation feel thicker than normal. At the wrist, motions are free. There are no contractures and muscle power is good. The styloid process of the ulna is, however, at least 1 inch above the styloid of the radius and there is a distinct gap below the end of the ulna and the wrist joint. The lower ends of both bones are oversize and there is a slight inward bowing of the ulna at about its lower third. The left arm shows free motions at the shoulder, good muscle power and no contractures. At the elbow the outline of the joint is distorted. The head of the radius is subluxed externally and posteriorly, and is greatly increased in size. The motions of flexion and extension, pronation and supination are free, and there are no contractures. The forearm shows considerable bowing of both bones. At the wrist the ulna is short, the styloid process being at least 1 inch above the radial styloid; the lower ends of both ulna and radius are increased in size. Muscle power is good in all groups, and there are no contractures. The hands are rather small, and the fists cannot be more than half clenched, on account of the obstruction offered by the enlarged extremities of phalanges and metacarpals. At both hips the trochanters are on Nélaton's line, joint motions are free and muscle power good. At the knees muscle power is good. There are no contractures, and joint motions are free. At the right ankle the internal malleolus is unduly prominent and the whole foot is held everted; joint motions are free, and muscle power good in all groups. There are no contractures. The left ankle is held somewhat in the same position as the right. The internal malleolus is abnormally prominent. There are no contractures and muscle power is good in all groups. Reflexes: Knee jerks present on both sides. No clonus, Babinski, nor Oppenheim. Right arm: acromion to internal condyle 9⅛ inches. Left, 9¼ inches.

Left leg: length, 28⅛ inches. Circumference: thigh, 12¾ inches; calf, 8¾ inches.

Right leg: length, 28¼ inches. Circumference: thigh, 13 inches; calf 8¾ inches.

Roentgenologic Examination: Cranium negative; sella turcica of normal size. Thorax free, except for slight irregularities in lower ribs. Marked lateral curve in lumbar spine. Slight irregularities about sacro-iliac articulations. Both ilia show a peculiar series of radiating striations about the crests. Clavicles and scapulae are free, and the humeral heads show slight thickening. The lower third of the shafts of the humeri show some deviation from normal contour. The circumference is lessened, and the bone is bent. The humeral condyles show mottling. The ulnae are relatively short, bowed concave forward, and at the lower end present a large irregular bulbous enlargement, in which the epiphyseal line is lost. The radii are straight, with the upper end dislocated outward and upward, so as to form a marked projection at the level of the outer condyle. The lower end presents a similar irregular cystic-like enlargement, but the epiphysis is present intact, though relatively small. The entire carpal articulation is carried on the radius. The distal ends of all the metacarpals and the proximal ends of the first two rows of phalanges show the globular striated enlargements referred to. The femoral heads are squat and thick, with flat epiphyses and prominent trochanters. There is mild genu valgum in both legs, and the diaphyseal extremities of tibiae and fibulae are widened and irregularly striated; the fibulae are relatively short, so as to destroy the ankle mortise, and the tarsus is offset outward to create an extreme pes valgus. The heads of the metatarsals, and the proximal metaphyseal extremities of the first phalanges show the globular vacuolated enlargements already seen on the fingers. On the left foot the first and third digits show comparatively slight involvement, and are accordingly relatively longer than the other digits.

The deformities in this case consist in a scoliosis, shortening and bowing of the forearms, ulnar deviation of the hands, dislocation of the heads of the radii, moderate knock knee, extreme tarsal valgus, irregularity in length of toes, and shortness of stature. There are no exostoses, few hyperostoses, and the deformities are symmetrical.

The roentgenograms were taken at the Children's Hospital.

Case 2.—*History*.—Miss J. W., white, aged 21, bookkeeper, was born in Boston of Jewish parents. The father was born in Hungary, a tailor, of ordinary height. He died of old age in Boston, at 82. His father died of tuberculosis. No knowledge of deformities in family. Mother born in Austria, living and well at 46, of ordinary height. Her father living, 82 years old. Mother died of old age at 75. No knowledge of deformities. One brother died of hydrocephalus at 1½ years. No other brothers or sisters. The patient had measles in childhood, and nervous indigestion for several years. Rheumatic pains in joints whenever exposed to a draft, or at a change of weather, for years but never so as to be confined to bed. Menstruation at 14.

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[17] Ashhurst, A. P. C.: Multiple Cartilaginous Exostoses (Hereditary Deforming Chondrodysplasia), with Notes of Nine Hitherto Unpublished Cases, Ann. Surg., 1915, **63**, 167.

[18] Marshall, H. W.: A Case of Multiple Cartilaginous Exostoses, Am. Jour. Orthop. Surg., 1916, **14**, 346.

[19] Since this paper was written, A. V. Moschcowitz (Ann. Surg., 1916, **63**, 749) has reported a typical case in a man of 31, in whom an osteochondrome of the left femur of considerable size projected into the popliteal space, producing cyanosis and coldness of the extremity through interference with the blood supply.

Physical Examination.—I first saw her, May 7, 1915. I found her a bright looking girl of excellent mentality. She had, in fact, won some distinction during her high school course. She had been working steadily as a bookkeeper during the past three years. The nausea had continued, but it was relieved by eating. She had had no benefit from treatment and was convinced that it was purely nervous. She had occasional twinges of pain in the joints. Wrists are weak, particularly the left, so that at times she can hardly lift a sheet of paper. She walks only with arch supports.

She is short in stature, measuring 4 feet 8½ inches. The middle point is half way between pubes and umbilicus. The arms are noticeably short, the right reaching a third way down the thigh, and the left being shorter still. Measurements from tip of acromion to the tip of middle finger are: right, 23½; left, 22¼. Musculature is good. Both arms hyperextend about 15 degrees at the elbow. Both wrists are loose in adduction, the left to a higher degree than the right, and just above the carpus the radius can be palpated on the inner as well as the outer aspect. Fists can be clenched tightly with the appearance of one or two small double knuckles. Wrists not greatly enlarged. Patient says that she formerly had a large mass on the ribs on the right side, but this disappeared four years ago, after she began to wear corsets. It is not to be felt now.

Moderate degree of knock knee. Large rough lumps to be felt above and below both knees. There are lumps and irregularities on the lower ends of both tibiae and fibulae. Slight degree of flatfoot, but on the whole the ankle mortise is well maintained.

Roentgenologic Examination: Cranium negative, normal sella turcica. Thorax shows a slight caving in of the ribs, especially on the left; enlargement of the costochondral junctions (rosary), and a tear-drop exostosis on the lower border of the fifth left rib, one third of the way around from behind. No scoliosis. Some irregularity about sacro-iliac articulations. Pelvis shows very wide ilia, and unusually thick pubes and ischia, with a relatively small superior strait. Clavicles thick, with enlargement at outer ends. Scapulae not remarkable. Upper ends of humeri show irregular enlargement of diaphyseal extremities, with longitudinal striation. About one third of the way down the shaft of the humerus on both arms is a moderate enlargement, from which project rounded stalactite exostoses. Elbow joints appear normal. The ulnae are relatively short. In a plate taken at the age of 6 the lower ends of the ulnae are irregularly enlarged, but do not reach to within an inch of the carpal articulation. The epiphysis cannot be distinguished. The lower ends of the radii are somewhat enlarged and irregular, particularly the right; the epiphyses are clear cut, but small. In the recent plates (taken at 18 years) the irregularities are much less, the bones showing a denser structure, with a straighter outline. There is no evidence of epiphyseal line. The right ulna ends in a point, which articulates laterally with the radius, and on the left it resembles a spear head. There is a fine retrodirected exostosis on the outer aspect of the lower end of both radii. The metacarpals and phalanges in the 6 year plate show irregular enlargement and vacuolation of the diaphyseal ends, most marked in the metacarpals. There is a spur on the left forefinger; the right middle finger is disproportionately long, and the distal phalanx subluxed inward. The later plate shows the same conditions except that the bone is denser and the outlines less irregular, and the epiphyses have disappeared in moderate globular striated enlargements at the ends of the bones. At the hips, the femoral necks are short, and very much increased in width; the outlines are irregular and the trochanters prominent. The shafts are of normal contour down to the lower ends, which are squared, striated longitudinally, and present hooklike exostoses, directed upward. The same lengthening and squaring of the diaphyseal extremity is apparent in the upper end of the tibiae, but here the pair of stalactite exostoses are directed downward. The upper ends of the fibulae show marked irregular globular enlargement, cystic in appearance, much larger on the left. There is moderate genu valgum. The shafts of fibulae and tibiae are clear. Their lower ends are broadened, and there is a long irregular pseudarthrosis between them. The fibulae are relatively short, but the axis of motion of the ankle joint is not disturbed. In none of the late plates is there evidence of an epiphysis.

The deformities in this case consist in disproportionate shortness of stature, deformity of thorax, rosary, shortening and bowing of forearms, ulnar deviation of the hands, subluxation and asymmetry of fingers, moderate genu valgum, moderate pes valgus, enlargement of the diaphyseal extremities at shoulder, knee and ankle, a few exostoses, and a chondromatous enlargement of the upper end of the fibula. The occurrence is symmetrical, although the degree varies slightly.

The early plate was taken at the Children's Hospital, the later plates at the Boston City Hospital.

CASE 3.—*History.*—Mr. F. R. J., aged 56, white, janitor, first seen May 11, 1915, in the orthopedic outpatient department of the Massachusetts General Hospital, by courtesy of Drs. Brackett and Low, was born in Vermont, of American parents. Father died in 1910 at 82, mother died in 1915 at 87. Family short in stature. Father and mother both of same height as patient. One sister died in infancy. One brother living and well, of normal height. Grandparents American born. No history of deformities or exostoses.

The patient had measles and pertussis as a child. Denies venereal diseases; does not use alcohol. At 7 or 8 years outgrowths and deformities were first noticed. Taken to local physician who said that patient had exostoses and would probably be a cripple. At 14 an extensive crop appeared, growing "as fast as he grew," some being painful or tender at times. Went under treatment with a "quack" doctor for three years; he stopped the pain and stopped the bunches from increasing in size. Since then he has had no new bunches, no increase in size, no disappearances.

Had occasional growing pains or rheumatism when young; at 19 inflammatory rheumatism, in bed one week.

Has always been able to do heavy work; when younger could run upstairs with a bag of corn over his back. No trouble with walking. No bunch is large enough to interfere with the free action of any joint.

Physical Examination.—The patient is a genial, intelligent-looking American. Height 5 feet, 2 inches. Middle point is 3 inches above pubes. Finger tips reach to point short of midthigh.

Upper arms not remarkable. Lower arm short and curved. No dislocation of radial head. No club hand, although entire articulation is carried on radius. Hand is stubby, no limitation in closure, but both fourth fingers are short, the same length as little fingers.

Stands with considerable knok knee, greater on the right, approximating 45 degrees. The right knee, probably in part as the result of the injury already noted, allows of lateral mobility of about 20 degrees. Both knees very large, with palpable exostoses. Lower legs: fibulae short, with dislocation valgus, more marked on right. No limitation of motion at knee or ankle. Good function knees and ankles, except at right knee, as noted.

Roentgenologic Examination: I have plates only of the arms and legs. The shoulders show the characteristic striated elongation of the upper end of the humerus. The ulnae are short, curved, and articulate with the inner surface of the radius. The lower ends of ulna and radius are irregularly enlarged, and of thinner texture than the shafts. The knees show marked valgus, elongation and squaring of the diaphyseal ends, with irregular exostoses at the corners, projecting upward on the femur and downward on the tibia. The upper ends of the fibula are enlarged and thinned, and run by direct fusion into the tibiae. The lower ends of the tibia and fibula are distorted; on the right there is fusion of the two bones. On the left there is a pseudarthrosis. The fibulae are short; there is a fair ankle mortise, but the axis of motion of the astragalus is oblique, rather than horizontal.

The deformities in this case are disproportionate shortness of stature, shortening and curvation of forearms, mild ulnar deviation of the hands, shortness and asymmetry of fingers, knock knee, pes valgus, hyperostoses and exostoses about joints. The deformities are symmetrical.

The plates were taken at the Boston City Hospital.[20]

Case 4.—*History.*—Mrs. E. H. H., aged 20, white, first seen, May 25, 1915, at her home in Somerville, through the courtesy of Drs. Binney and Kimpton, was born in Montreal, Canada. Father was an Englishman, from Sussex. He was about 5 feet 8 inches in height, and is not known to have had any deformity. He died in 1910 at 48. Mother was a French Canadian, born in Montreal, of normal height, and is not known to have had any deformity. She died in 1915 at the Boston City Hospital. The family consisted of eleven children, three boys and eight girls, of whom the patient is the fifth. One boy and one girl died in infancy. The others are living and well, and are said to present no deformity. This patient is the only one who is distinctly below normal height.

Physical Examination.—Patient is 5 feet 5½ inches in height. Middle point is just above pubes. The right arm is 25 inches and the left arm is 24¾ inches. The outer ends of the clavicles are rough, and on the right there is a sharp knob. The forearms are short, somewhat curved, right, and sharp curve left. Wrists enlarged, but no disability. Can close fists. Middle fingers long.

Moderate knock knee; some pes valgus, but feet seem good from point of view of function. Ankles enlarged. Large knob on the outer side of femur above the left knee.

Roentgenologic Examination: Cranium negative; sella turcica normal in size. Thorax shows a very pronounced caving in of the ribs on both sides. There is an irregular enlargement of several of the ribs, particularly the first four on the left and the first two on the right. There is a synostosis between the third and fourth, left. The spine shows a double scoliosis. The sacro-iliac joint and pelvis are clear. The clavicles are thick and enlarged at both extremities. The scapulae show small irregularities; upper end of humeri show small united epiphyses. On the left the contour is normal, but there are several fine exostoses, and on the right the shaft near the upper end shows irregular cystic enlargement with small exostoses. The lower halves of the shaft are free, and the elbow joint is normal. The forearms are short with a very marked relative shortening of the ulnae. The radius is curved and its lower end irregularly enlarged. There is no epiphyseal line apparent. The articular surface of the radius stands at an obliquity of about 45 degrees to the shaft, making a potential manus vara, with a very weak wrist. The fingers show globular enlargement at the metacarpophalangeal articulations and the first interphalangeal articulations particularly. The middle fingers of both hands are relatively long. The upper ends of the femur are thick, with short, thickened necks. The shafts are free down to the lower diaphyseal extremities, which are square, elongated, striated longitudinally and present several exostoses, directed upward. The upper diaphyseal extremities of the tibia and fibula are similarly squared and elongated and present exostoses directed downward. The lower diaphyseal extremities are elongated and present pseudarthroses. The ulnae are relatively short, and the tarsi are in valgus.

The deformities in this case are disproportionate shortness of stature, scoliosis, deformity of thorax and ribs, shortness and curvation of the forearms, ulnar deviation of the hands, knock knee, pes valgus, asymmetry of fingers, and hyperostoses and exostoses about joints. The deformities are symmetrical. There is no evidence of epiphyseal line, except at the upper ends of the humeri.

The plates were taken at the Boston City Hospital.

Case 9.—*History.*—E. L., boy, aged 12, white, seen May 22, 1916, at my office, was born in Cambridge, Mass., of Anglo-American parents. Father well at the age of 42, height 5 feet 6 inches, printer, born in Rockland, Maine. He has three brothers and one sister all below medium height, except the oldest. The oldest has one child. His father died of paralysis in the fifties, and his mother is living and well, in the sixties. No history of deformity.

Mother living and well at the age of 48; born in Rockland, Maine; 5 feet 6 inches in height. Her father was a sea captain, above medium height. He wore a corset for some "spinal trouble," and died in 1885 of Bright's disease at 53. Her mother was a delicate woman who died at 52 in 1890 of gastric cancer. She was above medium height. Her one sister is living and well. No history of deformity. She was married at the age of 17. No miscarriages, has lost no children. One other child beside patient, a girl of 15, living and well, without deformity.

Roentgenologic Examination.—I have plates of the arm and knees of this patient at the age of 8, and plates of the entire skeleton taken at the present age of 12. The thorax shows no abnormality, spine slight scoliosis. Pelvis shows marked irregularity about the epiphyses as well as considerable thickening of bone. Clavicles show marked thickening of the inner ends, particularly on the right. The scapulae show small spurs and irregularities, particularly about the head and neck. The humeri are somewhat thickened and dense at the upper ends, with wavy outline, and the epiphyses are partly united. Elbows: some irregularity in bony structure and in outline about condyle of humerus. The epiphyses are distorted in the early plate and show signs of partial union in the more recent picture. The ulna on the left is markedly shortened and somewhat curved. It ends in a point, which does not take part in the carpal articulation. This point is capped by a small triangular epiphysis. The radius is curved and thickened at the lower end, and the epiphysis is distorted. The right forearm presents a practically straight ulna with slight irregularity in outline at the lower end, and a small epiphysis not united. The radius is slightly curved; both epiphyses show partial union. The fingers show striation at the metaphyseal ends, with slight disproportionate lengthening of the right middle finger. The hips present marked thickening of the neck with irregular contour in the region of the lesser trochanter and partial union of the epiphysis. The knees show squaring of the metaphyseal ends with striation and spur formation at the corners, a process which is carried further in the more recent plate, the striated portion extending further up on the shaft and the spurs being increased in size. There is slight knock knee, and the more recent plates show a partial union of the epiphysis. The upper ends of the fibulae are vacuolated and the lower ends are irregular and vacuolated, and in contact with an irregular surface on the outer side of the tibia. The shafts of tibiae and fibulae are clean cut. The fibulae are relatively short. The feet show calcaneal spurs and striation and irregularity of outline at the metaphyseal extremities of metatarsals, and to a less degree on the phalanges.

The deformities in this case are as follows: moderate valgus at the left elbow, shortening and curvation of the forearm, greater on the left, ulnar deviation of the wrists, particularly the left, small hands with asymmetry in length of fingers on the right, moderate genu valgum, moderate pes valgus, disproportionate shortness in stature, and juxta-epiphyseal hyperostoses and exostoses.

The plates were made at the Children's Hospital.

GENERAL OBSERVATIONS

I have found in the American literature fourteen articles on this disease and four recorded case reports, the earliest dated 1875. The inevitable deduction seems to be that the condition is a rare one in this country. The cases formally reported in these records number twenty-nine; but if the cases mentioned in discussion are added, as well as the relatives stated as being affected, the total is brought up to seventy-one. Some of these, however, were not residents of the United States.

But in comparison with these figures I can say that in a period of about a year in Boston I have unearthed the series of twelve cases herewith presented, and a few months ago Ashhurst reported a series of thirteen cases from Philadelphia. Accordingly, it is easy to believe that with more widespread knowledge of the condition, an interested search will bring to light many cases in other communities, and raise the disease out of the ranks of uninteresting rarities.

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[20] September 26, this patient, employed as an elevator man in a Boston hotel, suffered a severe crushing injury of his right leg above the ankle. I performed an amputation, from which he is recovering uneventfully. The specimen is being studied at the pathologic laboratory of the Harvard Medical School.

As to the sex occurrence, adding my cases to the seventy-one mentioned above, there are seventy-three in which the sex is given. Of these fifty-five are male and eighteen female, just about in the proportion of 3:1. This agrees with the figures which I stated in my previous article.

The question of nationality is interesting, but it is a complicated one to work out in this country, where so many racial stocks are involved. Many authors make no statement whatsoever on this point. Dr. Percy's family of twenty-six patients were of Dutch birth or descent; five others are given as being of German birth or descent, and there were two of Irish, and one each of Italian, Austrian, English, and French-Canadian birth or race. One had an English father and French-Canadian mother. The Austrian was a Jewess, and is one of the very few reported. The negress reported by Dr. Ashhurst is the only one I have found in the literature, although the disease is known to affect others than Caucasians. Of the remaining forty-five, some are stated as being native-born of Anglo-American stock, and the rest were probably for the most part of the same origin. I previously stated that the German cases predominated in the literature (60 per cent.); next followed the French (27 per cent.) and English (8 per cent.). All other countries together showed only 5 per cent. This American series is interesting for the predominance of Anglo-Americans, and the occurrence in a negress and a Jewess.

Heredity has been a hard matter to study in connection with the disease, because the country is young and the population mixed and to a large degree migratory. Many of the case reports have been casual, and make no mention of this subject. It happens that we now have several families authoritatively worked out in this country. The largest is that of Percy, with twenty-six affected in four generations; then comes Gibney's with four in two generations, mine with three in two generations, Boggs with father and son, and Ashhurst with two, and probably three, brothers. In addition there have been reported in discussion a girl with two brothers and probable father (Taylor); a brother and sister, with mother, grandmother, and great-grandmother (Ashley), and three generations (Freiburg). Accepting these, we may say that inheritance or familial occurrence was shown in fifty cases. In the remaining thirty-two, it is stated in twelve that no evidence of heredity was obtained.

The characteristics of the disease in the cases here reported have agreed well with my previous description of the disease. The affection is distinctly one of the period of skeletal growth. It has been usually first noticed in infancy or early childhood; the manifestations have increased with skeletal growth, and ceased at skeletal maturity. Chondromatous tumors may increase rapidly in size, and regress, either before or after maturity; but the bony spurs, usually capped with cartilage, grow slowly and are undoubtedly fixed at skeletal maturity. They may fracture, and the fractured portion absorb, or the bursa which frequently covers them may become inflamed from irritation, and form an abscess or subside, or a spur may become infected and carious. It is unlikely that the bony elements regress in adults, although Davis records a case in which this apparently occurred under his observation in a man of 53.

Disproportionate shortness of stature was constant in the seven of my cases in which it was measured for, and Ashhurst reports it as a finding in one case. I believe that it will be found practically constant in well marked examples of the disease. Generally, the cases have shown irregular juxta-epiphyseal hyperostoses, particularly marked at knee, hip, shoulder, ankle and wrist. The lower end of the femur and the upper end of the tibia have shown a characteristic squaring-off, with spurs at the corners, running upward from the femur, and downward from the tibia. These spurs should not be confused with the developmental exostoses about the knee, which are similar, but are purely local, and bear no definite relationship to this disease. These spurs may increase in size and change their shape in the period of growth. The enlargements at the metaphyseal ends increase in length with skeletal growth; in the younger patients they are thin in density, and striated or mottled in appearance; the older cases are striated longitudinally, and are dense in structure, with heavy more or less wavy outline.

The lower end of the ulna, occasionally of the radius, and both ends of the fibula characteristically show a thin bubble-like vacuolation, suggesting cysts. The bone becomes denser and the outline more regular in the older patients. In the majority of cases the ulna and fibula are disproportionately short in relation to the radius or tibia. The ulna is likely to end in a point, articulating with the radius on its mesial aspect, but not partaking in the carpal articulation. This gives rise to a club hand, or a weak wrist with ulnar deviation (potential manu vara). The relatively excessive length of the radius is also taken up in a bowing of the shaft, sometimes with a dislocation upward of its head, and rarely in a spiral twist about the ulna (case of Carman and Fisher). The relative shortening of the fibula disturbs the mortise at the ankle joint, and causes a structural valgus. The tibia is a strong bone, with its ends firmly set into joints, and it does not become distorted from the shortness of its companion, as does the radius. The fibula frequently becomes structurally united with the tibia at one or both extremities; sometimes, instead, there is a long irregular pseudarthrosis, particularly at the lower end.

The fingers and toes show the same type of bulbous juxta-epiphyseal enlargement, vacuolated in the younger patients, becoming denser and more regular in outline later. In marked cases these form double knuckles, and prevent complete closure of the fist. Frequently fingers or toes are irregular as to length, one being longer or shorter than it should proportionately be. There seems to be demonstrable correspondence between the amount of bony involvement and the extent of retardation in growth. Generally, the hands are small and chubby. Fingers may be crooked or a phalanx subluxed, from an irregular growth.

The cranium is generally not involved, although in one case a spur on the left superior curved line of the occiput is cited (Ochsner and Rothstein). There may be growths on the jaw, or the mastoids and other prominences may be roughened and enlarged. One case in this series was diagnosed as exostosis in the sella turcica, and Virchow found at necropsy that the occurrence of small spurs on the basilar process at the spheno-occipital junction was common. The spine frequently shows a lateral curve, and occasionally spurs on the bodies or spinous process are demonstrable by roentgenoscopy. Clavicles and scapulae frequently show spurs, thickening, or irregularities in outline, which, if subcutaneous, may cause ulceration of the skin. The ribs often show enlargement at the costochondral junction (rosary), occasionally a spur, or a broadening of and synostosis between ribs. There may be irregularities about the head and neck of the ribs, and occasionally the thorax shows a marked caving in of both sides.

Growths at the lumbosacral junction and about the sacro-iliac joint are frequently demonstrable. The pelvic bones are likely to be thickened, lessening the diameter of the superior strait; the crest may show striation, or there may be spurs on or within the crest. The upper end of the femur is enlarged and irregular, and the neck is short and thick. This may rarely interfere with function. Knock knee in mild degree is common, and in excessive degree not unusual.

Pediculated osteochondroma may arise from any affected portion of the skeleton, particularly from the juxta-epiphyseal hyperostoses. They may grow rapidly in size, even after the cessation of skeletal growth. The shafts of the long bones are likely to be free from irregularities or spurs, these grouping themselves at the metaphyseal ends. It may be said categorically that the bony irregularities mark the progress of a disturbed or pathologic ossification at the epiphyseal line. The epiphyses of the bones most affected usually show some distortion in the roentgenogram, and at the wrist this may be very marked. The union of the epiphysis with the shaft occurs abnormally early, as a rule.

The skeletal disturbances and malformations are generally speaking symmetrical for the two sides of the body. Usually minor differences may be apparent, in degree of distortion, but it is rare to have any one side suffer a great deal and the other be only slightly affected. This occurred, however, in one case, that described by Coon. This patient resembles those of the small series discussed by Ollier, Wittek and Frangenheim, and in several other ways he departs from the rule. I consider this case, however, to come within my definition of the disease.

This series has brought out several cases representing the rarer complications of the affection. Freiburg, in the discussion of Davis' paper, reported a case of popliteal aneurysm caused by friction of a bony spur against the artery. There are only seven other cases of this sort on record.

Nerve complications have been unusually frequent. These include a case with syringomyelia and acromegalic symptoms, probably from a spur in the sella turcica (Oberndorf); cord symptoms from a pediculated intraspinal osteoma (Ochsner and Rothstein) and from a growth at the lumbosacral junction (Harris), both operated on; and peripheral manifestations, (1) in the ulnar nerve from pressure by a bony mass in the neck, and (2) in the sciatic from pressure of an exostosis (Ashhurst). The case of Boggs' had degeneration of the acoustic and optic nerves, muscular dystrophy and thyroid atrophy.

There have been in this series no cases of secondary malignant chondroma. In my previous paper I stated that this occurred in about 5 per cent. of the reported cases.

CONCLUSIONS

Hereditary deforming chondrodysplasia can no longer be considered a rare affection in this country. The disease is a distinct clinical entity, whose manifestations are now well defined. The work which has been done on its pathology points definitely to a disturbance in the bone-forming cartilage as the underlying cause. The hereditary nature of the disorder, which has been pretty well demonstrated, gives it an individuality which makes investigation interesting. The disease should be given wider recognition and study, not only for its importance, but also because it opens up the whole field of obscure congenital skeletal affections.

ABSTRACT OF DISCUSSION

Dr. Albert H. Freiberg, Cincinnati: No one can discuss this subject to any great extent because so little is known of the true nature of this condition. I can simply tell you the circumstances under which I saw a case very early in my surgical career, when, as assistant to a general surgeon, we operated on a popliteal aneurysm which was produced by fracture of the pedicle of one of these exostoses in the popliteal space. The case was similar in all respects to the cases Dr. Ehrenfried has shown us; and there was a very distinct history of transmission through the male side of the family for a number of generations.

Dr. Albert Ehrenfried, Boston: This disease is not a rarity. I have found seventy-one cases recorded in this country, most of them in the past few years. Ashhurst has just reported thirteen cases from Philadelphia, and the twelve in my series were collected in Boston in less than eighteen months, so it cannot be very uncommon. The disease is a distinct clinical entity. Exostoses play a very small rôle; they were considered characteristic in the days when we had to depend on palpation for diagnosis, but now the Roentgen ray shows the whole bony picture. The pathology of the affection has been cleared up to a considerable degree. My own work has demonstrated a dysplasia of the intermediary cartilage as a basic element in the disease and the chief source of the skeletal deformities, and has corroborated the persistence of islands of cartilage as the probable source of the hyperostoses and osteochondromas. The matter of heredity I have just touched on. It is a fascinating subject, and when thoroughly worked out will undoubtedly assist us to a proper understanding of the whole group of congenital skeletal affections of which we now know so little.

Artificial Milk.—Vice Consul Hamilton C. Claiborne, at Bradford, England (*Commerce Reports,* Jan. 11, 1917) reports that application has been made for a patent on the process of making an artificial milk from peanuts, soya beans, sugar, water and mineral salts, which is said to be wholesome and inexpensive. The method of making the milk, as taken from the Yorkshire *Observer,* is as follows: In 200 pints of pure water at 80 C. are dissolved 400 grains of potassium phosphate, or the equivalent amount of sodium phosphate; sufficient sugar is added to give 4.5 per cent. to the finished milk, and 40 pounds of meal prepared from one of the above nuts, blanched. The solution is boiled in a steam-jacketed pan, then subjected to the operation of a vacuum pan, and finally treated with a culture of lactic bacteria until the required acidity is obtained. It is afterward pasteurized at 60 and 70 C. for at least twenty minutes, cooled and stirred, while 0.05 to 0.11 per cent. of citric acid is added. The milk so produced is said to be condensed and sold in tins or dried to a powder and sold in bottles. It may be given a certain percentage of cream, it is said, by the addition of coconut or one of the other tasteless nut fats, the fat being added when in the vacuum pan. It may be cultured by the addition of lactic bacteria to give a table cream or a soured mass for making into cheese.

COMPRESSION PARALYSIS OF POTT'S DISEASE IN ADULTS *

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In reviewing my own experience relative to compression paralysis of Pott's disease in adults, I have been impressed by the frequency of its occurrence, of the severity of the symptoms, and the mortality. The general picture of Pott's paraplegia in adults, compared with that usually seen in children, justifies a discussion of the problem which is distinctive in many regards. To approach this subject it is necessary to quote data not only obtained from the records of my own service, but also from other services at Cook County Hospital.

In seventy-five cases of adult Pott's disease, examined and treated at this hospital from January, 1914, to May, 1916, between the ages of 19 and 62 years, paraplegia occurred in twenty-four cases, and of these the known number of deaths was sixteen. The termination in the remaining eight cases is unknown. Surgical procedure, such as osteoplasty or laminectomy, was performed in thirteen of the twenty-four cases at some period in the course of Pott's disease. Postmortems were held in seven cases, of which five had compression paralysis.

Unfortunately a full analysis of my series of cases of Pott's disease is impossible on account of the incomplete records of the cases; nevertheless, they warrant a definite opinion that pressure paralysis of the cord is relatively frequent in adults. That this complication of Pott's disease should be of frequent occurrence ought not to be surprising, considering the immediate proximity of the cord to the site of the disease.

There are two factors to be considered in compression of the spinal cord in tuberculous spine disease: first, pressure from tuberculous granulation tissue which occurs mostly in children, and second, pressure from intraspinal abscess, usually seen in adults. Though other factors have been prominently mentioned, such as alteration in the position of the vertebrae, producing an angled projection of the spinous process, and protruding sequestrums at the site of the kyphos as a sequence of vertebral destruction, they should not be seriously considered. As to the angled projection, the caliber of the spinal cord is not narrowed in the anterior-posterior direction, as is generally supposed, and sequestrums are improbable.

In adults, compression of the spinal cord and nerve roots is most frequently the result of intraspinal abscess, although occasionally due entirely to granulation tissue. It is not exceeding the limit of probability to state not only that intraspinal abscess leads to paralysis, but also that the pressure will usually be protracted and tend to produce severe injury to the cord. Eventually the abscess may make its way out of the spinal canal into the deep tissues, though without corresponding relief of the symptoms. In exceptional cases, however, the paralytic symptoms may disappear if the pressure has existed only for a short time and has been relieved by the migration of the abscess outside of the vertebral canal.

Intraspinal abscesses are interpreted in roentgenograms as irregular, dark, wavy shadows surrounding apparently destroyed vertebrae. On the roentgenograms of patients with tuberculous spines, available for examination, intraspinal abscesses were observed in eighteen. Of this number fifteen had clinical symptoms of compression paralysis; whether or not the other three cases developed paralysis is unknown. In two paralytic patients with no characteristic symptoms of tuberculous spine disease and in which the roentgenograms did not show either vertebral bone destruction or shadows indicating abscess formation, the diagnosis of Pott's disease with intraspinal abscess was made only after postmortem examination. Five paraplegic patients went to postmortem, and intraspinal abscesses were found in all.

In children the majority of cases of Pott's paraplegia are due to pressure from inflammatory changes in the dura mater, the result of extension of the tuberculous process into the vertebral canal. This produces a disturbance of function without setting up a destructive or degenerative process. Only occasionally does an intraspinal abscess occur. These observations are based on (1) the examination of roentgenograms of tuberculous spines in children, which seldom show shadows indicating intraspinal abscesses, and (2) the fact that children afflicted with Pott's paraplegia when treated by recumbency on a Bradford frame, with or without traction, generally recover.

That recumbency can influence ultimate recovery in Pott's paraplegia where there has been severe and protracted pressure with consequent injury to the cord is improbable. In my opinion, restoration of function following recumbency ensues only when the stress has been moderate, as from tuberculous granulation tissue. Therefore, when recovery follows compression paralysis of Pott's disease, either in children or in adults, the lesion must generally be considered as having been a tuberculous granulation tissue rather than an intraspinal abscess. Of the twenty-four patients afflicted with Pott's paraplegia, due to intraspinal abscess, not one complete recovery has been recorded; generally death has resulted; but in those cases which, perchance, have not proved fatal, the degenerative changes in the cord were so great that a permanent paralysis remains. However, one patient (Case 3) partially recovered.

The treatment of so persistent an affection as Pott's paraplegia, the result of intraspinal abscess, has been without favorable effect. In the routine treatment of Pott's disease, I have operated both by the method of Albee and Hibbs, but neither has made any noticeable impression on the paralysis. Laminectomy, too, has been tried without securing results. In fact, where laminectomy was performed on four patients, death followed within a short period.

Postmortem examination in the five patients previously mentioned revealed total destruction of one or more vertebrae with abscess formation. The abscess communicated through the space formerly occupied by the destroyed bodies of the vertebrae, compressing the spinal cord. The dura mater was enormously thickened, markedly infiltrated and covered by yellowish, caseous material and occasionally by soft granulation tissue masses; the inner surface was smooth. The spinal cord was hyperemic in the region of the compression, and was completely severed in three cases.

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* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

In one case it was compressed from side to side. Pulmonary tuberculosis was the primary cause of death in four cases.

The following cases are selected to substantiate my observations of compression paralysis of Pott's disease, and also to introduce phases of the subject not hitherto discussed in the text of this paper:

REPORT OF CASES

Case 1.—W. C., man, aged 56 years, admitted to the medical service of Cook County Hospital, June 24, 1914, complained chiefly of pain in the left side of the chest for the past two weeks, and during this time cough developed which gradually grew worse.

The lungs gave a distinct friction rub in the left side, and a few râles could be heard. Tubercle bacilli were found in great numbers; reflexes were normal.

Aug. 7, 1914, the patient complained of a beginning weakness in the legs. Three weeks later he could not walk without support. At this time he had a steppage gait, exaggerated knee jerks and ankle clonus on the left side. No deformity of the spine nor typical symptoms of Pott's disease were present. Roentgenograms showed destructive lesion of the third, fourth and fifth dorsal vertebrae and a shadow denoting abscess formation.

Sept. 14, 1914, he complained of pain in both legs. The knee jerks were markedly exaggerated; Babinski was present and there was incontinence of urine, etc. He was transferred to the orthopedic department, and from there referred back to the ward for pulmonary tuberculosis, because he was not considered an orthopedic case.

He died, Oct. 11, 1914, and a necropsy showed caseous tuberculosis of the tracheobronchial lymph nodes; apical pulmonary tuberculosis; necrosis of the fifth and sixth dorsal vertebrae and a tuberculous abscess communicating through these vertebrae, pressing on the dura mater. Microscopic examination of the spinal cord was not made.

Case 2.—H. H., man, aged 22, entered the neurologic department of Cook County Hospital, Jan. 18, 1915, complaining of pain, numbness, heaviness and stiffness in both lower extremities, and also difficulty in walking. Seven years previous he had tuberculosis of the cervical region of the spine, but he has been without any discomfort up to one year ago, when the foregoing symptoms appeared.

Muscle power is good in the upper extremities, but decreased in the lower; both lower extremities are spastic, the right more than the left; tendon reflexes markedly exaggerated; Babinski is present and ankle clonus increased. There is a small kyphos in the region of the eleventh dorsal vertebra.

Roentgenograms show bone destruction of the lower dorsal and first lumbar vertebrae, but no apparent shadow indicating abscess formation.

The diagnosis is compression myelitis of Pott's disease.

Feb. 20, 1916, laminectomy was performed, and the patient died about two weeks later. No postmortem was held.

Case 3.—M. S., man, aged 20, admitted to my service at Cook County Hospital, May 31, 1915, as a transfer from the tuberculosis ward, stated that he had been coughing more or less for about one year. Six months ago he became aware of a small deformity in the dorsal region of the spine which had increased in size. He suffered no particular discomfort other than the inability to bend the spine freely. In the past four months he noticed a gradual difficulty in walking—a sense of heaviness and stiffness in the legs.

The gait is slow, with a stiffness and dragging of the feet; tendon reflexes are exaggerated; there is loss of muscular power, and loss of cremasteric and abdominal reflexes; Babinski is present and ankle clonus increased. There is a small kyphos at about the seventh to the ninth dorsal vertebrae, and impaired resonance of the left upper lobe and the right lower lobe, together with a few subcrepitant râles.

Roentgenograms show collapsed bodies of the eighth and ninth dorsal vertebrae and a very classical shadow around the seventh to the tenth dorsal vertebrae indicating cold abscess.

The diagnosis is tuberculous spine with beginning paraplegia and incipient pulmonary tuberculosis.

June 15, 1915, the Albee operation was performed.

Dec. 1, 1916, the condition on discharge to Oak Forest Infirmary was about the same as mentioned above.

June 6, 1916, the patient returned to Cook County Hospital for examination. He walked with a quick, firm step; the tendon reflexes were markedly exaggerated; Babinski was present and ankle clonus increased.

Roentgenograms showed a shadow surrounding the seventh to the tenth dorsal vertebrae indicating a cold abscess.

Case 4.—M. M., woman, aged 31 years, admitted to Cook County Hospital, April 23, 1915, complained of parasthesia in legs and feet; she was unable to use the lower extremities, and also there was incontinence of urine and feces. The paraplegia began eight months before with sensation of tingling, numbness and a "dead feeling" which steadily increased. Previous to this time she had been well.

There was complete paralysis in the lower limbs, spastic in type. All reflexes were exaggerated and Babinski positive on both sides. Sensory disturbances were limited to the lower half of the body up to the region of the umbilicus, running in a circular line around the body; there was kyphos in the region of the third and fourth vertebrae. Bladder and rectal disturbances were marked. There were trophic sacral bedsores.

Roentgenograms showed marked bone degeneration involving the fourth to the twelfth dorsal vertebrae and also a very definite shadow opposite the fourth to the eighth dorsal vertebrae, indicating cold abscess.

The diagnosis was tuberculous spine disease with paraplegia.

Patient died, May 22, 1915, and necropsy revealed a cold abscess the size of the fist in the region of the third to the fifth dorsal vertebrae projecting anteriorly into the chest cavity. The sac of the abscess was thick and on opening a cheesy, yellow tuberculous pus exuded. The bodies of the third, fourth, fifth and sixth vertebrae were destroyed, through which the abscess sac compressed the spinal cord to the extent of almost complete severance. The dura mater was markedly infiltrated—a peripachymeningitis—in the region opposite the lower part of the cord and cauda equina. The spinal cord was curved on itself in the upper dorsal region. Microscopically the gray matter was broken up in separate patches irregularly scattered over the surface, so-called heterotopic changes, which are considered to be artificial. Above and below the focus of softening there were found ascending and descending degeneration. In the posterior and lateral columns were circumscribed foci of softening surrounded by some glia tissue.

Case 5.—E. K., man, aged 22, entered the neurologic service of Cook County Hospital, June 15, 1915, with the following history: About two weeks previous he became aware of a difficulty in getting out of bed; for the next three or four days he could manage to get up and around to a slight extent, but if he tried to move fast he would fall. At the present time he is unable to walk and has slight pains in the shoulder and back. Otherwise the history is negative.

In the left supraclavicular space and just in front of the right trapezius muscle, apparently connected with it, is a soft, painless, freely movable tumor about the size of a small hen's egg; patient states that this tumor appeared about five days previous to his inability to walk. On the left pectoralis major muscle, near its origin, is a soft, distinct, painless tumor extending from the second to the fifth rib the size of a man's palm, which has been present for about two months. No fluctuation is obtainable. Below this tumor is a small, painless, fluctuating one about 1½ inches in diameter from which a brownish, yellowish fluid was aspirated. The tendon reflexes and exaggerated Babinski, Gordon and Oppenheim are present. Anesthesia is complete in the lower limbs up to the level of the eleventh dorsal vertebra; from the seventh to the eleventh dorsal vertebrae there is hypesthesia; pain, heat and cold touch are lost in this region; there is apparent lack of control of the sphincter muscles. There is deformity of the spine.

The luetin test proved negative. The Wassermann blood test was positive, while the Wassermann spinal fluid test, made ten days later, proved negative. Roentgenograms showed no destructive changes in the vertebrae nor a shadow indicating abscess formation.

The diagnosis of myelitis (traumatic or compression) was made.

The patient finally died, Dec. 3, 1915. Necropsy showed miliary tuberculosis of both lungs; fibrocaseous tuberculosis of the tracheobronchial lymph glands, and fatty degeneration and passive hyperemia of the liver. A tuberculous abscess, about 4 cm. in diameter, was bulging from the fifth and sixth dorsal vertebrae, the bodies of which were completely destroyed. On opening the vertebral canal there was a tuberculous, cheesy mass surrounding the dura mater opposite the fifth and sixth dorsal vertebrae. The dura mater over the dorsal and lumbar region was found enormously thickened and covered with caseous and soft granulation tissue masses. On opening the dura mater, the inner surface was smooth, but hyperemic; the cord too was hyperemic. Microscopically the lower cervical region of the cord showed a patch of softening occupying the posterior horns and part of the posterior columns. The axons were found swollen and broken up in small fragments, while the hyalin was in the form of lumps, drops or droplets. The glia showed the so-called ameboid transformation. In addition there were present the usual findings of ascending and descending degeneration.

Case 6.—M. O., woman, aged 25 years, entered my service at Cook County Hospital, July 3, 1915, as a transfer from the neurologic service. Six months before she complained of pain in the abdomen followed by numbness and tingling in both legs. One month later she lost complete power in the lower limbs. About two months afterward an operation (laminectomy) was performed.

Both legs lie extended and immobile; patellar reflexes, ankle clonus and Babinski are absent. There is a scar over the region of the middle and dorsal vertebrae as from recent operation. There is no apparent kyphos. Sitting up increases the pain referred to the abdomen. There is incontinence of urine; there are trophic ulcers over the sacrum and some dry râles over the right chest anteriorly.

Roentgenograms show destruction of the tenth and eleventh dorsal vertebrae, and also a very definite shadow in the region of the seventh to the eleventh dorsal vertebrae indicating cold abscess.

The Wassermann test was negative.

The diagnosis was tuberculosis of the spine with paraplegia and pulmonary tuberculosis.

Necropsy revealed a cold abscess about the size of a lemon along the ventral aspect of the dorsal vertebrae and communicating through the space formerly occupied by the bodies of the tenth, eleventh and twelfth vertebrae, which were completely destroyed. The anterior and lateral portion of the seventh and eighth dorsal vertebrae were roughened. The dura mater was thickened and covered by cheesy material; the inner surface was smooth. The spinal cord was seen to be entirely severed at this level. There were fibrocaseous ulcerative tuberculosis of the lungs, fatty degeneration of the liver and kidneys, trophic ulcers, etc.

Case 7.—M. T., woman, aged 25, entered my service at the Cook County Hospital, July 26, 1915, with a history of tuberculous spine disease of two years' duration for which she had been treated. About three weeks previous to her entrance to the hospital, her legs became weak and finally she was unable to move them. She also suffered from incontinence of urine.

There are typical symptoms of compression myelitis, and a kyphos in the upper as well as in the lower dorsal region of the spine. Roentgenograms show apparent necrosis of the bodies of the fourth, fifth, sixth, seventh and twelfth dorsal and first lumbar vertebrae, and also a shadow in the region of the middle to the lower dorsal vertebrae, denoting abscess formation.

The diagnosis is tuberculous spine disease with paraplegia.

Dec. 15, 1915, necropsy revealed a focus of encapsulated, fibrous, caseous tuberculosis in the apex of the right upper lobe of the lung; bilateral fibrous adhesive pleuritis; marked bilateral disseminated bronchopneumonia; between the third and fourth dorsal vertebrae, there was a possible partial dislocation of the spine; that is, there was a necrosis of the bodies of the second, third and fourth dorsal vertebrae, and between the third and fourth, this necrosis was so marked that the normal intervertebral attachments were loosened to permit of marked abnormal mobility. The bodies of these bones were, so to speak, collapsed on each other. In opening the ileopsoas group of muscles on either side, there was a large quantity of yellowish, cottage cheese-like material which had excavated a cavity in these muscles approximately 4 by 18 cm. There were sinuses leading from the upper end of these cold abscess cavities to the region of the twelfth dorsal and the first lumbar vertebrae. The bodies of the seventh, eighth, ninth, tenth, eleventh and twelfth and the first lumbar were necrosed, of softened consistency, and yellow. Between the twelfth dorsal and the first lumbar there was so much necrosis that here, too, the bodies had collapsed to make the angular deformity described in the lumbodorsal region. On removal of the spinal cord there was a marked narrowing of the spinal canal in the upper dorsal region adjacent to the third and fourth dorsal vertebrae. This narrowing was so marked as to have caused a definite marked narrowing of the adjacent spinal cord. The dura mater in this region was greatly thickened, and on its exterior surface had a granular appearance and yellow color as that found in the adjacent bone. In the lumbodorsal region, there was no narrowing in the spinal canal. The dura mater at this point, however, was greatly thickened, and there was some dependent edema of the leptomeninges. There were no adhesions between the leptomeninges and the dura mater in any part of the cord. The lumbodorsal bone necrosis was at the level of and below the beginning of the cauda. Between the dura and the bodies of the lower dorsal vertebrae, there was an infiltration of cheesy material. This infiltration is an extension from the necrosed dorsal and first lumbar vertebrae. The deformity in the upper dorsal region has been produced by a slight collapse of the bodies of the third and fourth vertebrae; the deformity not being great, the collapse is not great. The necrosis of the arches of these vertebrae is so great that the narrowing of the spinal canal is in the lateral rather than in the anteroposterior diameter. This encroachment on the lumen of the spinal canal is due to an infiltration of the dura with caseous material and the consequent fibrous infiltration of that membrane.

Microscopically the spinal cord gave the typical picture of so called diffused myelitis, that is, the cord had the Swiss cheese appearance, numerous vacuoles, swollen axons, broken up myelin and the so-called ameboid transformation of glia. The vessels showed marked infiltration of the adventitial lymphatic spaces. In addition there were present signs of secondary degeneration.

SUMMARY

Compression myelitis may be the first clinical sign of an unsuspected Pott's disease, often unmasked by roentgenograms. The severity of the compression is correspondingly shown by the intensity of the clinical phenomena.

Intraspinal abscess is the dominant factor in subjecting the spinal cord to pressure, borne out by laboratory examinations and postmortem findings. At first the pressure may not make any appreciable alteration in the nerve element, but sooner or later there is severe damage to the cord resulting in primary and secondary degeneration; in time actual necrosis and severing of the cord may occur as already recorded. It therefore follows that the paraplegia will be complete and permanent, though occasionally it may be but partial: As a rule, death may be anticipated — generally from pulmonary tuberculosis. It cannot be denied, however, that complete recovery may take place even after the paralysis has existed for a long period of time. But in this connection a second factor must be considered in the mechanism of compression, namely, tuberculous granulation tissue most commonly occurring in children, which invades the vertebral canal, and a moderate pressure is manifestly enough to excite functional disturbance without necessarily having an actual mechanical destruction of the nervous elements. This fact is of practical importance, as it explains the cause of recovery, which occurs by absorption of the tuberculous granulation tissue.

No reliance can be placed on operative procedure. Where laminectomy has afforded relief, it has been due to the accidental evacuation of the abscess; it is a serious operation and the immediate mortality is large.

ABSTRACT OF DISCUSSION

Dr. C. B. Francisco, Kansas City, Mo.: Formerly we were taught that Pott's paraplegia was, as a rule, the result of bony pressure. It is now generally considered that the pressure is due either to granulation tissue, abscess formation or an extension of the process to the meninges. In children I believe that the pressure is usually the result of granulation tissue, and that recovery is the rule. Occasionally a child will not recover completely. Recently I had a necropsy on a child who had had very efficient treatment for ten years; it had started off with the paralysis early in the disease, and had been continuously paralyzed, walking, at times, with considerable difficulty. In that case, we found a direct extension to the meninges (that is, an infiltration due to extension of the process); but these cases, I believe, are very rare. There is seldom bony pressure in children, if ever. In adults, it has been my observation that a case of tuberculosis of the spine developing paraplegia is going to continue to have signs and symptoms of the paraplegia. Whether the original pressure is due to abscess formation or meningeal involvement, it is maintained sufficiently long to produce destruction of the cord structures and removal of the pressure then does no good, therefore it is useless to do a laminectomy. These cases will continue to have exaggerated reflexes and considerable difficulty. It is rather rare, I believe, to see a case that improves as much as the one Dr. Jacobs reports, in which the patient became able to walk very well, but still had the reflexes exaggerated.

Dr. J. T. Rugh, Philadelphia: My experience rather leads me to feel that the prognosis in adults depends very much on the involvements or complications in other parts of the body. If the patient does not have any pulmonary lesion or any active lesion in other parts of the body, the prognosis of the spinal condition is better. A year or so ago, I had a case of paralysis of about a year's standing, in the Philadelphia General Hospital. As a last resort, and because of inability to control the patient as he was, I placed a bone-graft in the spine. Six months later, he met me in the corridor, walking around with a cane. It is now two years since the graft was inserted, and he is now driving a dray in the city. I have been able to duplicate that result in several other patients with disease of a similar type, in which there was no complication. Those of my patients who have not recovered or have shown no improvement have usually died of complications, pulmonary, renal, or whatever they might be.

Dr. A. L. Fisher, San Francisco: There ought to be a complete neurologic examination in all these cases as a routine. For the last year we have been making not only the examination of the motor nerves and reflexes, but also of sensibility, tactile sensation, cold and heat sensations, etc. Although the results are not yet sufficient to draw any conclusions, I have seen some evidence that there are in some instances disturbances of sensation before any evidence of motor impairment is shown.

Dr. Reginald H. Sayre, New York: I agree with Dr. Rugh that it is the lesion in some other part of the body that generally proves fatal in these cases, and my personal experience has been that a much larger number recover with good function than would seem to be the history with the patients whom most of the other gentlemen have seen. I have under treatment at present three adults who were paralyzed for periods of from six to eighteen months. They had both sphincters paralyzed; and in two cases there were bedsores. These patients have practically recovered. Two of them are supporting themselves. The other patient has so far recovered as to be able to move around the ward with difficulty; but she has improved so much within the last six months that I think she will make a good recovery ultimately. She was a mass of bedsores when she first came under my observation; and a diagnosis of transverse myelitis had been made, Pott's disease not being suspected. Nothing had been done; but with traction and hyperextension in bed, she began to recover very soon. She has slowly increased in her capability of looking after herself, and is, I believe, on the way to recovery. In most of the fatal cases that I have seen, the pressure was in the cervical region. I have seen several that went to a fatal termination, and there was marked meningitis at the time of death—the cerebral meninges being involved as well as those of the cord.

Dr. F. J. Gaenslen, Milwaukee, Wis.: I want to report a procedure that I used in two instances in which the paralysis came on suddenly, and in which the condition would probably have terminated fatally otherwise. The first thing I did was a laminectomy, splitting the spines as you would in an Albee operation. The advantages of that are that when you close up the wound, you have a very firm line of union. In addition to the laminectomy, I put in a tibial graft over the laminectomized portion of the spine. In one instance, I removed the laminae of the fourth, fifth and sixth cervical; and in the other three laminae in the dorsolumbar region.

Dr. James T. Watkins, San Francisco: I want to report progress in a case belonging to the group described by Dr. Jacobs. The patient was a young woman with a complete paraplegia and multiple sinuses pointing in her back low down. In the hope of inducing these abscesses to discharge elsewhere and so enable me to get a clean back to operate on, I had her put on an inclined plane. My hopes were realized. In time she developed sinuses in each groin and those in the back healed up. Shortly afterward I went off service and Dr. Sherman took the case over. He did a laminectomy and removed a large tuberculoma from the neural canal. The outcome to date is most gratifying. It is less than six months since the operation and she already walks with assurance.

Dr. Edward S. Hatch, New Orleans: I agree with Dr. Rugh that if they do not have other complications, these adult patients do well. I see many adult negroes come to the Charity Hospital with paraplegia or great weakness; and in the cases in which there are no other complications, the prognosis is good. I have one man who was absolutely paralyzed, but who could get around a little in three months and is steadily improving. It is a great mistake to say that we cannot do anything for these patients.

Dr. Albert H. Freiberg, Cincinnati: There is very little difference of opinion as to the correctness of the general considerations which Dr. Jacobs has placed before us. At the same time, I question whether we may applaud all that he has said with reference to these cases, whether in child or in adult. The demonstration of an abscess around the spinal column in a roentgenogram in a case of paraplegia does not prove that the abscess stands in direct relation to the paraplegia. Neither is it possible to be quite so definite as to what is going to happen as the result of conservative treatment in child or adult. The proof cannot be seen in the roentgenogram, but in the conduct of the case. What is important is that we should first use adequate mechanical means for placing the spine in a properly corrected position and for maintaining an exact immobilization with comfort to the patient and for a sufficient length of time to be able to judge, by the patient's behavior afterward, whether he is improving or not. If he is not, we are not accomplishing what we are after; and then the question of some other kind of intervention comes up. This is as true with reference to the child as to the adult, but the difference between the two classes of cases lies in the fact that improvement is more likely and more rapid in the child than in the adult. For these cases it is my custom to use the Lorenz plaster bed, and not the Bradford frame for immobilization. By this means, I can secure what we call hyperextension, but which it would be better to describe as a corrected position; and, in addition, I hope, a greater degree of immobilization. This appliance is always under control, and enables one to see that the patient receives proper care of the skin. Our experience has been most gratifying in the treatment of these cases. I may have been more fortunate than most. We are going through this experience with some cases now. The ultimate fact to be looked for is continuous improvement, even though slow. So long as that is going on, I feel that we are moving in the right direction.

DR. C. M. JACOBS, Chicago: I do not deny that some patients get well; but what I have tried to bring out is that when this occurs the pathologic lesion is a tuberculous granulation tissue rather than an intraspinal abscess. We know that most children with Pott's paraplegia get well; on the other hand, my records show that out of twenty-four adult cases, sixteen were known to end fatally. Children with Pott's paraplegia are placed on a Bradford frame, with or without traction, and as already stated they usually get well. The roentgenograms in these cases do not show a shadow indicating abscess. When the roentgenograms show abscess formation there is more or less permanent paralysis. At the Home for Crippled Children, I have two patients with Pott's disease who have been paralyzed for the past two years. I have tried in every way to modify the condition by different methods—particularly with rest, but without success. The roentgenograms show a shadow which I have diagnosed as an intraspinal abscess. According to my observation, Pott's paraplegia in adults, due to intraspinal abscess, is usually followed by complications such as pulmonary tuberculosis, bronchopneumonia or tuberculous meningitis. Dr. Sayre did not state whether roentgenograms were taken of his cases and if so, whether a shadow was shown indicating abscess formation.

DR. SAYRE: In both of my cases I believe that there was an abscess present, because, after the disappearance of the paraplegia, abscesses showed themselves—in one case, in the spine, and in the other, in the groin. These abscesses were opened and washed out, and disappeared.

DR. HIBBS: These were intraspinal abscesses, not ordinary abscesses?

DR. SAYRE: I believe that these abscesses had their origin in the spinal canal, as the result of a process going on in the vertebra and elsewhere in the canal. They exerted enough pressure to cause paraplegia. Then, before they were done, they became extraspinal abscesses; and, with relief of pressure in the canal, the paralysis disappeared. This does not occur in all cases, but did in these.

NEURITIS AND PARALYSIS AS A COMPLICATION OF THE INTENSIVE PASTEUR TREATMENT

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Remlinger,[1] Stimson,[2] Simon,[3] Hasseltine[4] and Fielder,[5] in a summary of the literature with a report of their personal cases, show the sum total of paralyses following the Pasteur treatment to be 142, with twenty-four deaths. With the additional cases described in Table 1, the number of paralyses is increased to 150, without taking into consideration the seven cases reported as neuritis. Attention is particularly called to the two cases of optic neuritis heretofore not described in the literature. With the etiology of this complication very much in doubt, it is best that one call attention to the seemingly important factors of the cases in this series.

TABLE 1.—PARALYSES

Case	Diagnosis in Biting Animal Based on	Onset Days After		Site of Involvement	Time of Recovery
	Negri Bodies or Inoculation; Observed Symptoms; Suspicious History	Bite	Beginning Treatment		
1	+	21	17	Unilateral facial paralysis................................	Traces 9 months later
2	Treatment taken as a precautionary measure	..	28	Partial paralysis legs; considerable diarrhea present.	Six weeks
3	+ No bite; supposed cuts on hands.	21	15	Paralysis legs; partial paralysis arms and face sphincters	Partial recovery 3 weeks later
4	+	24	17	Paralysis both legs; cerebrospinal fluid withdrawn and inoculated subdurally into guinea-pigs, with negative results	Several weeks later
5	+	18	13	Bilateral facial paralysis, with involvement of lower limbs, sphincters, and, to a smaller extent, the arms; prodromal symptoms of extreme nausea and severe local reactions, with rise of temperature	Traces 16 months later
6*	Dog well; treatment taken as a precautionary measure, and self-administered	12	10	Paralysis both legs and sphincters; simultaneous with the beginning of involvement of nervous system there was a "flaring up" of all previous local reactions with a sharp rise in temperature	Traces 7 months later
7*	Pricked on thumb with needle while administering the Pasteur treatment	..	17	Paralysis of legs................................	Several months
8	+	..	17	Paralysis of legs and sphincters; severe local reactions after each injection, the paralysis following unusually severe ones; no rise of temperature	Reported slowly improving four months later

* Physician.

STUDY OF CASES

1. The percentage of involvement of the central nervous system including the cases of neuritis in the series of intensive Pasteur treatments in which these cases occurred, numbering approximately 1,600, was 0.9 per cent. This percentage is in excess of what is usually reported, and would lead one to believe that many cases go unrecognized. Considering the paralyses alone, the incidence was 1:200 in those treated in this series.

2. No children were affected. It is of interest to note that Cases 6 and 7 were in physicians.

3. The paralysis occured in one person (Case 2) who was not bitten. Again, it occurred in one person

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[1] Remlinger: Accidents paralytiques au cours du traitement antirabique, Ann. de l'Inst. Pasteur, 1905, **19**, 625.

[2] Stimson, A. M.: Facts and Problems of Rabies, Bull. 65, Hyg. Lab., U. S. P. H. S., 1910.

[3] Simon: Ueber Lähmungen im Verlauf der Tollwutschutzimpfung, Centralbl. f. Bakteriol., Orig., 1913, **68**, 72.

[4] Hasseltine, H. E.: Paralysis During Antirabic Treatment, Pub. Health Rep., Oct. 24, 1913, p. 2220; ibid., July 30, 1915, p. 2226.

[5] Fielder, F. S.: Paralysis During Pasteur Antirabic Treatment, THE JOURNAL A. M. A., June 3, 1916, p. 1769.

(Case 6) who was bitten, but not by an animal which was rabid.

4. Cases 4, 5 and 6 were treated with the same set of virus with fifteen others. This virus was checked culturally, aerobically and anaerobically, with sterile results. From these cases one would be led to believe that there was some idiosyncrasy on the part of the ones affected. An idiosyncrasy not being a complete explanation, one would consider the symptoms presented as a result of fixed virus infection.

5. In Cases 2, 5 and 6, observed personally, one would be apt to judge the patients as having such temperaments as to predispose to some involvement of the nervous system.

6. In Cases 2, 3, 4, 5, 6, 7 and 8, the condition was apparently a myelitis, yet in others the peripheral nerves seemed most involved. Facial paralysis alone was noted in one case (Case 1). There is no doubt that bulbar symptoms were present in Case 5. The involvement may be of a selected nature, as shown by Cases 11 and 13.

7. In Case 3, though the treatment was discontinued and resumed with no ulterior results, I am convinced from observations of Cases 5 and 6 and the alarming symptoms presented that the continuation of the treatment was bad judgment. There must be a border line, so to speak. The latter cases around the seventh day of treatment presented definite prodromal symptoms of nausea and temperature. In Case 6 the treatment was discontinued for two days, with a return of the patient's condition to normal. The resuming of the treatment brought on an immediate and much aggravated return of the initial symptoms coincident with the appearance of the paralysis.

TABLE 2.—NEURITIDES

Case	Diagnosis in Biting Animal Based on Negri Bodies or Inoculation	Onset Days After		Site of Involvement	Time of Recovery
		Bite	Beginning Treatment		
9	+	34	31	Spasmodic contraction muscles side of neck	Several weeks
10	+	48	45	Spasmodic contraction muscles side of neck	Several weeks
11	+	23	19	Double optic neuritis followed by complete blindness of a few days' duration	7 weeks
12	+	34	30	Severe pains left eye, later affecting side of face, occurring at intervals	2 weeks
13	+	21	17	Double optic neuritis followed by complete blindness with gradual recovery of vision	Several weeks
14	+	..	..	Continuous vomiting.........	Immediate
15	+	21*	18*	Extreme numbness of fingers and toes with some extension to arms and legs	Several weeks

* Contact

8. One can easily grant that the local reactions observed during the course of the Pasteur treatment are an indication of the individual's hypersusceptibility to foreign proteins. Then the flaring up of these reactions simultaneously with the beginning of the symptoms of involvement of the nervous system observed in Case 6, and to a lesser degree in Case 8, is most interesting. These cases readily support the anaphylactic theory.

9. The shortest incubation period of the paralyses was ten days. In one instance it was twelve days, in one thirteen days, in one fifteen days, in three seventeen days, and in one twenty-eight days.

COMMENT

There is no doubt that in some persons to whom the intensive Pasteur treatment is administered, 0.9 per cent. in our series, taking into consideration the cases of neuritides presented, there occurs some involvement of the nervous system, with possible serious results. Therefore the intensive Pasteur treatment is not without danger, and warning should be given accordingly.

This involvement may be of the nature of a definite myelitis which is most probably rabic. The short incubation period as demonstrated in the cases reported here seems characteristic of fixed virus, yet it must be remembered that comparatively as short an incubation period is seen in cases of human rabies,[6] as a result of street virus infection, overwhelming in every instance. No single etiologic factor can explain every case, as in Case 6 in my series. The patient was not bitten by a rabid animal. Either theory—an idiosyncrasy anaphylaxis, or fixed virus—is applicable to this case. Though continuation of the Pasteur treatment in some of the cases of paralyses may not appreciably affect the course of the disease, in others it may be fraught with grave danger, as illustrated by Case 6.

THE HECHT-WEINBERG-GRADWOHL TEST IN THE DIAGNOSIS OF SYPHILIS

ITS SUPERIORITY OVER THE WASSERMANN TEST IN UNTREATED AND TREATED SYPHILITICS *

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It has taken about one decade to introduce the Wassermann test into the field of diagnosis. It is now recognized as one of the most valuable laboratory aids that has yet been brought into routine use. It is so nearly specific in differentiating between syphilitic and nonsyphilitic conditions that for all practical purposes we may conclude that a positive Wassermann means syphilis.

This reaction is usually performed by competent workers along the lines originally laid down by Wassermann and the so-called Berlin school of serology. As a pupil and follower of that school I have insisted on the carrying out of a technic similar in all details to that originally advocated by Wassermann, with the exception of replacing the watery extracts of antigenic substance by one or more of the much superior alcoholic preparations. Using, therefore, the so-called "classical Wassermann" with the proper alcoholic antigen, cholesterinized or not as the case may be, I have seen every phase of the development of this reaction, and have watched it from the standpoint, not only of the laboratory, but also with the interest of a clinical observer in syphilis. With this experience I have long since come to recognize in this test a splendid method of syphilitic diagnosis and at the same time have come to regard its negative presence in many instances as a sore disappointment in clinching a diagnosis in which almost absolute clinical evidences of the disease were at hand. In other words, like others, I have long since

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6. Geiger, J. C.: Human Cases of Rabies in California and Their Treatment, California State Jour. Med., June, 1916.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

been forced to conclude that a positive Wassermann is laboratory proof of syphilis, but that a negative Wassermann is by no means a method of proving that syphilis does not exist.

The Wassermann test, while therefore a boon to us in diagnosis, is at the same time, in other instances, a crushing disappointment. How often does this occur? It is almost impossible to estimate accurately the percentage of positives that are to be found in all syphilitic cases that are daily examined throughout the medical world. My own experience of nine years in the work entitles me to estimate it in terms of possibly 60 per cent., that is, of all syphilitics examined, including blood and spinal fluid Wassermann reactions, we will get 60 per cent. of positive findings in all untreated patients who have passed beyond the primary period.

With these figures before us, it might be well to inquire into the meaning of the 40 per cent. negatives in manifest syphilitic conditions. Is this a fault of the technic or is it due to a temporary or permanent disappearance in the reaction in certain persons and in certain phases of the infection, regardless of the application of specific medication? I would answer as a result of my experiences that it is due partly to the first cause and partly to the second. I say this advisedly, because I have been able to add 15 per cent. to the column of positives by utilizing another test which eliminates those errors inherent in the test itself. I have been unable to add much to the percentage of positives by eliminating faults due to factors inherent in the idiosyncratic factors of the patient or of the disease, unknown factors that make his blood and spinal fluid consistently negative at certain times and under certain conditions. I do not include, in the latter statement, however, my use of the "provocative" method of producing positives by means of arsenobenzol injections.

About four years ago my attention was called to the method of Hecht and Weinberg[1] in demonstrating the presence of the syphilitic antibody, if such it may be termed, by a method first described by them. I had repeatedly tried out methods of making Wassermann tests other than that used by the Berlin school, but in each instance found none of them in any sense superior in point of accuracy to the original method. There were, however, certain elements in the method of these workers that logically recommended at least a trial of their methods. In first order I might mention the fact that the method utilized unheated serums. This is undoubtedly a point of superiority over the Wassermann, which utilizes inactivated or heated serums. Heating of blood serum for the purpose of destroying complement unquestionably also destroys part of the syphilitic antibody or substance responsible for complement fixation. If this is true, in the presence of a small amount of this substance the performance of a Wassermann test with inactivated serum most certainly will tend to produce a negative result. Another explanation of this may be found in the claim of those who believe there are two kinds of syphilitic antibody, one thermolabile, the other thermostable; that in some cases and under certain conditions the thermolabile factor predominates and under other conditions the thermostable. Granting that a test were to be carried out while a serum was charged with thermolabile antibody and weak or deficient entirely in thermostable body, inactivation would necessarily destroy the element that would complete complement fixation and give a negative result where a positive should and would have been obtained with an active or unheated serum.

This fact seems to have some support in addition to my observation from Vladimir Busila,[2] who showed that both blood and spinal fluid contain two syphilitic amboceptors, one thermostable or unaffected by temperature of 56 C. and the other thermolabile, that is, destroyed by that temperature. He states that one or both may be present and in various proportions. The thermolabile is the first to appear in the blood on syphilitic infection and the last to disappear under treatment. When both amboceptors are present, the Wassermann reaction yields a weaker result when the serum is previously heated than when it is not. He states also that when the thermolabile amboceptor is present alone or nearly alone, the Wassermann reaction with heated serum gives a negative result, but without heating, a strong positive result. The negative blood Wassermann performed with the ordinary technic which includes preliminary heating, is not, therefore, a proof of the absence of syphilitic amboceptor. Busila also makes the observation, which is rather interesting, that syphilitic cases with a positive reaction exclusively in spinal fluids are rare, much less common than is generally thought, and includes cases mainly in which the blood amboceptor is exclusively of the thermolabile variety, or nearly so. He states, in the light of his own observation, that by the performance of the blood Wassermann with unheated serum one may thus generally dispense with the cerebrospinal fluid Wassermann. He further believes that the thermolabile amboceptor often exists alone in cases of latent, inadequately treated or nervous syphilis, and the Wassermann reaction performed with the original technic is thus unavailable, precisely in the cases in which it is most needed.

Again it must be remembered that the Wassermann technic does not take into account the presence of natural antisheep amboceptor. The presence of antisheep amboceptor in the blood serum of persons depends, it is assumed, on the ingestion of mutton. It is impossible to state just how much mutton must be ingested before natural amboceptor appears in the blood. We have seen it present in fairly large amounts in persons as young as 12. The amount of this substance varies within wide limits, as we shall see later. It is fair to assume that if in the Wassermann reaction one utilizes a certain amount of amboceptor made from rabbit's serum and fails to take into account the amount naturally present, then the balance for the hemolytic system which our titration experiments have established as a prior step to the performance of the actual test is seriously impaired. If, for instance, 0.5 c.c. of a 1:2,000 dilution of rabbit antisheep amboceptor will hemolyze 1 c.c. of a 5 per cent. sheep corpuscle suspension, and already sufficient amboceptor is present in the patient's serum to hemolyze 1.5 c.c. of sheep corpuscles, as I have frequently noted in my work, then the balance is most seriously disturbed and reliable work cannot be carried out.

The method of Hecht and Weinberg was pointed out to me during my stay in Paris, by Leredde particularly. The method obviously has much to recommend it in that it utilized unheated serums and took into account the presence of natural amboceptor and natural complement. The method was put on trial, and the principles already mentioned readily asserted themselves as eliminating the errors inherent in the classic Wassermann. After working out Hecht and Weinberg's method, I determined on the expedient of estimating the exact amount of complement and amboceptor present in each serum, and utilized only the exact amount of sheep corpuscles hemolyzable by that much amboceptor and complement. In other words, my work with this test added to the accuracy of the "balance" of the hemolytic system. The method which I used and first reported before this Association[3] is as follows:

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[1] Hecht and Weinberg: Wien. klin. Wchnschr., 1909, **22**, 256.

[2] Busila, Vladimir: Presse méd., Sept. 23, 1915.

> Place in a rack fourteen small test tubes. The first ten of these tubes are used to determine the hemolytic index of the suspected blood. By this I mean the exact amount of hemolytic amboceptor present in the given blood serum. The last four tubes are used in the actual test. Add 0.1 c.c. of fresh unheated patient's blood serum to each of the first ten tubes. Then add decreasing amounts of normal salt solution to these tubes, beginning with 1 c.c., then, 0.9, 0.8, 0.7, 0.6, 0.5. 0.4, 0.3, 0.2 and 0.1 c.c. to the succeeding nine tubes. Next add increasing amounts of fresh 5 per cent. suspension of sheep's blood, starting with 0.1 c.c. and ending with 1 c.c. Place the rack in the water bath for one-half hour. The tube which last shows complete hemolysis constitutes our "hemolytic index"; if it is Tube 4, our index is 4, because this tube had received 0.4 c.c. of sheep's corpuscles to be added to the last four tubes. The first three tubes (11, 12 and 13) constitute the tubes for the actual test, while the last tube in the rack (Tube 14) serves as our serum control tube. Tubes 11, 12 and 13 receive, therefore, the patient's serum, the proper amount of sheep's corpuscles, dependent on hemolytic index, rising strengths of antigen, but no complement and no amboceptor. Tube 14 receives only sheep's corpuscles, but no antigen.
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> In my technic I use 0.1 c.c. of a diluted antigen, determined by titration in tube 11, 0.15 c.c. antigen in Tube 12, and 0.2 c.c. in Tube 13. In order to equalize the volume of fluid in all these tubes, I add 0.2 c.c. normal saline to Tube 11, 0.15 c.c. to Tube 12, 0.1 c.c. to Tube 13, and 0.3 c.c. to Tube 14. The tubes are then agitated and placed in the water bath for half an hour. These last four tubes are filled at the time I make the additions to the first ten and are left with them in the water bath for one-half hour for fixation of complement, the rack is then taken out and the hemolytic index computed. If the index is low, say from 1:4, I add 0.1 c.c. of sheep's blood to the last four tubes. If the index is between 5 and 7, I use 0.15 c.c. sheep's blood to the last four tubes; if between 10 and 15, I use 0.25 c.c.; if between 15 and 18, I use 0.3 c.c.; and if between 18 and 20, I use 0.35 c.c. If the patient's serum has an index below 3, I regard the reaction as of doubtful value. If it is above 3, I regard it as absolute. The reaction is read off exactly as in the Wassermann, that is, inhibition or noninhibition of hemolysis. If the amount of complement or natural antisheep amboceptor is very low, we can add the proper amount of guinea-pig's serum or rabbit's immune serum, ascertained by preliminary titration.

The particular advantage of this test is the fact that we are dealing with unheated serums, avoiding the chance of the development of complementoid substances. I wish to state that the Hecht-Weinberg-Gradwohl test has never been found negative in any blood serum which showed a positive Wassermann, but it has frequently been found positive in blood serums that show a negative Wassermann. Thus, its advantage can readily be seen.

Having worked out the technic I have consistently followed it up with a close comparison with the classic Wassermann. In every test carried out by me for complement fixation diagnosis of syphilis I have performed both the Wassermann and the Hecht-Weinberg-Gradwohl. Many of these tests were performed without any knowledge of the clinical history in advance, and my reports were unhesitatingly given to my clinical consultants, sometimes showing a positive in both tests, sometimes showing a negative Wassermann and a positive Hecht-Weinberg-Gradwohl, sometimes showing negative both, but never showing a positive Wassermann and a negative Hecht-Weinberg-Gradwohl. At first I was astonished at the frequency of the "dissociated reaction," by which I mean the negative Wassermann and the positive Hecht-Weinberg-Gradwohl. Later I lost my astonishment and came to the conclusion that the method I used in eliminating the factors of errors inherent in the Wassermann had thoroughly justified me for the additional time spent on it. We found that in no instance where we obtained a positive Hecht-Weinberg-Gradwohl and a negative Wassermann was our work at fault or our serologic diagnosis a surprise to the clinician. We must confess that there are still certain cases of syphilis in which both tests were negative which were really syphilitic, as proved by true clinical manifestations and later the appearance of positive reactions in one or both tests at a subsequent examination. These were invariably cases of latent syphilis in robust individuals. We wish to add, too, that the use of cholesterinized antigens does not measure up in accuracy to the use of the Hecht-Weinberg-Gradwohl test as a serologic test for syphilis. We have carried out both Wassermann and Hecht-Weinberg-Gradwohl, and have utilized all the different antigens now in common vogue. We have lately tried out the use of cholesterinized human heart antigen in an endeavor to compare the results obtainable with this method to those obtainable with a noncholesterinized antigen in the Hecht-Weinberg-Gradwohl technic. We must announce that the Hecht-Weinberg-Gradwohl frequently gave undoubted positives when the cholesterinized human heart antigen in the straight Wassermann technic failed to do so. In other words, our positives with the Hecht-Weinberg-Gradwohl cannot be explained on the basis of increasing the *sensitiveness* of the antigen: they can be explained only on the basis of the elimination of the factors at fault already enumerated. Furthermore, I wish to be understood as stating that when I speak of negative Wassermann and positive Hecht-Weinberg-Gradwohls, we do not mean a *faint inhibition* in the latter and a *complete hemolysis* in the former. The results are astonishingly different and striking, on the one hand a clean-cut negative Wassermann, on the other a definite and distinct, positive Hecht-Weinberg-Gradwohl.

A recent publication by Sellards and Minot[4] alludes to the fact that the writers in fourteen cases in only 134 found natural amboceptor in the amount of two or more units. They also mention that where they depended on natural sheep amboceptor no hemolysis occurred and there was no apparent explanation for this lack of hemolysis except the inefficiency of the natural amboceptor. These statements, while based on an absurdly small number of cases and under conditions unknown to us, are so utterly at variance with our findings and our previous statements that we feel it necessary to dwell on them at some length here. Our personal experience now with something like

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[3] Gradwohl, R. B. H.: The Hecht-Weinberg Reaction as a Control Over the Wassermann Reaction, The Journal A. M. A., July 18, 1914, p. 240.

[4] Sellards and Minot: The Antagonistic Action of Negative Sera upon the Wassermann Reaction, Jour. Med. Research, May, 1916.

5,000 comparative Wassermanns and Hecht-Weinberg-Gradwohls show that at least 98 per cent. of the people examined for complement fixation have some amount of natural antisheep amboceptor present. This amount, expressed in terms of "hemolytic indexes," that is, amount of sheep corpuscle suspension in tenths of 1 c.c. hemolyzable by 0.1 c.c. of serum, varies between the limits of 1 and 20. For instance, the accompanying table, compiled from our complement fixation work from May 1, 1915, to April 30, 1916, shows the number of cases, the total hemolytic indexes and the average.

NUMBER OF CASES, TOTAL HEMOLYTIC INDEXES, AND AVERAGE

Month	Cases	Total Hemolytic Indexes	Average Number of Units of Natural Antisheep Amboceptor
May	236	485	2+
June	245	810	3+
July	208	901	4+
August	222	986	4+
September	215	1,301	6
October	216	1,312	6
November	221	1,600	7
December	213	812	3+
January	256	1,610	6
February	254	1,090	7
March	262	1,146	7
April	229	780	6
Total	2,777	Total average	5

In other words, the average beginning May, 1915, of units of natural amboceptor present was 2 plus, running up to an average of 7 in November and declining to 6 in April, 1916. A number of times we have found an index as high as 15. The highest we have found was a case recently with 20. Our figures for previous years run approximately the same as those for 1915-1916.

In what class of cases and under what conditions are we liable to find the Hecht-Weinberg-Gradwohl positive and the Wassermann negative? We might say that in cases in all periods of syphilitic infection is this finding likely to be found. We have found manifest secondary syphilis with a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. We have found it again in so-called latent syphilis, in cases of tabes dorsalis, in tertiarism. I am referring now to untreated cases. In cases of congenital syphilis, we have found it time and again. Every Wassermann worker is familiar with the frequent negatives found in this group of cases. We have in general found it present in 15 per cent. more cases than the Wassermann, irrespective of the period of the disease or whether treatment had or had not been instituted. Leredde has called attention to the "dissociated reaction" in ocular syphilis.

For the purpose of illustrating the character of cases and the circumstances under which we have obtained what we term a "dissociated reaction," that is, a negative Wassermann and a positive Hecht-Weinberg-Gradwohl, I shall quote the following histories from a large number in our records:

CASE 1 (8542)—Patient of Dr. Jost. Treated from December, 1915, as follows: Six-tenths gm. salvarsan followed by mercurial (gray) oil 1 grain once a week up to Jan. 6, 1916. Then intravenously 0.6 gm. salvarsan followed by weekly injection of mercuric salicylate, 1½ grains, up to Feb. 4, 1916, then 0.6 gm. salvarsan intravenously followed by weekly injections of mercuric salicylate, 2 grains. March 4, 0.6 gm. salvarsan intravenously. Patient disappeared from service, and returned, April 2, expressing a belief that he was cured. Blood at the time gave a negative Wassermann, positive Hecht-Weinberg-Gradwohl.

CASE 2 (8024).—Service of Dr. Hauck. This case came under observation, December, 1914, for a neglected tertiary lesion affecting the vomer and tissues of the posterior nares, decided necrosis with odor of necrotic bone. Wassermann was + + + +. Patient was put on mixed treatment with four intravenous injections of neosalvarsan, mixed treatment with tonics, continued to date. Subsidence of all symptoms, area of necrosis all healed over. March 18, 1916, negative Wassermann, positive Hecht-Weinberg-Gradwohl. As result of these findings, patient was continued under treatment.

CASE 3 (6805).—Service of Dr. Crowley. This man was exposed in August, 1912, when he was 19 years of age. Chancre appeared at some time after two weeks. He first came under observation the latter part of November of that year. The first of December the cutaneous eruption was present. He used inunctions of mercury till the first of February, 1913. From that time until the middle of December he took yellow mercurous iodid. Then for two months he used inunctions again. From the middle of February, 1914, till October, 1915, he took yellow mercurous iodid faithfully. From the middle of October till January 5 he took no treatment. January 5, Wassermann was reported doubtful only because of the clinical history. A single dose of salvarsan was given, March 1, and a second Wassermann was reported negative. At this time the patient was advised to discontinue treatment till about the first of January, and then have a Wassermann made. Owing to the illness of the attending physician, this was not done, and the patient began to imagine all sorts of things, one being that he had infected his whole family. His mental condition became so bad that he insisted on having another dose of salvarsan, and this was administered, Feb. 1, 1916. On the 9th he brought his father to the office and insisted that a specimen of his blood be sent to the laboratory for examination. This was done and was reported from our laboratory under the date of February 12, negative in both reactions. His own blood was sent in February 16, and was reported negative Wassermann and positive Hecht-Weinberg-Gradwohl. He has received no further treatment, although he has been advised to do so. Had a mild attack of grip during March that worried him considerably.

CASE 4 (3495).—Patient first came under observation at the age of 22. Had been infected at the age of 17. Infection in this case occurred in August, 1909; manifestations mild, secondary eruption mild. Began treatment, Sept. 15, 1909, of yellow mercurous iodid, from 1 to 4 grains daily, continuing until May, 1910; then six injections in gluteal muscles (one injection weekly) of 10 per cent. mercuric salicylate in liquid petrolatum, each injection 4 minims. This was followed by 3 to 6 yellow mercurous iodid pills daily, ⅓ grain each, also solution of potassium iodid, about 30 grains daily for three months. No further treatment until March and April, 1912, when one injection of mercuric salicylate same as above was given weekly for the two months, followed by no treatment until August 27, when 0.6 gm. salvarsan was administered intravenously. No further treatment was given. October, 1913, Wassermann negative. Jan. 30, 1914, Wassermann negative. Aug. 31, 1914, Wassermann negative, Hecht-Weinberg-Gradwohl positive. It may be also of interest to know that since then this patient had an injection of 0.6 gm. neosalvarsan about May, 1915, then about September, 1915, Wassermann showed negative; then, March 1, 1916, we made test: Wassermann, negative; Hecht-Weinberg-Gradwohl, positive.

CASE 5 (4476).—Service of Dr. Johnson. When patient came under observation she had had syphilis of five years' standing. Later had syphilitic baby. At time of examination no signs of syphilis. Results: negative Wassermann and positive Hecht-Weinberg-Gradwohl.

CASE 6 (5130).—Service of Dr. Phillips. This was a case of beginning tabes with incontinence of urine and severe headaches. He had been treated twenty years previously for a short time for a suspicious sore. We found a negative Wassermann and a positive Hecht-Weinberg-Gradwohl.

CASE 7 (3293).—Service of Dr. Boyne. Man, aged 29. History of exposure ten days previously. Typical primary lesion on glans. No treatment before examination. We found negative Wassermann and positive Hecht-Weinberg-Gradwohl; 0.9 gm. of salvarsan given intravenously the day following this "dissociated reaction." Lesion disappeared rapidly within seventy-two hours. Two weeks later neosalvarsan again given. Patient refused further treatment. Was married subsequently, and had an apparently healthy child.

Case 8 (3254).— Service of Dr. Winter. Woman, aged 32, came under observation, July 15, 1908. Had been married two years, and had had one child previous to her marriage, by her husband. Was unable to carry three subsequent pregnancies to term. Her husband was syphilitic, and had been under treatment. Patient took yellow mercurous iodid pills for about two years faithfully, with the result that she gave birth to a healthy child in 1910. In July, 1914, we found an examination of the blood gave a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. She was found to be suffering with a septic endocarditis, of which disease she died in August, 1914.

Case 9 (8255).—Service of Dr. Caldwell. Woman came under observation, April 7, 1916, some weeks after losing her only child. This child, which was only 14 months old, had been ill only a few days. Patient was extremely nervous, could not sleep or eat. She had been married nine years. First baby had lived twelve days; had sores on body. Then followed two miscarriages and then the child which had lived only fourteen months. Family history showed that mother had four miscarriages before raising a child, and two of her sisters have each had a miscarriage. She made the remark that none of them had ever been able to raise a boy. Father now at the age of about 65 has kidney trouble, and has been suspected of having tuberculosis for several years. Patient had a very bad case of pyorrhea, which she said had run on for years. Skin on hands and at elbows was dry, and edge of tongue was red. Had frequent attacks of diarrhea, appearance of pellagra. Husband a big, healthy fellow, who denied all knowledge of syphilis. Only treatments given her were two injections of sodium cacodylate. This made some improvement. April 18, we obtained a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. Patient's husband denied syphilis, and blood examination showed negatives in both tests. Patient continued on mercuric chlorid, intravenously injected. This was a case of hereditary syphilis. Dr. Caldwell states that he was indebted to the Hecht-Weinberg-Gradwohl for the diagnosis; otherwise, he would have considered this a case of pellagra.

Case 10 (2931).— Service of Dr. Darner. Patient came under observation with eruption on chest. Diagnosis, syphilitic leukoderma. History of a chancre six years previously, with very small amount of treatment with pills. Wassermann at that time was positive. Present observation is made six years after initial sore, and at this time the findings are negative Wassermann and positive Hecht-Weinberg-Gradwohl.

Case 11 (6817).— Service of Dr. Lyon. Patient came under observation with a mucous patch and an infection. History of a primary sore. Our findings were a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. The mixed infection yielded to specific treatment.

Case 12 (6268).—Service of Dr. Galloway. Patient came under observation at the age of 54. Diagnosis was locomotor ataxia. Patient denied syphilis, but admitted gonorrhea. Attended the wife in her first confinement in 1895. Child syphilitic, and died in about a week's time. Advised both patients to take treatments, but they refused. Attended the wife in her second confinement in 1896, when she again had a syphilitic child which died in about a week. Then the husband consented to take treatment at this time, but continued only a short time, because he had no clinical symptoms, and showed no scars, glandular enlargements, or other proofs of infection. Again confined the wife, who had a third syphilitic child in 1897, but which recovered under mercurial inunctions, and is alive and well today. Mother had been treated two months previous to birth of last child. After this confinement the husband again consented to take treatment, and continued it for about one year. Treatment was with yellow mercurous iodid, and later with red mercuric iodid and potassium iodid. He was urged to continue treatment, but he refused. About six or seven years ago he complained of general physical weakness, loss of sexual power and occasional pains in legs. Examination showed Argyll Robertson pupil, Romberg sign, and absence of patellar reflex. Under treatment of red mercuric iodid and potassium iodid, with strychnin intercurrently, he has improved subjectively, and continues at work. Our blood examination, Nov. 27, 1915, showed negative Wassermann and positive Hecht-Weinberg-Gradwohl.

Case 13 (4826).— Service of Dr. Rice. Patient had had a syphilitic infection some eight or nine years ago. Has been under treatment at intervals since then. She was not receiving any treatment at the time the laboratory finding was made, but certainly had an infection, also stricture of the rectum, which was divulsed some two and one half years ago, and dilation was kept up for a few months. She returned a short time ago and the rectum was again divulsed and she was put on antisyphilitic treatment, since which time she has apparently been doing first rate, but there is no question that she had a syphilitic infection a number of years ago.

Case 14 (6572).— Service of Dr. Neel. Patient and her husband were infected in 1907. Treatment with mercury and potassium iodid was given for several years, with pronounced success. In the latter part of 1915 he exhibited symptoms of the disease, and had a positive Wassermann. He has been relieved by treatment. His wife exhibited no symptoms of the disease, but showed a negative Wassermann and a positive Hecht-Weinberg-Gradwohl.

Case 15 (2869).— Service of Dr. Parrish. This was a case of marked tertiary syphilis with no previous treatment. Six months before treatment we found a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. Marked improvement after intravenous injection of salvarsan.

Case 16 (7950).— Service of Dr. Fischer. History of old syphilis. Diagnosis, diplopia, made two years previous, which cleared up with mercuric chlorid and potassium iodid. Had two years' treatment. Examination gave Wassermann + +, Hecht-Weinberg-Gradwohl +. Received five neosalvarsans, 9 gm. each. An examination made here, Sept. 30, 1915, showed a Wassermann + + and Hecht-Weinberg-Gradwohl +. Then ten injections of salvarsan were given. A third examination showed a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. General result apparently excellent. Still continuing treatment.

Case 17 (2599).—Service of Dr. Bassett. This patient first came under observation in April, 1913, with the initial sore on the lip. The examination of blood done at this time gave a positive Wassermann. One intravenous injection of salvarsan was given, with internal treatment for seven months, given, not continuously, but interruptedly, when all medication ceased. The following April the patient returned, complaining of sore throat. No patches were observed. The patient simply showed a pharyngitis, which did not improve with gargles and applications. Another specimen of blood was submitted to us, and showed a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. A second dose of salvarsan was then given intravenously, and the patient was treated until Dec. 1, 1915.

Case 18 (2144).— Service of Dr. Flader. This patient came under observation, Jan. 22, 1914. On examination a large syphilitic ulcer was found over the right scapular, mucous patches of the mouth and tongue, and an ulcerated condition of the mucous membrane of the nose. He had been under the usual mercurial treatment, previously, for about two years, which is about eight years ago. His primary lesion dates back about six years from the time he first consulted Dr. Flader. His treatment consisted only of mercury and potassium iodid by mouth, and there was no other treatment given. Jan. 9, 1914, 0.6 gm. of salvarsan was given intravenously, and six days later all the lesions of mouth, back and nose had disappeared, and to date there has been no return of the trouble, or any other evidences. He claims he will take no further treatment unless the evidences of the disease manifest themselves. Blood examination made here showed, Jan. 28, 1914, negative Wassermann and positive Hecht-Weinberg-Gradwohl.

Case 19 (5056).— Service of Dr. Thierry. This was a case of imbecility due to hereditary syphilis. Wassermann negative, positive Hecht-Weinberg-Gradwohl.

Case 20 (6231).— Service of Dr. Thierry. This was a case of mental deficiency due to hereditary syphilis. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 21 (4978).— Service of Dr. Pauley. This patient's family history was negative. His previous venereal history showed gonorrhea in May, 1911, July, 1912, and June, 1913. Jan. 7, 1915, he complained that he had had severe headaches for about one week. They improved somewhat under salicylate, but returned later. April 1, 1915, he was confined to bed with fever and swelling on both frontal sinuses; also severe headache. Feb. 12, 1915, he said he had had a blood test made, which was positive. February 20, he was given salvarsan, and three mercury injections at intervals. He returned, March 28, 1915, and told Dr. Pauley what had been done. The laboratory findings at this time, April 25, 1915, showed a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. May 8, 1915, 0.4 gm. of salvarsan was given. Then he received from 2 to 2.5 c.c. of a 1 per cent. benzoate solution. In May, June, July and August he received, respectively, twelve, nine, nine and two injections. August 22, he reported that his bowels had not moved for three days, and he had had about five or six chills. August 24, he had a chill at 11 a. m., followed by fever; 5:30 p. m. his fever was 102.7 and his pulse 107. August 25, at 9 a. m. his fever was 99.2 and his pulse 96; at 5.40 p. m. his temperature was 100.7 and his pulse 90. Blood examined microscopically showed what we thought to be plasmodium, but owing to staining not being good, the question was doubtful. At no time were there any eruptions or mucous patches, but the lymphatic glands were enlarged, and there were severe headaches. Sept. 23, 1915, he lifted heavy weights, and slipped. Testicle swelled and became very painful. On the following day the testicle was swollen more, and the bowels moved at 11 a. m., September 23, and then nothing would make them move until 4:30 p. m., September 29. The patient was slowly improving when he left the hands of Dr. Pauley.

Case 22 (6491).— Service of Dr. Gradwohl. This patient has been under two years' continuous treatment, having received four injections of salvarsan with periodic intramuscular injections of mercury. In the absence of all symptoms the patient still shows a negative Wassermann and a positive Hecht-Weinberg-Gradwohl.

Case 23 (3168).— Service of Dr. Gradwohl. In August, 1913, patient came under observation with a history of syphilis of two years' standing. Had had only six months' treatment by mouth. Showed mucous patch. Gave strong positive Wassermann and Hecht-Weinberg-Gradwohl at the time. He was kept under continuous mercury and salvarsan treatment. Six salvarsans and weekly injections of mercury were given, with proper intervals of tonic treatment for one year. Later he showed negative Wassermann and positive Hecht-Weinberg-Gradwohl. This case has been continued, and only in the past two months has shown negatives in both tests.

Case 24 (8211).— Service of Dr. Gradwohl. Infection three months ago. Treated with pills. Shows a negative Wassermann and positive Hecht-Weinberg-Gradwohl. At this time the patient is profusely covered with macular syphilids, and also numerous mucous patches in his mouth.

Case 25 (6453).—Service of Dr. Gradwohl. Shows a negative Wassermann and a positive Hecht-Weinberg-Gradwohl in December, 1915, eight months after initial lesion and after two salvarsans had been given with no other treatment. It is interesting to note that after intravenous injection of salvarsan, January 26, 1916, he showed a Wassermann + + + + and a positive Hecht-Weinberg-Gradwohl ("reactivation").

Case 26 (8204).—This patient came under observation with a primary sore followed by a secondary eruption. He had had, previous to my observation, three salvarsans, and fifty-six intramuscular injections of mercury. He now presents himself two and a half years after, with chancre recurrens. At this time he shows a negative Wassermann and a positive Hecht-Weinberg-Gradwohl. Under treatment the chancre disappeared, but the reaction persists (May, 1916).

Case 27 (3634).—This case gives a history of primary sore one year previously. He has no visible indication of syphilis, but complains of dizziness. Examination of blood at this time shows negative Wassermann and positive Hecht-Weinberg-Gradwohl. Has been continued under treatment to relieve his symptoms. Up to date, one year after that he showed strong positive Wassermann and positive Hecht-Weinberg-Gradwohl. This is evidently a "positive-fast" individual.

Case 28 (5531).— Patient of Dr. Jost. Contracted syphilis twenty-seven years ago. Had treatment for a period of two years with pills; spent three to six weeks at Hot Springs each year up to six years ago. Now complains of a swelling in right testis. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 29 (4992).— Service of Dr. Jost. Husband contracted syphilis six years ago (during his married life). Patient's history negative, no symptoms, no treatment. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 30 (6065).— Service of Dr. Jost. Treatment 0.6 gm. salvarsan intravenously followed by sixty-two injections of sodium cacodylate intravenously, 10 grains each, during a period of four months. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 31 (6064).— Service of Dr. Jost. Came under observation, Oct. 20, 1915. No history, symptoms or treatment. Blood test made to verify showed positive Hecht-Weinberg-Gradwohl given by his child. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 32 (8278).— Service of Dr. Jost. No history, no symptoms, and no treatment. Syphilis papulosa mucosae oris. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 33 (3060).— Service of Dr. Jost. Came under observation, June 18, 1914. Contracted syphilis, June, 1912. Treated with pills for seven months. Spent two and a half weeks at Hot Springs. June 16, 1914, complained of nocturnal headache and loss of weight, and had large syphilitic sore on left leg. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

Case 34 (4865).— Service of Dr. Jost. Patient came under observation with large ulcerated area on left leg 3 inches below knee. Has had some treatment on and off for past two years. No history. Wassermann negative, Hecht-Weinberg-Gradwohl positive.

COMMENT

The group of cases in which the amount of natural amboceptor in human serums seems to play a definite rôle in making a Wassermann appear negative and a Hecht-Weinberg-Gradwohl positive comprises the following:

1. Cases of ocular syphilis.
2. Cases of visceral syphilis, particularly of the liver and heart.
3. Cases of syphilis that have received intensive but inadequate treatment.
4. Provocative cases in which we are seeking to revive a Wassermann in suspected cases.
5. Cases of monosymptomatic tertiaries.

It is my belief that this test is far superior in every respect to the Wassermann in point of delicacy of "control" of treatment. Heidingsfeld[5] speaks of the superiority of this test in estimating the finest shades of any remaining trace of the disease in cases under treatment, while he maintains that the Wassermann used in this way estimates only the coarse, early improvement. This to my mind expresses exactly my own position based on my experience with the test in cases under treatment. I have noted that the vigorous institution of antisyphilitic treatment, except in the case of the "Wassermann-fast" subject, quickly reduces a positive Wassermann to a negative. Not so with the Hecht-Weinberg-Gradwohl, however. Long after the Wassermann has become negative and the case very properly still held to the specific treatment, this reaction persists. The reduction of the Hecht-Weinberg-Gradwohl from positive to negative under

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5. Heidingsfeld: Serology and Diagnosis of Syphilis, New York Med. Jour., April 8, 1916.

treatment is far more significant to me as a proof of successful therapeusis than is the Wassermann. Another observation from my experience with this test which might also be mentioned here is that when the Hecht-Weinberg-Gradwohl becomes negative as a result of the intensive treatment that is needed to bring this about, it seldom lapses back to positiveness. In other words, the Hecht-Weinberg-Gradwohl when negative after being persistently positive in untreated syphilis is the "consummation so devoutly to be wished by the syphilologist." I of course do not wish to go on record as stating this as a proof positive of "cure," but I do insist that it has a greater value when repeatedly negative than has a Wassermann under similar conditions.

CONCLUSION

I wish to state also that the Hecht-Weinberg-Gradwohl in my hands has been a far better check or control of the Wassermann than the use of any of the controls now in vogue. The so-called borderline Wassermann reactions, if truly positives, will show a strong Hecht-Weinberg-Gradwohl. A supposedly borderline positive Wassermann that shows a clearly defined and complete hemolysis in the Hecht-Weinberg-Gradwohl tubes is not a borderline at all; it is a spurious reaction and should be thrown out of consideration. There is no better way to control the accuracy of the Wassermann than the use of this test on every blood submitted for examination. While originally advocating this test, therefore, as a control over the Wassermann, I feel at present that it has attained the dignity of something more than a mere "control" over the classical test. It should take precedence over this test by virtue of its greater accuracy and be accepted as such wherever it is used. Outside of the extra amount of time necessary in making the test, there is no argument against its widespread and continuous use in the serologic laboratory. The extra amount of labor is more than compensated for by the greater amount of information obtainable. I do not recommend it, therefore, solely as a control. Rather do I speak of it as a far better test than the Wassermann except in the 2 per cent. of cases that have no hemolytic index. In this small group the Wassermann must remain our ally. In all other cases we could, indeed, eliminate the Wassermann, and lose nothing by so doing. It is only in deference to those who cling to the Wassermann that I continue to place it ahead of the Hecht-Weinberg-Gradwohl in my reports. To my mind it has long since been passed in the race by the Hecht-Weinberg-Gradwohl, and is bringing up a bad second.

No negative Wassermann test to my mind is worth while unless backed up by a negative Hecht-Weinberg-Gradwohl. When both are negative, which occurs in 25 per cent. of syphilitic cases, according to my statistics, then recourse must be had to the various other methods of the clinic and the laboratory, for the inclusion or exclusion of any remaining trace of the disease.

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ABSTRACT OF DISCUSSION

Dr. M. L. Heidingsfeld, Cincinnati: A year and a half ago I took up the study of the Hecht-Weinberg serologic examination as modified by Dr. Gradwohl, with a great deal of skepticism. I was thoroughly imbued with the idea laid down by Wassermann and his confrères that the Wassermann serologic examination was the test par excellence, that all modifications had certain fallacies that might lead to serious error, and that the Wassermann itself could never err on the unsafe side, namely, we could never have a positive Wassermann and no syphilis present if carefully and consistently carried out. All the modifications, the Noguchi and the Hecht-Weinberg as originally laid down, were regarded by Wassermann and his co-workers as possible pitfalls. I have used the modification as set forth by Dr. Gradwohl for a year and a half, and I can confirm everything he has said. This modification is absolutely trustworthy and reliable. I do not know of a single instance where I have had a positive reaction in which syphilis could be excluded definitely. In this respect, it is as trustworthy as the Wassermann itself. I have always been a strong convert to serologic control. I will admit that there are many who are opposed to that idea. The Wassermann and its modifications have fallen into considerable disrepute, in my judgment a very unfair and unjust disrepute. I believe that the serologic examination as laid down by Wassermann himself, if all the precepts are carefully carried out, the controls properly made, reagents carefully and properly prepared, and the various steps standardized and properly performed, the reaction is absolutely trustworthy and reliable. I can say equally as much for the Hecht-Weinberg. To treat a case of syphilis without a serologic control is very unsatisfactory and unscientific. These controls give us a wealth of information that we otherwise would not have, whether the case is progressing favorably or unfavorably, and how soon the treatment should be repeated, whether or not the same remedy should be used, or a change made to some other remedy, whether or not early marriage can be countenanced or discouraged. The Hecht-Weinberg as modified by Gradwohl gives us more information. Very often cases of syphilis which are strongly positive to the Wassermann become Wassermann negative in thirty to sixty days after salvarsan treatment, but remain positive to the Hecht-Weinberg (Gradwohl), for six months or longer. These cases, therefore, still have latent syphilis from a Hecht-Weinberg (Gradwohl) standpoint, whereas from a Wassermann standpoint, they appear to be clinically and serologically negative. These are the cases that are prone to relapse unless treatment is energetically pushed. Cases which are serologically negative to both the Wassermann and Hecht-Weinberg (Gradwohl) are not so prone to relapse. Exceptionally, they also relapse, if the case is indefinitely withdrawn from treatment and observation. Relapses in this class, however, are the exception, rather than the rule, and if they are controlled by monthly Hecht-Weinberg (Gradwohl) serologic examinations, any tendency to relapse can be recognized early and brought under more prompt control than otherwise. In my experience, I have also often noted a positive Hecht-Weinberg (Gradwohl) and negative Wassermann, but I have never observed a negative Hecht-Weinberg and a positive Wassermann. This in and of itself shows that the Hecht-Weinberg (Gradwohl) modification is a much more sensitive test for syphilis than the Wassermann.

Dr. A. L. Wolbarst, New York: I have had a number of examinations of serum made for me by Dr. Gradwohl with the Hecht-Weinberg modification, not so much as an original test for syphilis, but to check up the results of other laboratories with the Wassermann test. It has been my experience that you can go into any laboratory in this country and take your choice as to whether you are going to get a positive or a negative report on any serum submitted. Some laboratories will give you a positive and some a negative report on the same serum taken at the same time and presented under the same conditions. Serologists are working hard trying to devise some way by which the thirty-five or forty sources of error which have been revealed may be obviated. I was very glad to employ this Hecht-Weinberg test, as modified by Dr. Gradwohl, and to see which of the laboratories I was dealing with furnished the more accurate reports, and I am very gratified to say that, considering the clinical manifestations of the case, the Hecht-Weinberg appears to me, as far as my experience goes, to be far more delicate and far more reliable than the straight Wassermann. In any number of cases where I have had contradictions, positive and negative in the same serum, where I have had a negative Wassermann given to me in a case of undoubted syphilis, the Hecht-Weinberg has been positive. I have never seen an instance of a negative Hecht-Weinberg with a positive Wassermann. I feel that in any case in which we are in doubt as to whether the Wassermann we are getting is to be depended on, the Hecht-Weinberg-Gradwohl modification gives us an amount of information which is of the greatest importance. It ought to be used more generally than it is.

Dr. Leland Boogher, St. Louis: I have no faith in the Wassermann test being infallible. A minus Wassermann does not necessarily mean no syphilis. I always feel safer when I have the two tests made. In all the cases I have had it has been interesting to notice that where there was a negative Wassermann and a positive Hecht-Weinberg, I had made a diagnosis of syphilis. There are many cases where I suspect syphilis and have the tests made, and it is sometimes very satisfactory to find that the diagnosis has been correct. As to the accuracy of the Hecht-Weinberg test, I am only speaking from the standpoint of the clinician, but I have always felt that it was possibly a more delicate test than the Wassermann. I like to have both tests made on my patients.

Dr. Lewis E. Schmidt, Chicago: I agree with Dr. Gradwohl and Dr. Heidingsfeld. I wish to cite several instances where the Wassermann was negative two and three years after the last treatment. Under those circumstances we are prone not to give further treatment. In several instances we found the Hecht-Weinberg test positive two or three years after the last negative Wassermann. In other words, during that entire period of time the Wassermann was negative, yet at that late period the Hecht-Weinberg was positive, which set me thinking as to the necessity for further treatment, particularly in this series of cases.

Dr. M. L. Heidingsfeld, Cincinnati: The Wassermann is also invaluable when used in conjunction with the Hecht-Weinberg (Gradwohl). It reveals the finer shades of early improvement, which the Hecht-Weinberg in and of itself fails to reveal. Moreover, the two controls serve as a check on each other, eliminating, in a measure, any possible error of a purely technical nature. Each serves as a check on the other in this respect. The Hecht-Weinberg is positive, is always strongly positive, never weakly positive as the Wassermann, when it shades off in the stages of early improvement.

Dr. Carl C. Warden, Ann Arbor, Mich.: There is no question that theoretically and practically the Hecht-Weinberg is an improvement on the Wassermann. The great difficulty lies in two factors, one the complement and the other the antigen. The antigen is the thing. We are extremely unfortunate in the Wassermann reaction. The antigen is very indefinite. It has been classed as a lipoid, but there is no substance in it on which we can really lay our hand. I believe with further studies on the toxicity of normal serum, of the periodic disappearance of the complement in normal serum, and with improvements in the syphilitic antigen, that we will be able to pick up those positive reactions better than we do now.

Dr. Benjamin Gruskin, Chicago: I have used the Hecht-Weinberg test in over 200 cases. I have nothing but praise for it as a control, and still call it a control. The clinician as well as the laboratory man is sometimes at a loss to interpret the so-called borderline cases. Some laboratory men, in a case that gives a slight positive reaction, will say, "I am not going to condemn that man because he gives a very faint positive reaction." Others, again, are very liberal in pronouncing a case syphilis when they see the slightest degree of nonhemolyzed cells. Really, one test is not sufficient in a doubtful case, so any additional control is of great value. I would rely more on a positive Wassermann than on a positive Hecht-Weinberg, and I would rely more on a Hecht-Weinberg negative than I would on a Wassermann negative, but I believe by employing both one can check up and make a standard which can be called "faintly positive" or "strongly positive." What is needed more in laboratory work is to know exactly what "one, two, three or four plus" positive is. What one man will call "one plus" another will ignore altogether. However, the two tests used together by a close observer, who has his own standard for what he calls "one, two or three plus" positive, will certainly be a great aid to the laboratory man as well as to the clinician. Another factor regarding the Hecht-Weinberg which must be taken into consideration is that the serum must be sent to the laboratory immediately. This is hardly possible with a serum that is sent from out of town, which necessarily would be at least a day old. In these cases one may inactivate the serum, as for the Wassermann, and go through with the Hecht-Weinberg in the usual manner, plus additional complement.

Dr. R. B. H. Gradwohl, St. Louis: This is a far easier test to perform than the Wassermann. This test uses no artificial amboceptor and no artificial complement. It requires no guinea-pigs, it requires no injection of rabbits. It requires fourteen tubes, which may look startling, but does not mean very much work. It requires one tenth of a cubic centimeter of the patient's serum in each tube. We then estimate how much complement and amboceptor are present. In this test we do not have to bother very much with what are called borderline Wassermanns. With this test, they are either positive or negative. It is in this respect that this test has been of most value in my hands, because any Wassermann worker will confess that these borderline cases have been our bête noir. Often we could not tell a clinician whether a given case was positive or negative. It was a "borderline." In these instances the Wassermann instead of being a help was a great hindrance. This test eliminates that. If you get a "borderline" Wassermann you will get a strongly positive Hecht-Weinberg; if it is a spurious "borderline" Wassermann case you will get a negative Hecht-Weinberg. If it is worth nothing else, it is worth a great deal to serologists from that standpoint.

CANCER OF THE PROSTATE *

GRANVILLE MacGOWAN, M.D.
LOS ANGELES

Cancer of the prostate may be defined as a process of new growth or malignant degeneration of previous growths taking place primarily at any place within the capsule, or within that portion of the urethra which communicates directly with the glandular tissue of the prostate by way of its ducts.

For some reason, unknown and unexplainable with our present knowledge, that glandular group, lying between the submucosal urethral tissues and the posterior capsular surface, the so-called posterior lobe, is, or appears to be, the most frequent site for development of cancer of the prostate. It is claimed by Young and his school that the exceptions to this are very rare. We admit the value of this careful research work, but to us it seems that its conclusions are forced. It is often manifestly impossible to determine, when the disease is widely distributed, exactly which is the oldest part; but we do know that it has been seen primarily in any anatomic portion of the gland, and in atrophied, apparently normal, and hypertrophied prostates. As there is no definite, unvarying and finely marked syndrome characterizing cancer of the prostate, the diagnosis must be determined largely by exclusion. In approaching a prostate suspected of pathologic change, the examiner must keep before him the mental image of the average normal organ: about the size of a horse chestnut and of much the same shape, its upper border concave, convex toward the anus, bilobar, but not always symmetrically so, with a groove perpendicular to its long axis between these lobes where the tissues are markedly thinner, showing the course of the urethra through the organ; usually rounded from side to side, but not infrequently flattened like a truffle from its lateral abrupt borders toward its center; elastic, relatively smooth, only moderately sensitive to digital pressure, and movable to a degree from side to side and from above downward.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space, all of the individual case reports are omitted in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

* This paper and the paper by Drs. Young and Frontz, which follows, are parts of a symposium on the prostate. The remaining papers, by Drs. Gardner, Crenshaw and Squier, and the discussion will appear next week.

Chronic departures from this type, processes to be diagnosed differentially from cancer, are:

1. Increase in size and density and the presence of hyperesthesia: chronic parenchymatous prostatitis, either total or partial, with groups of hyperplastic glands, oftentimes with capsular adhesions.
2. Long continued, low grade, deep seated abscess of the prostate running its course without the symptoms of frank infection.
3. Primary tuberculosis of the prostate with its massive induration.
4. Stone situated well within the glandular tissue.
5. Atrophy of the glandular tissue with interstitial inflammatory changes.
6. Contracture of the bladder neck.
7. Sarcoma.

Let us see how these differ from, and how, in their symptoms, they resemble cancer of the prostate.

Chronic Parenchymatous Prostatitis.—The exploring finger encounters an obstruction bulging into the rectum from the region of the prostate. This may be symmetrical with a distended capsule, or the inflammatory process may be localized in one or more groups of glands in one lobe, or scattered irregularly throughout the whole organ. Such a prostate is tender on pressure and often very hard. Gentle massage always appreciably alters its consistence, reduces its volume and expresses a succus prostaticus which contains pus, phosphatic débris, lecithin granules, bacteria, epithelial cells of normal shape and staining capacity, and often dead spermatozoa. The mesial groove is still preserved, and a metallic instrument introduced into the bladder can be readily palpated throughout the whole length of the prostatic urethra. Examination of the posterior urethra by a water urethroscope or an open endoscope shows congestion, edema, pus exuding from enlarged glandular ducts, and often cysts and polypoid growths. Increased frequency in urination is often present, and there may be hesitancy and lack of power to the stream, and even residual urine, usually due to the presence of polypi or edema in the posterior urethra. All of the symptoms improve under treatment.

Simple Hypertrophy.—In adenomatous or fibromuscular enlargement of the prostate we palpate through the rectal wall an exaggerated prostate, an organ out of bounds. The enlargement is often symmetrical, but, just as frequently, larger on one side than on the other; it is movable when it can be grasped bimanually; the rectal tissues slide over it, or it slides away from the rectal tissues. There is a certain elasticity approaching the normal to the tumor, or tumors, if the adenomatous elements prevail; any outgrowths beneath the bladder, and up along the seminal ducts are soft and elastic. If there has been much long continued inflammation accompanying the process, and the fibromuscular changes outbalance the glandular, the tumor masses may be indurated, but they are never hard, like sole leather, bone or ivory, and they are not adherent to the surrounding parts. Massage reduces their volume temporarily, and if there has been no infection, expresses a succus prostaticus that contains masses of epithelial cells, undergoing fatty degeneration, abundant lecithin bodies, amorphous calcium phosphates and carbonates, a few leukocytes, many sympexia, and often live spermatozoa. If the patient has advanced to catheter life, infection has almost invariably taken place, and then the microscopic field shows, in addition, pus, bacteria and often a few red blood cells.

The cysto-urethroscope shows a congested, but flexible, posterior urethra with encroaching smooth surfaced whitish adenoma, enlarged follicular ducts, sometimes diverticula, few or many polypi and small cysts. The shaft of the instrument may usually be palpated from the anus to the bladder neck.

Chronic Abscess.—Long continued, low grade, deep seated abscess of the prostate taking its course without fever and without general infection, but with cachexia and deep seated boring pain, may give rise to the mistaken diagnosis of cancer. I had one such case in 1897 in the Los Angeles County Hospital:

A man, aged 60, had suffered for six months with deep seated pain in the perineum, with increasing difficulty in micturition, and finally complete retention. There were no other symptoms excepting a marked cachexia, constipation and loss of weight. On rectal examination, we found a huge tumor, stone hard and unyielding, occupying the whole pelvic floor. This was believed to be without any doubt, a malignant growth. A perineal exploratory operation was undertaken. Just as the apex of the prostate was opened, there was a gush of pus, and the exploring finger entered a capsular sac, entirely empty of prostatic tissue. This sac surrounded the urethra, which coursed through it, without any communication with it.

Binney reports a somewhat similar case in a much younger man, the exploratory operation being made suprapubically.

Stone in the Prostate.—This need not occasion any diagnostic difficulty, as the Roentgen ray easily differentiates for us.

Prostatic atrophy of the glandular and muscular tissues, with chronic interstitial inflammatory changes, causing loss of elasticity in the prostatic urethra, and contracture of the bladder neck, is often painful and simulates cancer very closely at times. The ring of indurated tissue entirely surrounds the urethra and prevents the shaft of the cystoscope at the neck being plainly felt by the exploring finger. In these cases, the best criterion of the nature of the malady is microscopic slides of the tissues removed by the punch.

Tuberculosis.—The occasions on which an error in diagnosis between cancer of the prostate and tuberculosis are possible should not be many, for tuberculosis is usually seen secondary to a similar affection of one or both epididymides with scattered nodules, of only a moderate degree of induration, and early vesical irritability, or else follows a descending urinary tuberculosis of long standing, tubercle bacilli being present in the urine, with caseating destruction of the prostate, from the urethra out, and ulceration along the urethral channel, demonstrable by the urethroscope, and accompanied by a urethral discharge, usually free of micro-organisms. Once, and once only, in an experience of more than thirty years, have I seen a case of primary tuberculosis of the prostate, in a man of 30 in which, symptomatically and by clinical history, we were dealing with a carcinomatous growth, which on microscopic section and subsequent development, was demonstrated to be tuberculous.

Sarcoma.—This is more elastic and of less painful development, and is more likely to occur in youth, though I have had two cases in men past 50 years of age.

FREQUENCY OF CANCER OF THE PROSTATE

Socin and Burckhardt[1] in 1902 assembled 120 cases, the total material reported in the literature of all languages up to that time. During the past thirteen years it has been learned that cancer of the prostate is relatively common, and in great clinics, where the specimens removed in operating for prostatism have all gone to careful microscopic examination, the following figures have been returned: Reports from the Necker Clinic place the frequency at 15 per cent.; from the Johns Hopkins, at 28 per cent.; the Mayo Clinic, at 15.5 per cent., and Mansell Moullin,[2] at 25 per cent. This gives an average of about 20 per cent., or one case in five, which probably closely approximates the true figure, though the returns of the pathologic institute at Munich are still higher, nearly 40 per cent., or one in two and one half cases, a figure which should cause much thought to an unskilled operator. The youngest patient who has come to my notice was 17 years of age, reported by Gardner and Cummings.[3] A number of cases have been recorded in persons past 80.

CARCINOMA

In the analysis of the appended cases, it will be easily seen that extensive carcinomatous infiltration of the prostate may exist without the presence of any of the symptoms commonly relied on to make a differential diagnosis between this condition and prostatic hypertrophy, for vesical retention and irritation is common to the two. There is no change in the urine that may be relied on as significant of cancer of the prostate. Judd[4] seems to think that an unusually low specific gravity is found in these cases; but this is true of any chronic obstructive disease of the total urinary tract, and bears no relation to cancer. How much more difficult must it be to determine an accurate diagnosis when the whole process is entirely intracapsular and confined to a deeply situated glandular group well removed from both the urethral and the rectal zones. When retention supervenes on vesical irritation, in months instead of years, after difficult and painful urination, mostly at night; when infiltration bullet-like, boardlike, leather-like or ivory-like is found in the prostate of a man who presents no symptoms of active syphilis or tuberculosis, and whose blood gives a negative Wassermann reaction; when the capsule of the gland has become adherent to the anterior pelvic fascia, or the fascia of Denonvillier, and the perirectal fascia, but the rectal tissues are no longer movable on it, and it has lost its motility in the pelvis, and the prostatic image to the sense of touch has become blended with that of one or both of the seminal vesicles, without the presence of acute inflammatory symptoms; when the central groove is blurred or lost, in the anterior two thirds of the prostate to the finger examining through the rectum over a steel instrument in the urethra; and added to this is loss of strength, and pain in the back, pain in the rectum, edema of the lower extremities, and neuralgia along the course of the sciatic, obturator or crural nerves, it is safe to make the diagnosis of cancer of the prostate.

The stiffening of the walls of the posterior urethra gives to the introduction of the instrument to the bladder a peculiar resistance which is not that of the blocking caused by adenomatous nodules, but more of insufficiency of tubular space. It is not unusual for a metallic or silk catheter or a cystoscope to creak in its passage through the narrowed and stiffened urethra, as if it were passing unoiled through a tube of harness leather. An inlying catheter is never well borne. Hematuria may or may not be present. It always occurs early when the cancer starts in the prostatic urethra. I have met two cases of this character recognized by means of the urethroscope. In both the prostate was easily enucleated entire; there were no adhesions and no nests in the peripheral tissues. Both had prompt local recurrence and metastasis, and each patient died within six months. Hematuria is much more likely to occur in a congested hypertrophied prostate, but its origin should always be investigated with a cystoscope of small size of the irrigating type which will get by almost any obstruction in the posterior urethra if the stream of salt solution is turned on when the instrument is passing through the bulb.

A urethroscopic examination of the posterior urethra should always be made when cancer of the prostate is suspected, as pointed out by Braasch.[5] If the disease is on the anterior wall, it can be seen as shown in Case 3 of my appended report; if in the posterior lobe, the floor is elevated so that the sulcus, posterior to the colliculus, is wholly obliterated. Bullous edema of the bladder neck or trigon is frequently observed. The size of the prostate is no argument for or against its malignancy. Small, hard, painful prostates, occurring in men in the fifth and sixth decades of life, should always be viewed with suspicion, as should also abnormal tenderness or pain in the rectum without the presence of hemorrhoids or inflammatory affections of the rectal walls or of the prostate. Metastases often take place early to the lymphatics and the bones in men past the age of 45. Without a clear picture of lymphocytosis, pernicious anemia, Hodgkin's disease, tuberculosis, local infection or syphilis, any chronic swelling of the lymph glands, or persistent ostalgia should cause investigation of the prostate for cancer.

Edema occurring about the penis, the rectum or the lower extremities, without definite renal or cardiac pathology, should always make one thoughtful of a probable carcinoma of the pelvic organs; and if, in the male, it be accompanied by pelvic pain and vesical irritability, should be sufficient cause to incite examination of the prostate for a primary cancer causing metastasis to the pelvic lymph glands and pressure on the iliac veins.

Metastasis takes place at times undoubtedly while the disease process is confined within the capsular wall; but it is usual after the rupture of the capsule, an occurrence signaled by the cessation of nerve pressure and the sudden temporary relief from pain, for it to spread, especially when the origin is in the posterior lobe, to the seminal vesicles and the pelvis, the bladder being attacked nearly always late and through the posterior wall close to the ureteral mouths, where it is in contact with the loose cellular packing about the seminal vesicles. This extension takes place along the ejaculatory ducts and the accompanying lymph channels, as was first pointed out by Young.[6]

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[1] Socin and Burckhardt: Die Verletzungen und Krankheiten der Prostata, Deutsche Chirurgie, Lieferung 53, Stuttgart, 1902.

[2] Moullin, M.: Early Diagnosis of Cancer of the Prostate, Brit. Med. Jour., May, 1909.

[3] Gardner and Cummings: Prostatic Carcinoma in a Youth, California State Jour. Med., July, 1914, p. 279.

[4] Judd: Cancer of the Prostate, Surg., Gynec. and Obst., March, 1915.

[5] Braasch: Factors Which Determine the Advisability of Prostatectomy, St. Paul Med. Jour., January, 1915.

Lundsgaard[7] reports a huge extensive lymphoma of the neck, operated on and found to be adenocarcinoma, in which, postmortem, a chain of fibroplastic carcinomatous enlarged glands led directly to a left-sided cancer of the prostate, in which the adenocarcinomatous parts lay in nests separated from each other by thick layers of fibromuscular tissue which had given no local symptoms during the patient's life time.

According to Salinger,[8] cases of metastases have been observed in all of the gland groups of the head, neck and trunk, including the axillary. I have seen metastatic nodules in the liver and in the splenic flexure of the colon from the prostate; others have found them in the suprarenal capsule, kidneys, spleen and pleura. Von Recklinghausen first directed attention to the great frequency of secondary cancer in the bones, metastatic from the prostate, and this has become so much a matter of common knowledge with surgeons that it may be accepted as a rule, that no case of apparent primary carcinoma of a bone, in a man past middle life, should be operated on without investigation of the prostate gland, so as to avoid unnecessary surgery. Yet sometimes the primary nodule in the prostate is so small and deeply placed that it is only discovered postmortem.

When the patient comes for consultation with bloody foul-smelling urine and dysuria, terrifying tenesmus, or entire retention, with great difficulty in passing a catheter through the urethra and great resentfulness to its presence there, so that it can be retained for only short intervals, or not at all, with pains radiating out from the pelvis in all directions, with edema of the legs and perineum and a stone hard immovable prostate, tender to the touch, not to be differentiated from the surrounding pelvic organs, and enlarged superficial inguinal glands, the diagnosis of cancer of the prostate is easy but useless to make, for it is long past the time at which any valuable relief can be given to the patient.

When is the time for diagnosis of cancer of the prostate, and what are the means to attempt its cure or relief? The time is while the growth of the carcinoma is still confined within the capsular walls of the gland; while we are not yet certain of its nature; while there is yet a chance that the growth may be one of the conditions from which we have to differentiate it. The means are the surgical procedure of prostatectomy with complete removal of all the glandular elements, either after the method of Freyer, or that of Young. The two give equally good results if performed properly. Freyer reports eight cases in which the patients were alive and in good health, from three to ten years after operation, and others in which the results were not so good; but he states that, even though the disease should recur, it is a great consideration to the patient in the interval to be able to urinate normally, thus deferring for months, or even years, the establishment of a permanent fistula.

Taking the figures of Albarran and Halle[9] as a basis, in which fourteen out of 100 prostates, apparently normal on removal, proved microscopically malignant, he believes he has operated on 150 carcinomatous prostates in this stage, and he has not known of more than six in which cancer subsequently affected the patient. Given that this stage has passed and the cancer is not surmised, but the diagnosis reasonably certainly established, what is the best mode of procedure? The choice then has to be made between as complete enucleation, or dissection, as possible, conducted suprapubically, so as to run no risk of incontinence by destruction of the external sphincter, and subsequent sparking of the capsular fragments with the d'Arsonval current, as I have shown to be feasible and successful, in Cases 5, 6 and 7 of this report; or by the operation described by Young as a conservative partial prostatectomy, removing all the prostatic tissue that can be removed by a dissection on each side, and outside of the urethra, but within the capsule, to delay progress and give for a time relief from retention. The ease with which such dissection can be accomplished will depend much on the cancer type. These prostates are usually not very large, and if of the epitheliomatous type, they adhere to the capsule and present the same difficulties to removal that small prostates of the fibroid type do, while adenocarcinoma often separates easily from the capsule. In rare selected cases, one may attempt total removal of the prostate and its capsule with the urethra beyond the triangular ligament, and the anterior two thirds of the trigon, either by the method described by Young, or by the method described by me. As Young advises, such an operation should not be commenced if the trigon is infiltrated, the pelvic or iliac glands enlarged, the seminal vesicles, the membranous urethra, or the muscular wall of the rectum involved, or metastatic foci are known to exist. The partial removal of a cancerous prostate, through the perineum, will result in incontinence in 50 per cent. of the cases; but if a good free channel is obtained, the patient will live much longer and be much more comfortable, even if he does have to carry a urinal, if he cares for that kind of life. I had one patient who lived for seven years, and he seemed to be happy. Naturally, in some cases, interference with the knife would cause more rapid spread of the disease and should always be followed by a thorough sparking of the remaining parts with the bipolar high frequency current.

When it does not seem wise to undertake any of these measures, or they are rejected, catheter life is the refuge as long as it is not painful or very difficult to pass a catheter. When the patient becomes unhappy from pain, or infection supervenes, or recurrent epididymitis occurs, permanent drainage through a suprapubic fistula must be established. For this purpose, many apparatus have been devised, the major number of which are cumbersome and unsatisfactory. I think I have tried all that have been recommended in the past thirty years; each leaks at times, some, all of the time. The cheapest and most satisfactory I have found to be a De Pezzer self-retaining catheter from 20 to 30 in caliber of the French scale, which is to be connected with a glass or metal bottle, carried in a special pocket in the underwear during the day and with a small hot water bag attached to the undershirt at night. The bladder can be washed of débris through this tube once or twice a day, with a silver nitrate mercuric cyanid or permanganate solution. The tube has to be replaced in from three to six months. These

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[6] Young, Hugh: Cancer of the Prostate, Ann. Surg., December, 1909; Perineal Prostatectomy for Cancer, ibid., **1910**; Carcinoma of the Prostate, Keen's Surgery, **6**, 690.

[7] Lundsgaard, C.: Metastasierendes Prostatakarzinom, Lymphomatosis simulierend, Virchows Arch. f. path. Anat., 1913, **213**, No. 1.

[8] Salinger, J. F.: Beiträge zur Symptomatologie und Diagnose d. Prostatacarcinom, mit besonderer Berücksichtigung der früh. Diagnos.

[9] Albarran and Halle: Hypertrophie et néoplasie épitheliales de la prostate, Ann. d. mal. d. org. génito-urin., 1898.

TABULATION OF CASE REPORTS

Case	Date	Physician	Age	Dysuria	Palpation Through Rectum	Cystoscopic Information	Kidney Function	Operation	Complications	Origin	Results	Alive	Metastases
1	11/13	E. J. Boesche.	76	3 months	Some **thickening** over shaft of cystoscope	Congested bladder	Phthalein, intravenous, 11 min.; 32% first hour	Suprapubic prostatectomy	Hemorrhage	Not clear	Comfortable one year; ultimate retention	Yes.	Sacral and lumbar vertebrae
2	11/13	MacGowan	63	With retention 3 months	Negative as to cancer.	Negative	Phthalein, intravenous, 7 min.; 45% first hour	Suprapubic prostatectomy and d'Arsonval sparking	Hemorrhage	Acini; right lobe	Comfortable one year	Yes.	Sacral vertebrae
3	12/13	Hamman	69	With retention 9 months	Negative as to cancer.	Vesical outlet changed; growths in urethra visible	Urea, Marshall test, normal	Suprapubic conservative prostatotomy	None	Superior lobe injury, silver catheter	Comfortable six months; no return of retention	Died 9/15	Lumbar and sacral vertebrae
4	5/14	Dohman	70	10 years; with retention 5 months	Hypertrophy; negative as to cancer	Distortion of vesical outlet	Markedly uremic; phthalein, 17 min.; 20% first hour	Suprapubic prostatectomy in two stages	None	Acinus, anterior lobe	Perfect in every way	Yes.	None
5	8/14	Stockwell	76	4 months	Hypertrophy; negative as to cancer	Distortion of vesical outlet; cystitis; follicular abscesses in posterior urethra	Phthalein, intravenous, 4 min.; 58% first hour; urea, 18 for 24 hours	Suprapubic partial prostatectomy; d'Arsonval sparking	Stricture of urethra; colon bacillus and aureus infection	Apparently anterior lobe injury, silver catheter	Perfect in every way	Yes.	None
6	10/14	Schnabel	76	6 months	Prostate very hard; right vesicle indurated; mesial groove normal to neck of bladder	Impossible to introduce cystoscope into bladder	Very uremic; phthalein, intravenous, 20 min.; 18% first hour	Suprapubic cystotomy; drainage 5 weeks; prostatectomy; d'Arsonval sparking	Multiple calculi; stricture of urethra; cancer colon	Not clear, wide spread	Perfect as to urination	Yes.	Splenic flexure of colon, liver, pelvic bones, pelvic glands
7	1/15	Morrison	63	6 months	Prostate very hard	Trabecular bladder; bullous edema	Phthalein, intravenous; 47% first hour; urea normal	Suprapubic prostatectomy; d'Arsonval sparking	None	Not clear	Perfect as to urination and sexual power	Yes.	None
8	5/15	Violet	65	6 months	Negative as to cancer.	Edema of trigon	Phthalein, intravenous, 5 min.; 35% first hour; urea normal	Punch operation; continuous suprapubic drainage	Colon bacillus infection	Near vesical neck	Strong, able to work; process retarded	Yes.	Not certain

patients live from three months to seven years, and often during the early period lose all pain, put on flesh and gain strength, so that to the ordinary observer they appear to be in robust health. In time, the process extending to the bladder mucosa brings ulceration with nerve exposure and hemorrhage, pain, cachexia, the necessity for opium, uremia from ureteral obstruction, and finally death.

Radium Cure.—There is but one authenticated case of apparent perfect cure of cancer of the prostate by radium cross-firing, so far as I know, and that is the one of Pasteau and Degrais.[10] The prostatic urethra is an ideal place for the use of radium, but the results so far obtained do not warrant its recommendation as a therapeutic agent.

Some instances of what appear to be secondary carcinoma of the prostate are on record in which the distributing focus was the colon. I have never met such a case, though I have seen one in which cancer of the descending colon and cancer of the prostate appeared to have developed simultaneously.

Pathogenesis.—Where it is so manifestly difficult macroscopically to differentiate cancer of the prostate, it is easy to understand how dissension has arisen among pathologists as to the pathogenesis of these growths, and the interpretation of microscopic sections made from them. In borderline cases it is very difficult at times to decide without viewing many sections in series. When we remember that "a normal acinus is lined with a single or an imperfect double layer of columnar epithelial cells," we have the basis from which we have to calculate our changes. Given an abnormal stimulus, a hyperplasia of these cells occurs, and so long as the hyperplasia gives rise to types of cells conforming to those naturally existing in the acini and confined to the acini, producing lawful and regularly arranged progeny of the original cells, no malignant type can be said to exist; but when the hyperplasia is chiefly or exclusively of the undifferentiated cells of the outer row, marked, and their arrangement without alinement in relation to one another and to the basement membrane, lawless, the case is probably malignant, and if the stroma surrounding the acinus is invaded by the epithelial cells, surely so.

REPORT OF EIGHT OPERATIVE CASES

I have arranged these cases in tabulated form, giving the ages, previous symptoms, duration, results of rectal and cystoscopic examinations, kidney function, character of operation performed, results obtained, complications and the apparent primary seat of the growth.

Five of these patients were over and three of them were under 70 years of age.

The one constant symptom was dysuria, which had been noticed in two cases for three months, in one for four months, in three for six months, in one for nine months, and in one for ten years. In five (Cases 2, 3, 4, 5 and 8) the results of palpation made through the rectum over the shaft of the cystoscope were negative as to the presence of cancer. In Case 1 there was some thickening in the posterior lobe. In Case 6 the mesial groove could be palpated readily but the rest of the prostate was very hard. In Case 8 the prostate was very noticeably hard over the shaft of the cystoscope. Seven patients are still alive.

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[10] Pasteau and Degrais: Sur l'emploi du radium dans le traitement des cancers de la prostate, Jour. d'urol. méd. et. chir., Sept. 15, 1913.

Patient 1 was comfortable for a year but now has dysuria and retention from extension of the growth to the surrounding structures and metastasis. Patient 2 was comfortable for a year but now has dysuria. Patient 3 was comfortable for six months but died in September, 1915, never having had a return of his retention. Patient 4 is alive and in perfect health. Patient 5 is in apparently perfect health and has full control of his bladder; there is no evidence either by palpation or by the cysto-urethroscope of cancer in the prostatic cavity or in the bladder. Patient 6 has widespread metastases but urinates perfectly. Patient 7 is apparently well. Patient 8 is alive and comfortable, but wears a suprapubic drainage tube because of the presence of cancer in the bladder wall.

PRELIMINARY TREATMENT FOR PROSTATECTOMY IN UNFAVORABLE CASES *

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Twenty years ago the mortality for prostatectomy was estimated at 20 per cent. Today in some clinics, it is less than 4 per cent. What has brought about this marvelous change? More accurate diagnosis and better operative technic have, of course, done much to reduce the mortality — the substitution of accurate operations, under visual control, for destructive procedures done in the dark, being one of the principal factors.

But much of the early mortality was due to complications, resulting from conditions existing before operation which were overlooked or neglected. In 1898, one of us operated on a patient who came to the hospital in severe uremia. A catheter could not be passed, suprapubic drainage was all that could be done, and the drainage afforded worked a seeming miracle. In a few days consciousness returned, and within a few weeks prostatectomy was carried out without difficulty and with success. Since then we have had a keen realization of the wonderful benefits of preoperative drainage in all prostatic cases in which the kidneys have been impaired by long-standing back pressure.

At first we employed suprapubic drainage in all such cases; but before long we came to realize that the same result could be accomplished by an inlying catheter or even by intermittent, regular catheterization. One of the most striking of these early patients was a man, aged 76, who was comatose and very septic; catheter drainage and infusion were not sufficient to abate his uremia, so we employed blood letting and simultaneous saline transfusion in the opposite arm, together with salt by rectum. After carrying out these strenuous methods for several days, the infection and uremia both disappeared, and in six weeks a prostatic operation was successfully carried out.

Employing the knowledge gained from similar experiences, we were the first to advocate systematic preparatory treatment in prostatic work where involvement of the kidneys, heart, etc., was present, and as a result in 1908 were able to report 128 consecutive perineal prostatectomies without a death, two of the patients being over 80 years and forty-three over 70 years of age.

In the early years of this work, the physical condition of the patient, presence of high residual urine and evident symptoms and signs of poor kidneys were the principal indexes which guided us in our decision as to when to delay operation and to resort to preparatory treatment. The phlorizin test and freezing point were experimented with without much help. When the value of phenolsulphonephthalein was first shown in the urologic department in 1910, it was quickly applied to prostatic cases and found to give the index of renal impairment which we had previously been able only to surmise or guess at.

As time went on, the desirability and value of additional tests for the blood, heart, etc., have been demonstrated, so that now a complex but remarkably helpful series of routine tests are employed in almost all cases.

Too great care cannot be exercised in the study of these cases preliminary to operation. Abnormalities of one kind or another are the rule rather than the exception, and the surgeon who disregards or overlooks these danger signals fails to reduce his mortality to the minimum. A careful physical examination, which should include a blood pressure reading, is of course essential in every surgical case. Of special importance in prostatic hypertrophy is an examination of the urine, the determination of the residual urine and a study of the renal function.

If on examination no organic disease is demonstrable, the blood pressure normal, the urine free from pathologic elements and the renal function satisfactory, an early operation can be carried out with the realization that, from a clinical standpoint, the patient is an excellent surgical risk. There is one important exception, however, which should be emphasized. The presence of a large residual urine, even though there be no infection and the renal function fair, furnishes a considerable risk if operation be performed without preparatory treatment. These are patients often with atonic bladders, dilated ureters and varying grades of hydronephrosis, and without preliminary catheterization, the danger of acute uremia and ascending infection is greatly increased.

Unfortunately an ideal physical condition is the exception, and the risks may be classified as follows:

I. CASES WITH RENAL IMPAIRMENT

This is most often due to back pressure, which usually leads to distention of the renal pelves and thinning of the renal cortex, the degree of lesion being dependent on extent and duration of the back pressure. In many cases infection has been added to the renal lesion, producing varying grades of pyelitis, pyelonephritis and pyonephrosis. In some cases a chronic nephritis is present without demonstrable infection.

Renal impairment may also result from cardiac insufficiency. To determine this renal impairment our most valuable means is:

A. *The Phenolsulphonephthalein Test.*—Space in The Journal does not permit any extensive description. Our routine is to make one test on admission, if possible with the first catheterization, as important functional changes may occur immediately after that. If the residual urine is large we may expect a drop in the kidney function until the kidneys adjust themselves to a catheter life (absence of back pressure). Semiweekly phenolsulphonephthalein tests are taken, and as a rule a steady improvement is shown (see cases) until a stationary period is arrived at.

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* From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Owing to lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the section and in the author's reprints.

If the first phenolsulphonephthalein test is good, the amount of residual urine not great (say, not over 200 c.c.), and the general condition good, operation is usually not delayed.

If the phenolsulphonephthalein test is poor (appearance time over fifteen minutes, excretion first hour under 30 per cent.), the patient is put on preliminary treatment while further studies are made.

B. *Blood Urea.*—This is determined in cases with poor phenolsulphonephthalein excretion, and in most of these cases shows no abnormal increase of the urea in the blood. In such cases catheter drainage with relief of back pressure will usually result in rapid improvement, as shown by successive phenolsulphonephthalein tests. A high blood urea generally goes with a bad phenolsulphonephthalein test and shows a dangerous condition, though this, too, often rapidly disappears on preliminary treatment (catheter, water, etc.).

C. *Acidosis.*—In cases of impending uremia a marked retention of acid salts may be present in the blood. This is discovered by determination of the hydrogen ion concentration of the blood or by estimation of the carbon dioxid content of the alveolar air. A fair index to the condition may be seen in the amount of sodium bicarbonate required to make the urine alkaline. In the normal person 10 gm. will render urine alkaline in a few hours.

Preliminary Treatment.—This may be classified as follows:

(*a*) Relief of Urinary Retention: This is very desirable when the residual urine is large in amount (over 250 c.c.) even though the phenolsulphonephthalein test is good. In such cases catheterization wice daily for a few days may be all that is necesary. If the phenolsulphonephthalein test is still good and the general condition good, and the infection present is not acute (no dysuria, acute urethritis, pididymitis or suggestion of ascending infection, ever, etc., present) prostatectomy may usually be hen carried out safely. In cases with sterile urine, cute infection is to be guarded against by irrigations nd injection of small amounts of 5 per cent. argyrol t each catheterization. If, notwithstanding every precaution, infection does occur, the patient should be watched several days to see that the above mentioned omplications do not occur.

Where the residual urine is very large (say, over 00 c.c.), and particularly when the phenolsulphonehthalein test shows definite renal impairment, catheerization from four to six times daily is indicated to revent recurrence of back pressure, and allow the idneys to improve. In such cases an inlying or etained catheter may be preferable, particularly if atheterization is difficult or quite painful. The catheer should be changed at intervals of from one to three days (depending on infection and irritation), nd the urethra should be injected with 5 per cent. rgyrol and "rested" several hours before a new atheter is inserted. A small soft rubber catheter is referable to a gum coudé, but sometimes will not ass. The inlying catheter may be closed with a clip r cork and emptied at intervals, or allowed to drain in a bottle, the patient being up and outdoors if possible. In very acute urethritis and epididymitis a retained catheter should not be employed. Epididymotomy may be required, and intermittent catheterization until acute symptoms subside. Sometimes suprapubic drainage is indicated in such cases, but our experience shows that it is certainly not indicated as a routine procedure, and that even patients with severe renal impairment from prostatic back pressure can almost always be got in excellent condition for prostatectomy by catheter drainage.

(*b*) Diuresis: The use of water in large amounts is very important, to keep kidneys active, expel uremic products, keep down infection and irritation, and assist in restoring good renal function. We give usually 6 ounces every hour, 3 quarts daily, especially in cases with lowered renal function. In severe cases salt solution by rectum or by infusion is employed — often several quarts daily — with due regard to the heart. In severe cases of uremia, transfusion and even simultaneous bloodletting have been employed with almost marvelous effect.

(*c*) Urinary Antiseptics: Hexamethylenamin is given in doses of 15 grains three or four times daily, unless it causes irritation of bladder or gastric disturbance. In alkaline urines, acid sodium phosphate or sodium benzoate in large doses (at separate times from hexamethylenamin) is also given. In cases of dysuria, methylene blue (1 grain three times a day) may relieve the irritation, though diuresis and argyrol injections usually suffice.

(*d*) Treatment of Acidosis: In the acidosis accompanying the severer forms of renal destruction, sodium bicarbonate should be given in large doses until the urine becomes definitely alkaline. This may be given by mouth or by rectum, but in the advanced cases the best results follow its use intravenously. Glucose and lactose, the former by infusion, the latter by rectum, also form a valuable adjunct in the treatment of these cases. In these cases and others showing cumulative phenomena, free catharsis is often followed by most beneficial results.

As illustrating the splendid improvement in these renal types following the institution of preparatory treatment, these cases are cited:

Case 1.—A. L. R., man, aged 50, was admitted April 14, 1915. There had been obstruction of urination of two years' duration, due to hypertrophied prostate of considerable size. Residual urine was 850 c.c. Phenolsulphonephthalein test: appearance time, twenty-five minutes; first hour, 8 per cent. Blood urea was 1.06 per liter (normal, 0.5 gm.) Mitral insufficiency; blood pressure, 210. Preparatory treatment was instituted. Remarkable improvement was obtained, as shown in the tabulation.

TABLE 1.—PHENOLSULPHONEPHTHALEIN TESTS, BLOOD UREA DETERMINATIONS AND BLOOD PRESSURE READINGS IN CASE 1

Date	Appearance Time Min.	First Hour %	Second Hour %	Total %	Blood Urea Gm.	Blood Pressure
Apr. 6	..	..	..	..	....	210/110
Apr. 8	26	8	6	14	1.06	185/105
Apr. 10	18	12	10	22	....	160/98
Apr. 12	20	14	11	25	0.80	170/85
Apr. 15	19	18	15	33	0.64	
Apr. 24	15	24	11	35	0.55	150/80
Apr. 29	13	23	12	35	0.47	

The patient was operated on the following day, a perineal prostatectomy being done. The convalescence was uneventful and he left the hospital in excellent condition twenty days later.

Case 2.—E. C. W., man, aged 47, admitted Sept. 30, 1915, with symptoms of urinary obstruction of several years' duration, had nocturnal incontinence. He was toxic, with marked edema. The prostate was very large. Residual urine was 1,125 c.c.; specific gravity, 1.004. No phenolsulphonephthalein during first hour. Blood urea 1 gm. per liter. Preparatory treatment was followed by wonderful improvement (Table 2).

TABLE 2.—PHENOLSULPHONEPHTHALEIN TESTS IN CASE 2

Date	Appearance Time Min.	First Hour Per Cent.	Second Hour Per Cent.	Total Per Cent.
Sept. 30	..	0	13	13
Oct. 2	14	14	25	39
Oct. 6	10	12	22	34
Oct. 10	10	27	19	46
Oct. 15	10	28	16	44
Oct. 17	10	20	20	40
Oct. 19	10	28	20	48
Oct. 24	10	40	19	59
Oct. 26	10	37	21	58

The improvement in this case was very striking, the patient gaining daily in strength and putting on 25 pounds in weight during the four weeks' preliminary to operation. Perineal prostatectomy was performed, October 27. Recovery was uneventful. Patient was discharged well in thirty days.

Comment.—These two cases showed a marked improvement following the institution of preparatory treatment. The first case is one of chronic nephritis with hypertension complicated by infection and back pressure, and shows a gradual increase in the phenolsulphonephthalein output to a point at which it remained stationary. The inverse parallelism between the phenolsulphonephthalein and the blood urea is also well illustrated. We have noted not infrequently in such cases a marked lowering of the blood pressure following the establishment of free urinary drainage and rest in bed. This is rather strikingly shown in this case. The second case is apparently one of functional impairment due entirely to back pressure, and shows splendidly the recuperative power of the kidney following catheter drainage, the renal function gradually returning to normal.

II. CASES WITH CARDIAC LESIONS

The determination of the cardiac risk often involves careful and prolonged study. Valvular and myocardial change is often seen in these cases, but so long as the condition is fully compensated, the risk of operation is minimal. Where there are signs and symptoms of a break in cardiac compensation, however, operation is absolutely contraindicated and should not be considered until complete restoration of function has been established. In these cases, frequent physical examinations, blood pressure records, fluid and urine charts and in the more obscure forms, electrocardiographic studies, are valuable in following the course of the condition.

The treatment of a break in compensation, whether it is due to valvular or to myocardial disease, is much the same. Rest in bed, digitalis and, in cases in which edema is a prominent feature, limitation of the fluid intake and free catharsis are indicated. The surgeon acts wisely in following the advice of a medical consultant in these cases, and at the Brady Urological Institute there is a whole time medical man who has charge of all such cases and the borderline work between medicine and urology.

The following cases show the value of preliminary treatment in this type of risk:

Case 3.—W. H. H., aged 67, admitted Oct. 21, 1913, had prostatic hypertrophy. Residual urine was 500 c.c. Heart was enlarged, irregular, mitral insufficiency. Electrocardiogram showed marked hypertrophy of left ventricle. Auricles had ceased coordinate contractions and were in a state of fibrillation. Blood pressure was 130. Treatment consisted of large doses of digitalis, rest in bed, catheterization, etc. The improvement in heart was steady and in one month the condition was vastly changed.

TABLE 3.—PHENOLSULPHONEPHTHALEIN TESTS IN CASE 3

Date	Appearance Time Min.	First Hour Per Cent.	Second Hour Per Cent.	Total Per Cent.
Oct. 22, 1913	11	30	8	38
Oct. 29, 1913	10	45	13	58
Nov. 4, 1913	8	40	15	55
Nov. 20, 1913	9	48	12	60

November 21, perineal prostatectomy was performed. Electrocardiographic tracings taken during operation showed only an occasional extrasystole. Three days after operation, the pulse again became rapid and irregular, responding promptly to digitalis. There was no further irregularity, and the patient was discharged, December 13. An electrocardiogram taken December 20, one week after discharge, showed that the heart was contracting in normal manner. There was also great improvement in general health and strength.

Case 4.—A. B., aged 66, admitted, Dec. 1, 1915, had prostatic obstruction for three years, associated with headaches, dizziness, dyspnea, cardiac palpitation and angina. The pulse was weak, cyanotic and dyspneic; the heart was enlarged greatly. Presystolic gallop rhythm and systolic blow at apex and base. Blood pressure, 165/80. Prostate considerably enlarged. Residual urine, 120 c.c.; specific gravity, 1.016; albumin, pus and bacilli.

TABLE 4.—PHENOLSULPHONEPHTHALEIN TESTS IN CASE 4

Date	Appearance Time Min.	First Hour Per Cent.	Second Hour Per Cent.	Total Per Cent.	Blood Pressure
Dec. 2, 1915	15	16	23	39	160/85
Dec. 5, 1915	10	39	19	58	165/95
Dec. 7, 1915	10	40	21	61	140/80
Dec. 12, 1915	10	40	18	58	

In addition to the catheter drainage, the preparatory treatment in the case consisted chiefly of digitalis and nitroglycerin for the anginoid attacks. The heart compensated promptly, and perineal prostatectomy was successfully carried out, December 13.

Comment.—These two cases illustrate a rather extreme type of cardiac risk, and it is doubtful whether an immediate operation could have been performed successfully. With the return of cardiac compensation, however, the risk was relatively slight, and both patients went through operation remarkably well. The blood pressure raising effect of nitrous oxid rather contraindicates its use in these cases, and we are of the opinion that ether is the anesthetic of choice in such cases, but in other cases we almost invariably employ nitrous oxid and oxygen, with a small amount of ether.

III. CASES WITH CARDIORENAL DISEASE

The study of cardiorenal disease resolves itself into a determination of the relative responsibility of the heart or kidney for the clinical and laboratory findings. As has been pointed out, in pure cardiac disease, the impairment of renal function may be the result of passive congestion, and if compensation is established, the renal function returns to normal. In these cases, in which the cardiac disease is alone at fault, the phenolsulphonephthalein output is rarely alarmingly low, nor is the retention of urea much above the upper limits of normal. Where the burden of responsibility rests with the kidney, however, its functional value, as determined by phenolsulphonephthalein, may approach zero and the urea retention may be at a very high level. Marked improvement as regards the renal and cardiac condition may follow promptly the institution of catheter drainage and other preliminary measures. In such a case the affair is largely a functional one, the renal impairment resulting from urinary obstruction, the cardiac condition being secondary to the renal one.

In other cases giving little or no evidence of urinary retention, where the elements of back pressure and infection can be eliminated, changes in renal function fail to keep pace with cardiac improvement, and the condition is one of true nephritis.

Many combinations are, therefore, possible; in one instance, the heart alone may be responsible, the improvement in both the heart and kidney running parallel; in another the renal condition is primary, the degree of response to treatment depending on the character and extent of the renal lesion.

The question to decide in the treatment of these cases is the factor primarily responsible for the condition. If the cardiac disease is primary, rest in bed, courses of digitalis and, in some cases, limitation of the fluid intake may bring about a prompt return of compensation. In the cases in which the preponderance of fault lies with the kidney, the establishment of free urinary drainage, diuresis, regulation of the diet, and, in the event of urea retention, free catharsis may be of benefit.

There will remain, however, a certain number of cases in which the outlook is most discouraging and the treatment long and tedious. The forcing of water, so essential a part of the treatment in certain renal types, may be contraindicated by the cardiac condition; and in others, measures directed toward the relief of the heart may be antagonistic to renal improvement.

As an example of a rather extreme type of cardiorenal risk, and as showing how prolonged the preparatory treatment may be, the following case is cited:

CASE 5.—H. D. C., aged 67, admitted Sept. 16, 1913, had prostatic obstruction ten years, attacks of dyspnea, dizziness, headaches, nausea and vomiting, one year, paradoxical incontinence one month, and chronic bronchitis, dilated hypertrophied heart, mitral and aortic insufficiency. Blood pressure was 175; residual urine, 825 c.c.; albumin, casts, pus and bacilli.

TABLE 5.—PHENOLSULPHONEPHTHALEIN TESTS AND BLOOD UREA DETERMINATIONS IN CASE 5

Date	Appearance Time Min.	First Hour Per Cent.	Second Hour Per Cent.	Total Per Cent.	Blood Urea Gm. per Liter
Sept. 16, 1913....	40	10	5	15	0.820
Sept. 18, 1913....	40	15	5	20	
Sept. 21, 1913....	..	5	3	8	
Sept. 23, 1913....	..	..	..	..	0.980
Oct. 8, 1913....	58	3	7	10	
Oct. 16, 1913....	70	Trace	10	10	
Oct. 31, 1913....	60	9	9	18	
Nov. 10, 1913....	30	7	2	9	
Nov. 20, 1913....	..	..	..	..	0.800
Nov. 29, 1913....	..	4	7	11	
Dec. 10, 1913....	20	18	7	25	
Dec. 13, 1913....	30	12	14	26	0.360
Dec. 15, 1913....	18	14	8	22	

The preparatory treatment in this case was very prolonged and consisted chiefly of catheter drainage, the forcing of water and the use of stimulants as indicated. During the first four weeks, the patient was uremic, on one occasion having convulsions. To this difficulty were added frequent breaks in cardiac compensation. On two occasions the life of the patient was apparently saved by the prompt use of strophanthin and camphorated oil. With improvement in the cardiac condition, allowing the use of water in larger amounts, the phenolsulphonephthalein output increased, remaining quite stable, and the blood urea was reduced to within normal limits. After thirteen weeks' preparatory treatment, a perineal prostatectomy was carried out. Recovery was uneventful. The phenolsulphonephthalein test on discharge showed an appearance time of twelve minutes, and output for the first hour 30 per cent. and second hour 10 per cent.

Comment.—This case shows what can be accomplished by preliminary renal and cardiac teratment in very bad cases. Examination one year after operation showed the cardiac and renal condition still greatly improved.

IV. CASES WITH HYPERTENSION

Arterial hypertension may exist independently of cardiac and renal disease, and moderate grades of it are seen without any discoverable organic change. The condition is most often associated, however, with renal or cardiovascular lesions, and its chief interest in this connection lies in the determination of its causation. If the responsibility rests with the kidney, the outlook will depend on the extent of the renal change and the degree of associated cardiovascular disease. As a condition per se, it rarely contraindicates prostatectomy, although in the severer forms, particularly when combined with marked arteriosclerosis, the risk of operation may be a very serious one.

The use of blood pressure lowering drugs in these cases is often dangerous, and at best the result is transitory. Rest in bed and the usual preliminary treatment in cases with associated back pressure symptoms are often productive of permanent results. We have seen frequently rather marked cases of hypertension occurring in individuals with long standing urinary retention and the usual back pressure phenomena. With rest in bed and catheter drainage, marked lowering of the blood pressure has frequently been coincident with improvement of the renal condition.

The following cases illustrate how uncertain the prognosis may be in this type of risk:

CASE 6.—M. E., aged 60, admitted Feb. 21, 1916, had prostatic obstruction for six months, and vesical calculus. No residual urine. Bladder capacity 90 c.c.. Specific gravity of urine, 1.016; no casts; faint trace of albumin. Appearance time of phenolsulphonephthalein, ten minutes; first hour, 48 per cent.; second hour, 15 per cent. Physical examination excellent except slight hypertrophy of left ventricle and blood pressure of 200. Patient was thought to be an excellent surgical risk, and prostatectomy was performed, February 28. After the patient's return to the ward it was noticed that he remained unconscious, and examination showed a left sided hemiplegia and evidently a cerebral hemorrhage which occurred during the anesthesia before or during the operation.

CASE 7.—G. R., aged 68, admitted Sept. 13, 1913, was perfectly sound in every respect except for hypertension. The treatment preparatory to operation was rest in bed and restriction of fluid intake to 1,500 c.c. The phenolsulphonephthalein tests and blood pressure readings follow:

TABLE 6.—PHENOLSULPHONEPHTHALEIN TESTS AND BLOOD PRESSURE READINGS IN CASE 7

Date	Appearance Time Min.	First Hour Per Cent.	Second Hour Per Cent.	Total Per Cent.	Blood Pressure
Sept. 13, 1913.......	22	40	10	50	210
Sept. 15, 1913.......	11	53	15	68	
Sept. 16, 1913.......	..	..	..	..	210
Sept. 18, 1913.......	..	..	..	..	200
Sept. 19, 1913.......	..	..	..	..	205
Sept. 20, 1913.......	..	..	..	..	210
Sept. 21, 1913.......	8	48	18	66	210
Sept. 22, 1913.......	..	..	..	..	210

Perineal prostatectomy was performed September 22. Recovery was uneventful.

Comment.—The determination of the degree of risk in a given case of pure hypertension is difficult, if not impossible. Advanced grades of cerebral arteriosclerosis may be present with very little change in the peripheral vessels, and a radial artery whose wall is barely palpable is no surety against a cerebral catastrophe. That sudden elevation in blood pressure may result in fatal hemorrhage should constantly be borne in mind, and for this reason we believe ether to be preferable to nitrous oxid as an anesthetic in these cases. The complication cited in the first case, however, is relatively uncommon, and in our series of nearly 1,000 perineal prostatectomies, it has occurred but twice.

V. CASES WITH INFECTION

The majority of patients requiring operation for the relief of prostatic obstruction have uninary infection and in a recent series of ninety-four cases, the urine of sixty-six, or 70 per cent., contained pus and microorganisms. The mere presence of bacteria in the urine without localizing signs is not alarming, but the occurrence of an acute process cannot be watched too carefully. Acute infections of the epididymis and urethra immediately call for a suspension in the use of the retention catheter. The majority of these cases can be tided over the course of the infection by interval catheterization, and the condition clears up promptly as a rule. In some instances the process is progressive, and if drainage of the bladder is necessary, a suprapubic cystostomy should be done. Many of these acute infections are secondary to the retention catheter, and can be prevented if sufficient care is exercised. Frequent changing of catheter, the substitution of interval catheterization in some cases, urethral and vesical injections of 5 per cent. argyrol and irrigations will do much toward diminishing the frequency of these complications.

As a fair statement of what can be accomplished by means of careful preparatory treatment, we think we may take the first years' work in the Brady Urological Institute from January, 1915, to January, 1916. During this time there were ninety-four cases in which prostatectomy was carried out, ninety by the perineal route and four suprapubically, with only one death, this patient being 93 years of age and dying of cerebral thrombosis on the thirteenth day after operation. An analysis of these cases is as follows: The average age was 67, the youngest 46, and the oldest 93 years of age. There were three over 80, fifteen over 75, twenty-three over 70. During this period every patient who came to the hospital suffering with pronounced obstruction from prostatic hypertrophy was operated on, so that there was no selection of cases. Fifty-three cases required considerable preliminary treatment, the longest being a period of sixty days; five cases required preliminary treatment over four weeks, nine over three weeks, twenty-three over two weeks, thirty-nine over one week, and eleven less than one week. The following analysis of the phenolsulphonephthalein records shows the splendid improvement which was obtained by means of preparatory treatment.

In the series of ninety-four cases, fifty-one, or 54 per cent., required preliminary catheter treatment, and of these, thirty showed on admission an output of less than 30 per cent. phenolsulphonephthalein for the first hour, and nineteen an output of less than 20 per cent. The preparatory treatment varied from four to sixty days, and at the time of operation, of these thirty cases, only ten had a first hour phenolsulphonephthalein of less than 30 per cent., and only one less than 20 per cent.

There were numerous cardiac lesions found in this series, both myocardial and valvular in character, and two extremely severe, one, a man 75 years of age, with a very bad heart from myocarditis, and another aged 66, whose case had been cited above. In regard to the cardiac cases we may say that almost every case, even those of very severe degree, can finally be got in sufficiently good condition for perineal prostatectomy under ether anesthesia, this anesthetic on account of its stimulating effect being preferable to anything else in cardiac cases. We are firmly convinced that these patients should not be operated on by spinal anesthesia.

High blood pressure was moderately common in this series of ninety-four cases, there being forty-two over 150 and fifteen over 170. In four cases the blood pressure was 200 or more, yet operation was successfully performed in each of these cases. Considerable care was taken in preliminary treatment in these cases, as described above.

A survey of these ninety-four patients, many of whom were very aged and infirm, shows that with proper care, perineal prostatectomy may indeed be called a benign operation. This, we believe, is due to various facts: The wound is extravesical, the drainage dependent, and the absorption of septic materials unquestionably less. Abdominal distention and other complications, which are not infrequently present after suprapubic prostatectomy, are very much less frequent after the perineal operation. The ability of the patient to get out of bed in a very few days, and the ease with which hemorrhage can be controlled, either by ligation of bleeding points at operation or packing, are very greatly in favor of the perineal route. These facts are mentioned because we believe that in severe cases, the choice of operation has almost as much to do with the ultimate result, particularly the mortality, as the preliminary treatment.

MECHANICS OF FRACTURES OF THE OS CALCIS

P. B. MAGNUSON, M.D.
CHICAGO

Fractures of the os calcis are due to two factors: direct violence by a fall on the sole of the foot, and a strong contraction of the gastrocnemius, making a sudden upward pull, thereby putting tension on the Achilles tendon. We have to deal here with a short fragment attached to one of the strongest muscles of the body, tending to displace it gradually even further than it was carried by force of the direct violence, and in the same direction (from *C* to *D*; Fig. 1). This short posterior fragment forms the posterior third or quarter of the longitudinal arch of the foot (*E* to *H*), and, when displaced upward, lowers the arch of the foot (changing *CG* to *DG*), at the same time stretching or tearing the bowstring which holds this arch normally (*GH*) and is attached to the anterior surface of the posterior fragment of the os calcis, running forward to its fan-shaped anterior attachment around the metatarsal articulations. The result of the tearing or laceration of the plantar fascia, which was referred to as the bowstring of the arch of the foot, results in a flattening of the anterior portion of the arch of the foot, which, in turn, and in conjunction with the lowering of the posterior portion of the arch due to fracture, allows the foot to evert (bringing *E* and *A* nearer to each other), thereby bringing the fractured surface of the os calcis upward and outward toward the external malleolus (*A* to *B*).

This results, if allowed to progress to the deposition of callus around the fracture, in mass of callus forming just behind and below the external malleolus (between *A* and *B*), pinching the soft tissues between two bony surfaces, and giving severe pain. The foot, thus being everted, causes the weight line which normally should fall on the middle metatarsal bone to fall on the first metatarsal bone or inside of it, further throwing a strain on the already lacerated ligaments of the longitudinal arch and causing further flattening of the foot.

Fortunately Nature has provided an easy way to rid us of the upward pull of the gastrocnemius by making the Achilles tendon in such a way that it heals readily after subcutaneous tenotomy without further surgical procedure, and is firmly united by the time the fractured bone has become solid.

It is a simple procedure to introduce a tenotome under the skin and completely sever the Achilles tendon, thereby ridding us of the only tendency to displacement of the posterior fragment, which can now be replaced with the assurance that there will be no displacement on account of muscular action. If the fracture is impacted, the foot should be placed over an orthopedic block (Fig. 2) with one hand above the heel and the other over the metatarsal bones, and the impaction broken up, forcing the heel and toe down and toward each other. This increases the arch and at the same time moves the fractured anterior surface of the posterior fragment downward and inward, increasing the distance between it and the external malleolus. The fragment replaced, the foot can then be put in a plaster cast in strong inversion (Fig. 3) further removing the line of fracture from the external malleolus. Before the cast is dry, the base of the thumb should be placed in the arch of the foot (Fig. 4) holding the soft plaster up against it. In this way there is an overcorrection, bringing the ends of the lacerated plantar fascia into apposition, and allowing the traumatized ligaments of the sole of the foot to contract before the cast is removed.

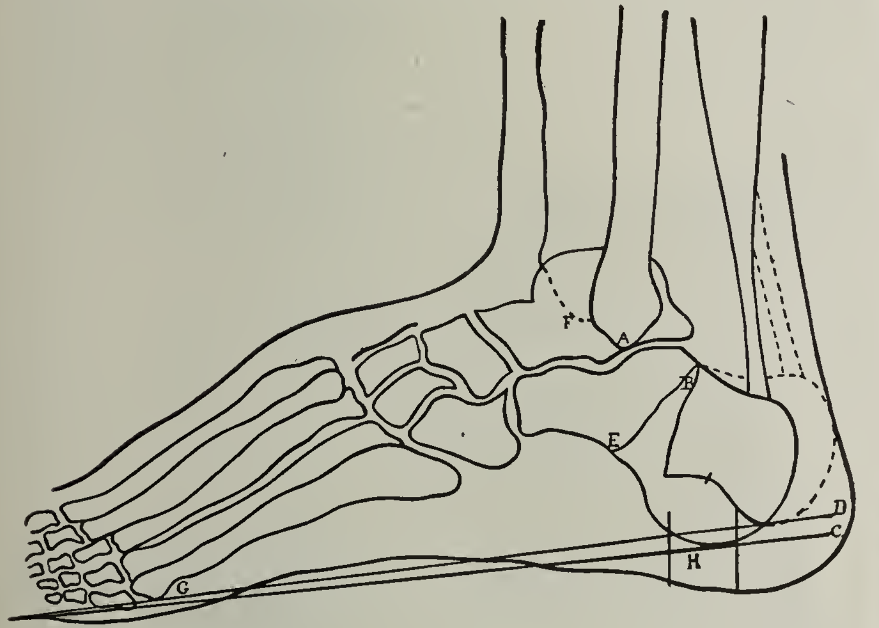

Fig. 1.—*A*, external malleolus; *B*, site of fracture and callus formation which is brought close to *A* by a combination of falling of the arch and eversion of the foot; *H* to *G*, attachments of plantar fascia lacerated at time of fracture of the os calcis; *C* to *D*, distance the arch is lowered when the posterior fragment of the os calcis is pushed up. An eversion of the foot causes the internal malleolus, *F*, to be brought nearer the ground; it also throws the weight line drawn from the anterior superior spine of the ilium through the middle of the patella to fall over the first metatarsal, or inside of it, rather than on the middle metatarsal as it normally should.

The cast should be allowed to remain on the foot for at least four weeks, and the patient admonished not to rest any weight whatsoever on it until two months have elapsed. When the cast is removed, dry or moist heat applications with expert massage should be instituted to increase the circulation in the ligaments and fascias of the sole of the foot, establish motion in the ankle joint, and loosen the adhesions about the Achilles tendon. At the end of the two months the patient should be encouraged to put weight on the foot gradually, care being taken to notice whether the callus around the fracture is solid enough so that it will not allow angulation of the posterior fragment.

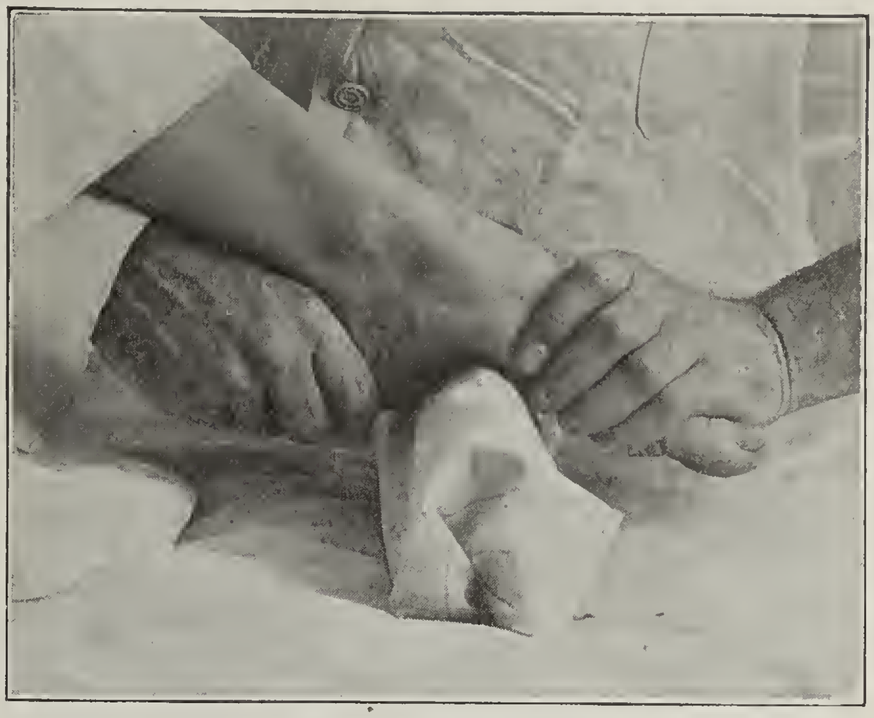

Fig. 2.—The proper position of the hands on the foot in bringing the heel and the toe close together over an orthopedic block and the reduction of fracture of the os calcis. If impaction is too firm to be broken up in this way, the foot should be placed in a sand bag and the posterior fragment struck a sharp blow with another sand bag which will relieve the impaction.

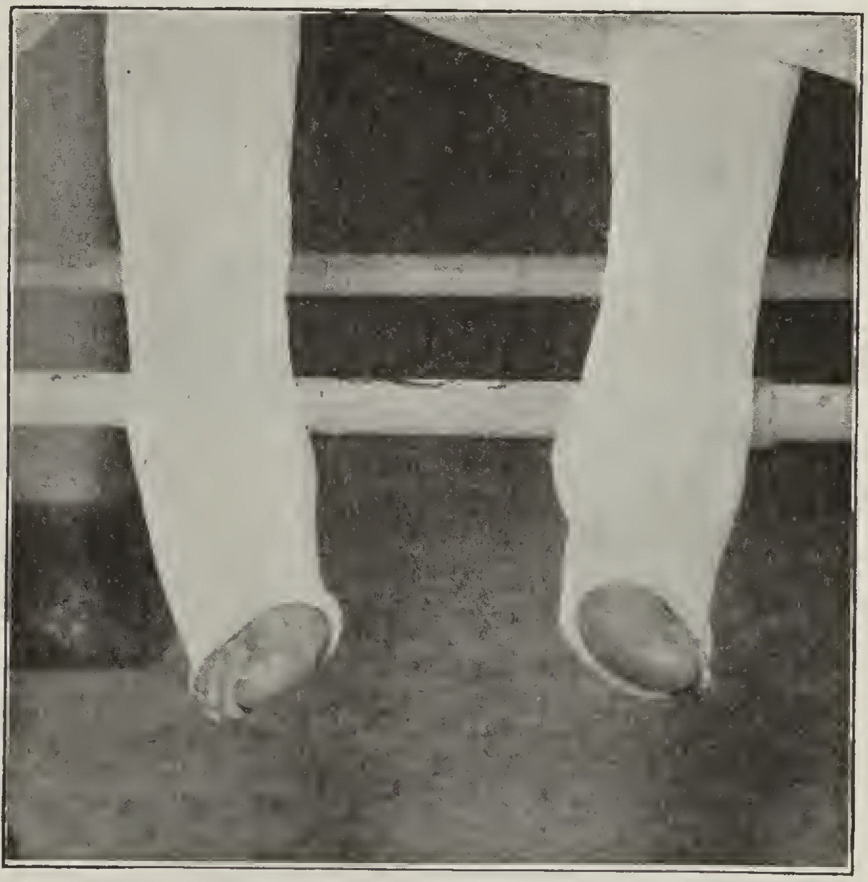

Fig. 3.—The position of the feet in plaster. Strong inversion with pressure under the instep.

The ligaments in the sole of the foot being weak and having a tendency to allow the foot to evert, the sole and heel of the shoe should be built up from one-eighth to one-quarter inch on the inside of the foot, so that the body weight will fall on the flat outside portion of the foot and not overtax the weakened ligaments of the arch. The arch may be supported by adhesive plaster strapping in conjunction with a felt pad either held on by the straps or sewed on an insole, and placed in the shoe in such a manner as to support the longitudinal arch (Figs. 5 and 6).

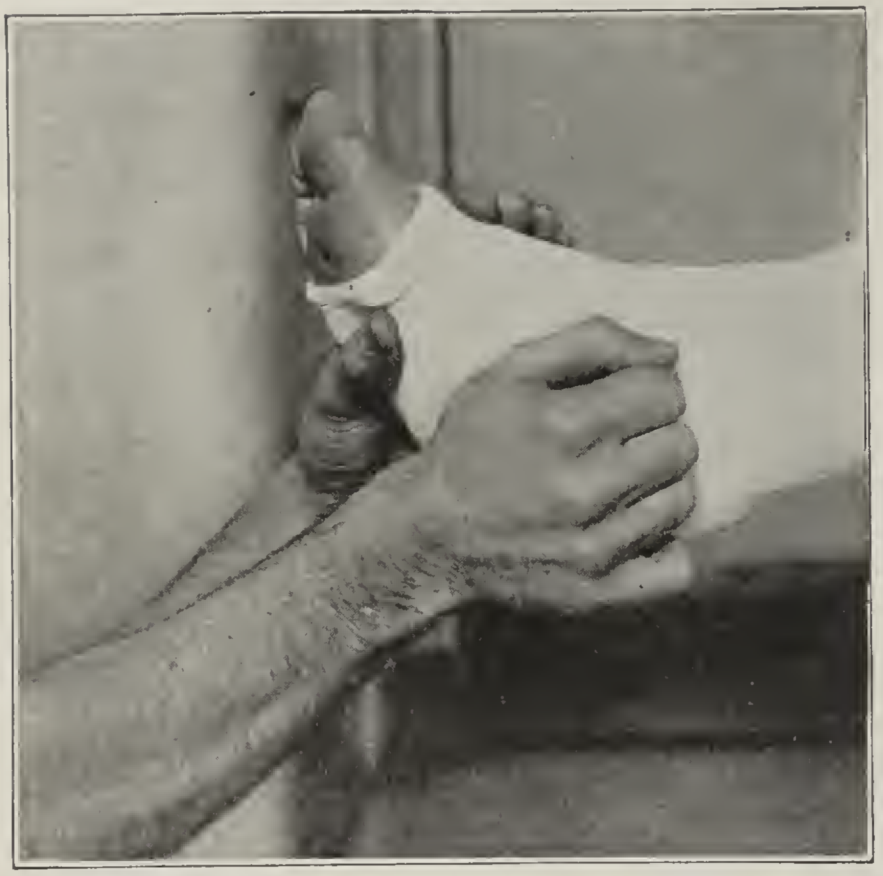

Fig. 4.—Proper position of the hands in inverting the foot and putting pressure under the arch while plaster is still soft. Care should be taken that the hand on the outside of the foot, in this case the left, does not press the plaster against any bony points.

The felt pad has proved much more satisfactory in the treatment of a weak foot than the metal plate, since it allows a moderate amount of strain to fall on the fascia, and being a spongy, elastic substance, it constantly massages the sole of the foot and increases the circulation. The metal plate acts as a rigid splint, relieving the ligaments of all strain, and thereby allowing them to weaken and to atrophy from lack of use.

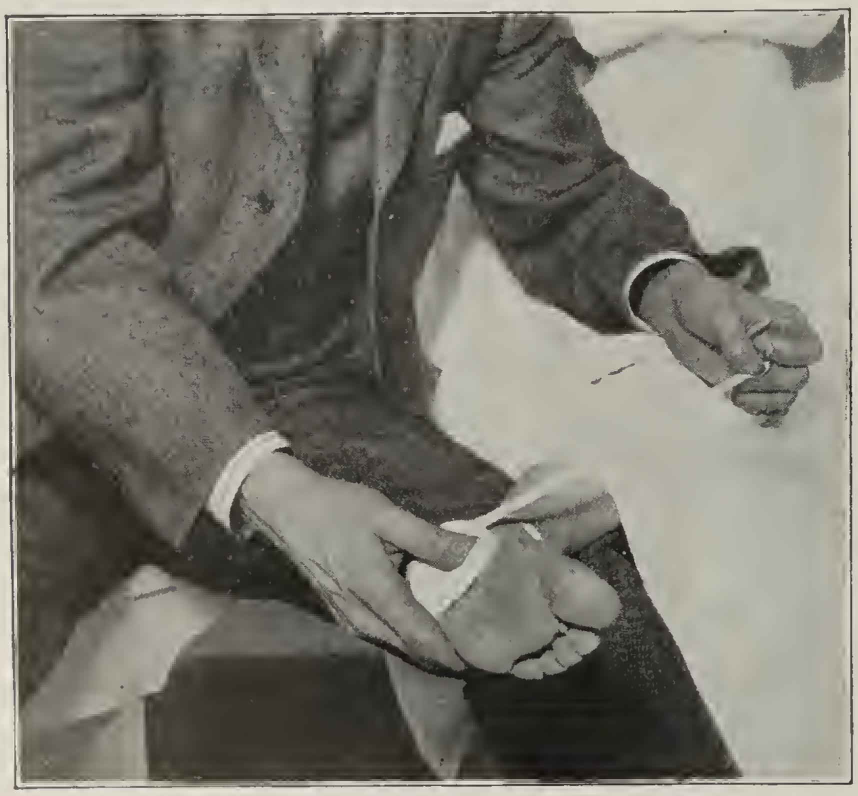

Fig. 5.—Inversion of the foot with felt pad under the arch for support, showing the method of using adhesive plaster.

Under this treatment, which has been extremely successful in my hands, we should have no permanent disabilities from fractures of the os calcis. There is no fracture in the body known which is more commonly overlooked and which will give more painful disability than a fracture of this kind, unless the mechanical details of the treatment are looked after carefully; and there is none easier to treat or which gives better results than this fracture, if promptly diagnosed and correctly treated. It is essential to examine with the Roentgen ray every patient who has sustained a fall on the sole of the foot, especially when there is pain and swelling underneath and posterior to the external and internal malleolus.

No fear should be felt in severing the Achilles tendon, since this structure has been cut subcutaneously by numerous men over a period of many years and practically never has failed to unite and refunctionate even in persons over 60 years of age, and it is absolutely impossible to hold the short posterior fragment of the fractured os calcis in proper apposition to the anterior portion without doing away with the pull of the muscles on the Achilles tendon.

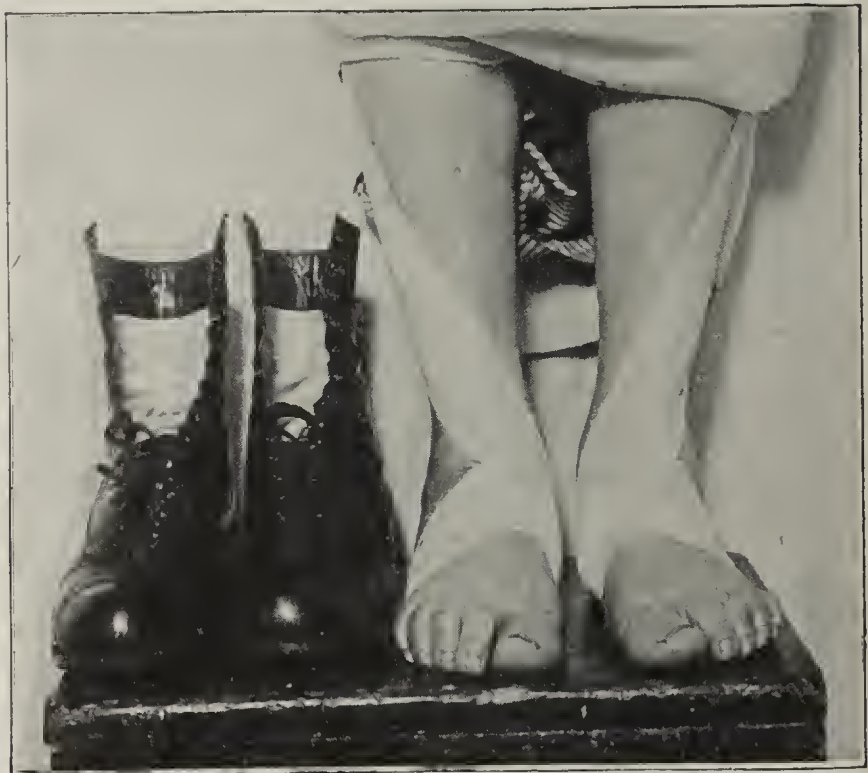

Fig. 6.—Completed strapping of the feet, with felt pad between adhesive and arches of the feet. The adhesive plaster is started on the upper outer surface of the foot, and brought downward and inward with the foot in strong inversion, bringing the plaster upward and outward on the outer surface of the legs.

30 North Michigan Avenue.

Transportation of Milk.—The milk ordinance of the city of Chicago, adopted in 1912, contained certain regulations with reference to the pasteurization of milk which were upheld by the state supreme court. Provisions of this ordinance required that the milk should be transported in sealed cans and prohibited bringing milk into the city the temperature of which was above 55 F. In a suit brought against a railroad company violating this provision with reference to temperature, the state supreme court decided that unless it could be shown it was possible for a railroad company to ascertain the temperature of the milk without having access to the interior of the cans, the ordinance was unreasonable and not enforceable. The court held, however, that a city has the right to protect the health of its citizens by reasonable regulations governing the transportation and sale of milk. The decision in full is printed in *Public Health Reports,* January 19.

FURTHER OBSERVATIONS ON THE USE OF THORIUM IN PYELOGRAPHY *

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Since the publication of the preliminary report[1] on the use of thorium solution as a pyelographic agent, many experimental investigations as to its pharmacologic action, and much clinical evidence after a year's experience in its use have led to the conclusion that it fulfils all the conditions requisite for an ideal pyelographic medium. These conditions are that the solution be nontoxic (within the ordinary limits of usage), nonirritating, opaque to the Roentgen ray, giving not only a good shadow but one of clear delineation, possess a marked degree of fluidity, and be inexpensive.

It is a well-known fact that the degree of opacity of an element to the Roentgen ray is directly proportional to its atomic weight. On this account, thorium, being next to the heaviest known element, seemed worthy of careful study. After an exhaustive investigation of its different salts and the various combinations into which they may enter, it was decided that the original solution, prepared in the manner suggested, and containing, as it does, the double citrate of thorium and sodium together with an excess of sodium citrate, and some sodium nitrate, was by far the best combination for use in pyelography. The solutions used contain 10 and 15 per cent. of thorium in the form noted, the 10 per cent. solution being used for cystograms, and the 15 per cent. for ureteropyelograms. The 15 per cent. solution contains approximately 15 per cent. of thorium nitrate, about 9 per cent. of sodium nitrate, and 21 per cent. of sodium citrate, the thorium being probably in the form of a double citrate of thorium and sodium, and not occurring as the nitrate.

Although solutions of thorium nitrate and thorium chlorid alone cannot be used clinically on account of their astringent and irritant action, and also the fact that they precipitate insoluble salts when brought in contact with the urine, they can be used to great advantage for outlining fine vessels and ducts in pathologic specimens. These specimens, after being injected with a rather concentrated solution of the chlorid or nitrate, are fixed in Kaiserling's solution, which causes a precipitation of the insoluble salts of thorium in the walls of the vessels and ducts, causing them to stand out with unusual clearness of delineation when a roentgenogram is made of the specimen so prepared.

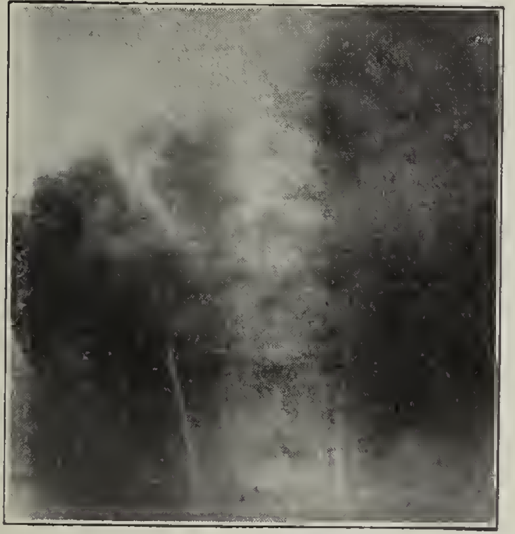
Fig. 1.—Double pyelogram showing the same type of renal pelvis on each side. The pelves are rather small and the calices greatly elongated.

Since the thorium solution for clinical use contains a mixture of different salts, it was thought that a withdrawal of all of these excepting the double citrate of thorium and sodium (this salt being alone responsible for the shadow-casting properties) would be a great step toward simplification. The substitution of other salts, namely, the chlorid for the nitrate of thorium, in the preparation of the solution, was also tried. It was found, however, that either the solution of the double citrate alone or any modification of the original solution when used experimentally, caused either an increase in toxicity, or the production of symptoms which were not observed when the original solution was used.[2]

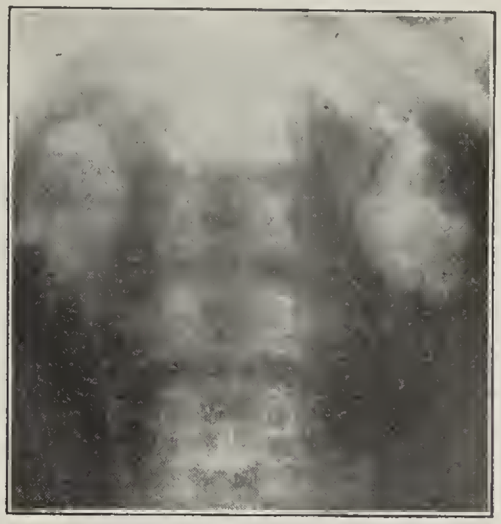
Fig. 2.—Double pyelogram; bilateral congenitally enlarged pelves.

The use of this solution in the urologic clinic of this hospital was begun one year ago. During this time it has been used in 185 cases, no untoward effects whatever having been observed. In five of the cases where it was injected into the renal pelvis and ureter there was a slight reaction characterized by a slight rise in temperature, nausea and vomiting, all of which promptly subsided. In one of these cases, on account of the marked irritability of the bladder, the patient had to be anesthetized before ureteral catheterization could be attempted; the etherization here could account for the symptoms produced. At any rate, these same symptoms could be accounted for by ureteral catheterization alone, for they occur fully as frequently in cases where no solution is introduced into the renal pelvis and ureter. In the series of cystograms there was nausea and vomiting in one case, and slight nausea and frequency of urination in another. In the former instance the nausea and vomiting occurred some hours after the cystogram had been made, and may have been due to some dietary indiscretion. In the latter instance, the patient was highly neurotic, which could readily account for the symptoms. As much as 600 c.c. of the 10 per cent. solution have been used in the entire urinary tract at one time. This patient, a boy 12 years of age, had a dilated and trabeculated bladder with dilatation of the internal vesical sphincter, double hydro-ureters, and hydronephroses due to a congenital obstruction in the posterior urethra. These conditions were all clearly demonstrated in the roentgenogram of this case. No change in phenolsulphonephthalein output or blood urea content after the introduction of this solution into the urinary tract was demonstrated in this case, nor has there been any interference with kidney function, as shown by these two methods of investigation, in any of the cases in which it has been used, even though in some of these cases there had been a marked reduction in phenolsulphonephthalein output, and an increase in the blood urea content before the injection was made. For pyelograms from 5 to 150 c.c. of the

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* From the James Buchanan Brady Urological Institute.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Burns, J. E.: Thorium—A New Agent for Pyelography, Preliminary Report, The Journal A. M. A., June 26, 1915, p. 2126.

[2] Burns, J. E.: Thorium—A New Agent for Pyelography, Bull. Johns Hopkins Hosp., 1916, **27**, 157.

15 per cent. solution have been used, and for cystograms almost a liter (quart) of the 10 per cent. solution.

Too much emphasis cannot be laid on the method of introduction of the solution into the renal pelvis and ureter. The gravity method is now recognized by urologists as being the most successful and the least dangerous for complete distention of the renal pelvis. This is accomplished by means of a buret with a rubber tubing connection and a properly fitting nozzle for the end of the ureteral catheter, the buret being held slightly above the level of the patient, and the solution being allowed to flow in until the patient complains of a sensation of fulness in either kidney region. The exposure to the Roentgen ray is then made, the solution being allowed to flow into the renal pelvis during the exposure. Injection by means of a syringe is dangerous because there is always a liability to overdistention of the pelvis, and forcing the solution into the renal parenchyma or into the perirenal tissues.

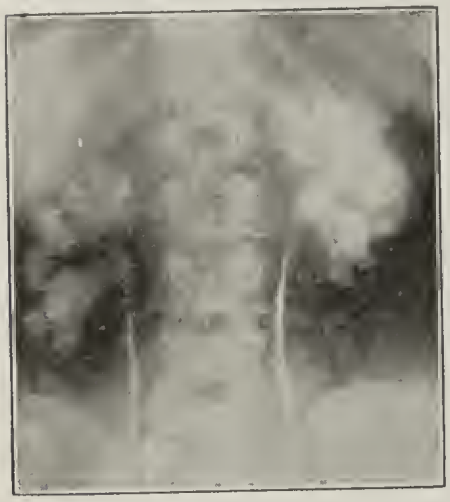

Fig. 3.—Double pyelogram; slight hydronephrosis on either side with marked irregularity of the outlines of the calices.

A word may be said here in regard to the making of pyelograms in cases where there is a marked impairment of kidney function. In these cases where the phenolsulphonephthalein output[*] for two hours is only a trace, and the blood urea content well above normal, it may be well to avoid injecting both renal pelves at the same time. In such cases the simultaneous injection of both renal pelves with any solution might sufficiently derange the functional activity of the renal epithelium, which is already markedly impaired, to cause the onset of uremia. For this reason, it might be well to make a pyelogram on one side, and then wait a few days before making the other. Again, where large hydronephroses and greatly dilated ureters are suspected, it may be well to allow the ureteral catheters to remain in position sufficiently long to insure a complete removal of the solution, for, as is well known, the peristaltic activity of a greatly dilated ureter is always markedly impaired, and consequently the elimination of the solution would be greatly prolonged.

In pyelograms and cystograms made with this solution the outline of the renal pelvis and ureter, or the bladder, as the case may be, is not only remarkably definite but the shadow itself, even to its finest details, possesses an unusual clearness of delineation.

The accentuation of the shadows of calculi by this solution, when they are not seen in the plain roentgenogram, is brought about either by the adhesive properties of the solution, by its capability of being absorbed, or by means of its comparative density. For instance, in one case lately, the shadow of a ureteral calculus was brought out on one side where it was not seen in the plain roentgenogram, and on the other side, a renal calculus, which had previously been seen in the plain roentgenogram, was accentuated by the fact that its shadow was less dense than the shadow of the thorium solution surrounding it in the renal pelvis.

The solution is clear and watery, and possesses such a marked degree of fluidity that it readily escapes from the renal pelvis, ureter and bladder. This is shown by the fact that a plate made a few minutes after the injection has been discontinued gives no suggestion of a shadow, and assures its complete elimination from the urinary tract.

The solution is not irritating to the mucous membranes of the renal pelvis, ureters and bladder. This is demonstrated by the fact that no urinary symptoms have been observed in the cases in which it has been used. No inflammation of the vesical mucous membrane has been observed at subsequent cystoscopic examination. In cases which have come to operation within a few hours or days after the injection, examination of the bladder, ureters and renal pelvis has shown no evidence whatsoever of any irritative action. Experimentally there has been no sign of any irritative action to the peritoneum in animals into whose peritoneal cavities this solution has been introduced, and all of the fluid has been absorbed in most instances. In the preparation of the solution too much emphasis cannot be laid on its careful neutralization, and it is felt that this fact alone is responsible for the absence of any irritative action.

The solution must be sterilized and kept sterile while being used, because, although it exhibits an inhibitory action on the growth of the ordinary bacteria, it is not bactericidal, and molds grow in it on standing. It has been found that sterilization and resterilization of the same solution do not affect its stability in the least.

As regards its use in bladder and kidney injections, no evidence of toxicity has been observed. Experimentally this solution is far less toxic than collargol. In animals where it has been given in small doses subcutaneously, intramuscularly, intraperitoneally and intravenously there has been no effect. Larger doses have occasionally produced gastro-intestinal symptoms, while very large doses have in some instances produced death. These fatal doses, of course, were far above the ordinary limits of clinical usage. In a few instances, 2 c.c. of this 15 per cent. solution per kilogram (intraperitoneally and intramuscularly) proved fatal, much larger doses being required intravenously to produce death. This, in the case of an ordinary man of 70 kg., would allow the escape of 140 c.c. of the solution into his tissues before evidence of toxicity—ten times as much as is used in a simple pyelogram, and hundreds of times greater than any small amount that might be absorbed during the procedure. Much larger amounts have been used in the renal pelvis without any ill effects.

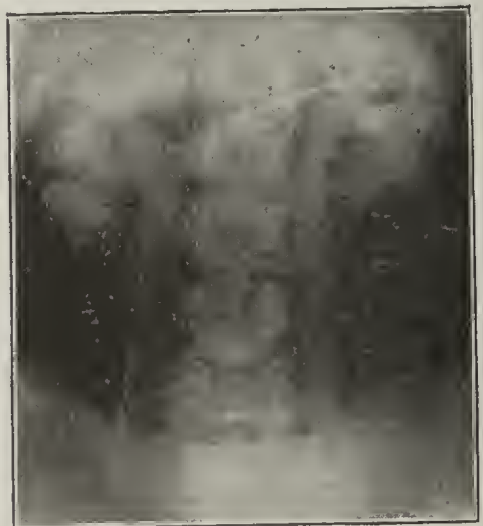

Fig. 4.—Double pyelogram showing well marked bilateral hydronephroses and hydro-ureters with kinking of the right ureter due to narrowing of the ureterovesical orifice.

CONCLUSIONS

1. Thorium solution fulfils all the conditions necessary for an ideal pyelographic medium.

2. Clinically there has never been the slightest evidence of toxicity in a series of 185 cases, the amounts used in a single case varying from a few cubic centimeters to a liter. This alone is proof of its nontoxicity.

3. Experimentally, although in a few instances death has followed the injection of large doses into the peritoneal cavity and tissues of animals, larger doses intraperitoneally and intravenously have produced no effect.

4. That the solution is nonirritating is shown by the absence of any urinary symptoms after its use and the absolute lack of any such evidence cystoscopically, and at operation.

5. The pyelograms and cystograms made with this solution show a splendid shadow which possesses an unusual clearness of delineation.

6. The solution is clear and watery; therefore it possesses a great degree of fluidity, permitting its ready elimination from the urinary tract.

7. It is perfectly clean and does not stain the linen. In this particular it possesses another marked advantage over other solutions, particularly those of the silver salts.

8. It is quite inexpensive, being about one third as costly as collargol.

ABSTRACT OF DISCUSSION

Dr. John T. Geraghty, Baltimore: Pyelography has become almost indispensable. In certain cases it is practically the only means we have of arriving at an accurate diagnosis. For that reason it is very necessary that we have a substance which is comparatively free from danger, and I think Dr. Burns has given us such a substance. I do not think you will ever be able to introduce into the kidney a foreign substance in cases that should not have pyelography; I think you would endanger the kidney by injecting salt solution under force. The mere catheterization in some cases may be sufficient to induce uremia, particularly in cases with marked reduction in function, and if bilateral. So that it is essential in very bad kidneys to have a substance not irritating and that will not reduce the function. I do not believe that thorium will injure the kidney any more than salt solution will.

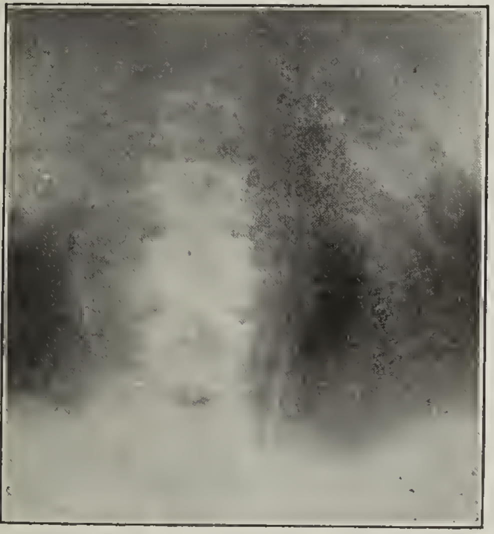

Fig. 5.—Double pyelogram showing double renal pelvis and double ureter on the right side with a calculus in the upper pelvis. Moderate grade of hydronephrosis on the left side due to stone in the lower end of the left ureter.

Dr. William F. Braasch, Rochester, Minn.: The value of pyelography is well understood now and generally recognized. It is unfortunate that a year or two ago so many accidents were reported with its use. It was in danger of falling into disuse. By means of thorium, however, it is very probable that pyelography will come into its own. Several years ago I said that that medium which was in thorough solution and which was nonirritating would be the best. Colloidal silver solutions are not solutions; they are suspensions. Some are more or less irritating, and therefore we had two important objections to pyelography. The ill results following pyelography were the results of two distinct errors of technic—overdistention, and permitting the fluids to remain in the distended pelvis where they could not drain out again. Thorium is a medium in solution, and which, even if injected into a distended pelvis and retained, will, as a rule, not cause any trouble. I have seen four or five cases in which thorium was injected into large hydronephrotic sacs and cortical necrosis resulted. I do not know whether it was due to the thorium alone or to a secondary infection that happened at the time of the injection of the thorium. I am under the impression it was the latter, but we should not jump to the conclusion because thorium has so many advantages over colloidal silver. I still maintain that pyelography should not be done when we can make a diagnosis without it. One objection to thorium is the fact that it does not give as good an outline of the ureter as do the colloidal silver salts. Great care is required in the preparation of thorium and the ordinary chemist or druggist is not competent to do it. The uniformity of clear cut delineation is not present as frequently as with collargol. When there is no danger of retention and I wish to get a clear outline of the calices I still employ a 15 per cent. collargol solution.

Dr. O. S. Lowsley, New York: I want to add a word of warning in regard to the use of thorium. In one of the clinics I am connected with we have been using thorium in all cases of pyelography. We have never had any bad effects, but one of my confrères reported a case in which he had used thorium by gravity and gravity distention of the kidney pelvis, and when the first cessation of the flow appeared, or the patient complained of pain, a small amount of the solution was allowed to flow back before the picture was taken. My confrère used thorium according to Dr. Burns' method. After the patient had passed a lot of black, tarry-looking, bloody material, she went into shock and died. I am not exactly familiar with the history of the case. She may have been one of the patients who should not have been pyelographed at all, but death apparently resulted from thorium.

Dr. E. O. Smith, Cincinnati: Some years ago I reported a death from pyelography. The patient was an aged lady who had a number of pathologic conditions, and perhaps this particular examination should not have been undertaken. The patient died within five minutes after the pelvis of the kidney was dilated with slight gravity pressure and the picture taken. She did not die from toxicity, but from shock. All of us have seen cases and had experiences where there was pronounced shock following this method of examination. Another case that came to me was a particularly sad experience. It was that of a physician, a man past 60 years of age, who had a tumor mass in his left side. We were unable to find anything abnormal in his urine, using the ordinary tests. As a matter of differentiation to determine whether or not the mass was in the kidney pyelography was done. The left kidney pelvis was injected under gravity with 10 per cent. collargol. This man suffered excruciating pain shortly afterward. We went to his home 40 miles in the country the following day. He passed absolutely no urine after we injected the pelvis of the kidney. He died about five days afterward from anuria. This emphasizes the point we ought to bear in mind that a distention of one kidney or some irritation produced in the kidney by this method of examination may have its effect on the other kidney, and this patient evidently had that effect, because the other kidney was catheterized at the time and there was nothing wrong with its function. Having these experiences in mind, I am like Dr. Braasch and take the position that this method of examination should not be employed until all other methods have been tried. We use it as a last resort.

Dr. J. Edward Burns, Baltimore: There are certain borderline cases in which pyelography should not be employed. In those cases in which the functional activity of the kidney is markedly impaired; for instance, those in which only a trace of phenolsulphonephthalein is excreted in two hours and the blood urea content is above normal on preliminary examination, a double pyelogram should be made with the greatest care. It would be better to make a pyelogram of one side and then wait a few days before making one of the other side, because the activity of the renal epithelium is in a state of unstable equilibrium, so to speak, just on the borderline, and the balance can readily be upset by the introduction of any solution. In regard to the introduction of the solution, it has been brought out in the discussion, and has been known for some time, that the least harmful and the most successful procedure for insuring complete distention of the renal pelvis is the gravity method, and as I stated previously, in our record of 185 cases in which this thorium solution has been used by this method we have had absolutely no trouble whatever. In cases where hydro-ureter and hydronephrosis are suspected it is well to leave the ureteral catheter in place for a while, so as to insure the drainage of as much of the solution from the pelvis and ureter as possible, because the peristaltic activity of the ureter is greatly impaired in these cases and for that reason their emptying is greatly prolonged. In borderline cases where there is marked impairment of function and pyelography is done, I do not feel that any harmful results could be attributed to the solution used for it is largely due to the fact that the patient is in such a state that the functional equilibrium of the kidneys can be upset easily and by anything. Dr. Lowsley did not state as to whether the case he reported had been worked out from a functional standpoint or not previous to the injection of the renal pelves so it would be pretty hard in a case like that to say definitely whether the solution had anything to do with the death of the patient or not. It is always well to have the renal function worked out definitely before pyelography is undertaken. We have had absolutely no trouble whatsoever at the Brady Urological Institute in the use of this solution.

THE TRANSPLANTATION OF FAT IN PROSTATIC AND KIDNEY SURGERY *

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CHICAGO

In the desire to utilize some means less mechanical than the various procedures suggested for the prevention of postoperative hemorrhage in suprapubic prostatectomy, nephrotomy and pyelotomy, this work was undertaken.

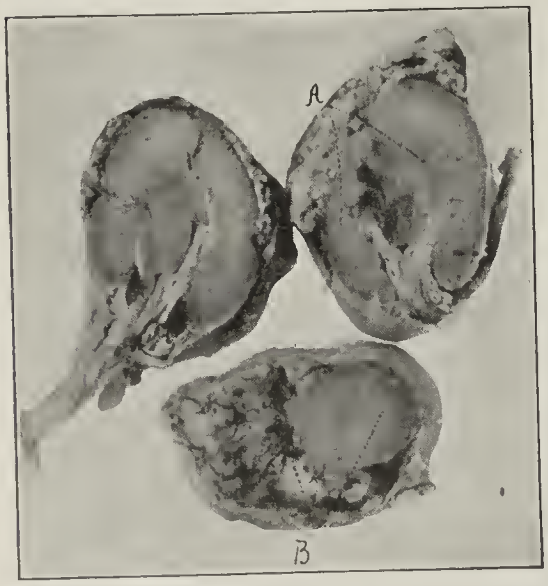

Fig. 1.—Kidney lacerated in several places. Fat sutured into wound. Ten days after operation.

The use of fat in surgery dates back to 1893, when Neuber suggested its use in lacerations of the liver. His work was followed by Lexer and Czerny, and later by Klopfer in bone surgery. I have been unable to find any reference made to the use of fat in kidney or prostatic surgery, except that of a preliminary report by Dr. Kolischer,[1] which appeared two years ago.

The experiments were carried out on dogs. The kidneys were traumatized by crushing and lacerating and nephrotomized in various ways, also decapsulated, and fat from either the same animal or previously obtained from another dog sutured or tied into or over the wounds. Some of the transplants were infected with colon bacilli and some with staphylococci.

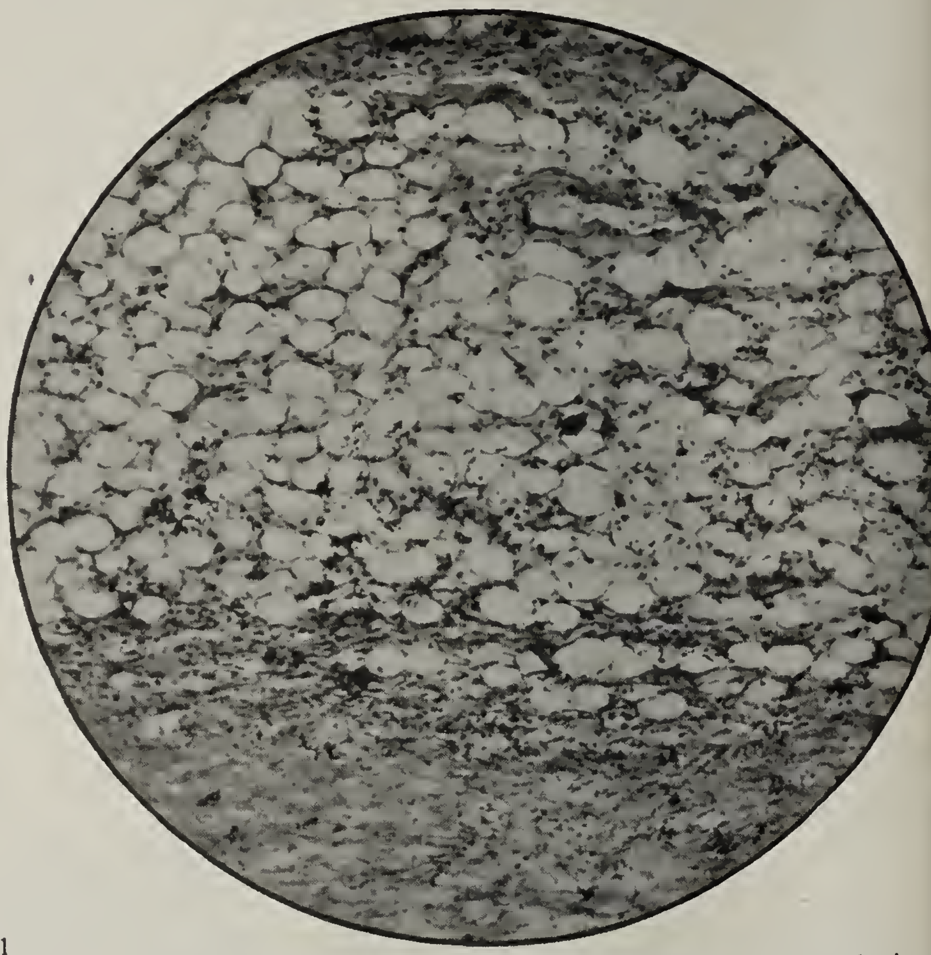

Fig. 2.—Section taken from *A*, showing progressive metamorphosis of the fat replacing the capsule, which was peeled off. Ten days after operation.

It was in every instance very striking to see how promptly the bleeding stopped. The kidneys were removed at periods following the operation varying from one day to six months.

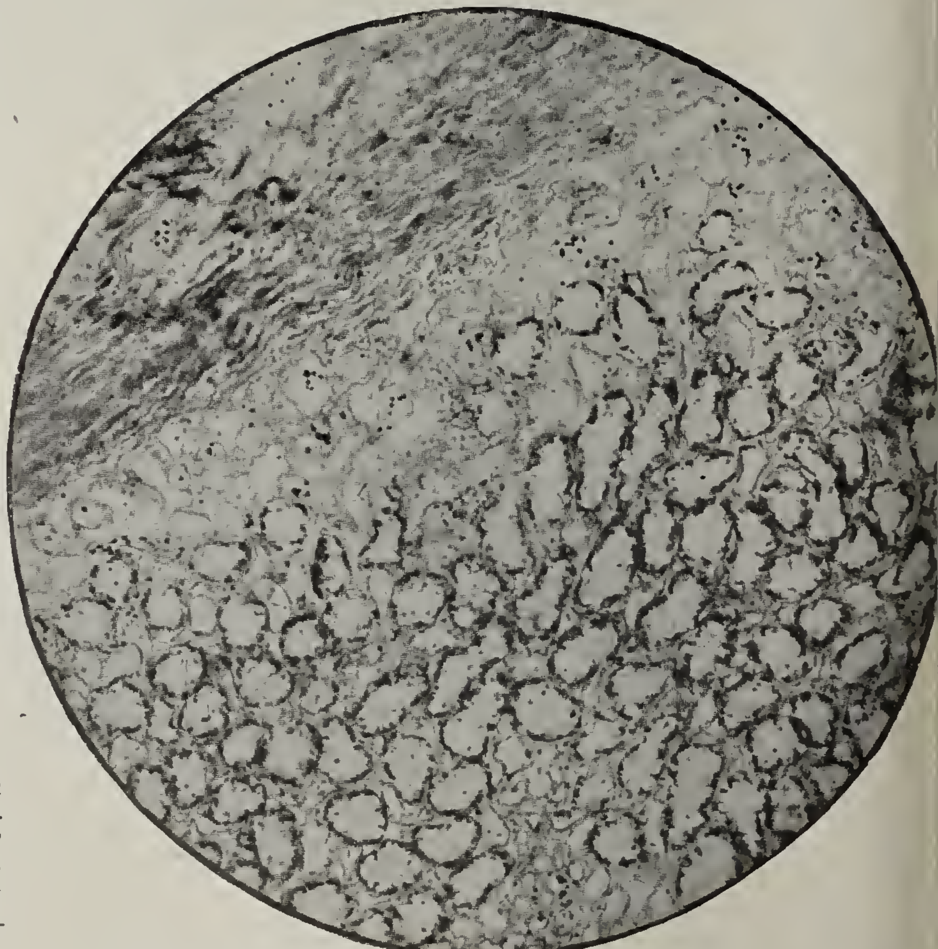

Fig. 3.—Deep nephrotomy. Fresh fat sutured in wound. Four weeks after operation.

On account of the anatomy of the prostate in the dog, the human prostatectomy could not be simulated. By making pockets out of flaps of the bladder wall

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* From the Department of Experimental Surgery of the Morris Institute of Medical Research, Michael Reese Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

[1] Kolischer: Urol. and Cutan. Rev., December, 1914.

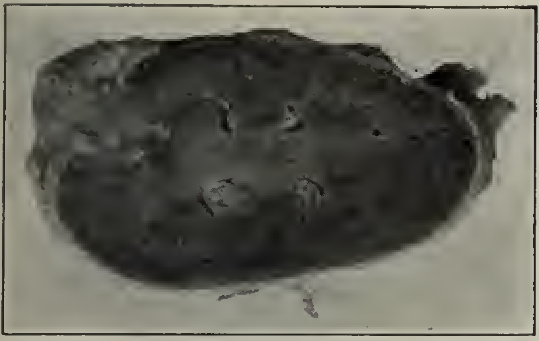

Fig. 4.—Deep incision into kidney. Fat fixed in wound with three sutures. Fourteen days after operation.

it was possible to study the effect on fat transplanted into the bladder. In each instance the fat rapidly disintegrated and completely disappeared from these formed pockets.

Clinically, the experience has been more limited to the prostate. The technic is simply to fill up the cavity made by the enucleation of the prostate and suture over the edges of the mucous membrane, leaving just enough of an opening for drainage and sloughing of the fat, which always takes place in two or three days, when it has served the purpose for which it was intended. The fat can be taken from the abdominal incision of the patient, if he is sufficiently adipose or, better still, obtained from a dog previously. Kept on ice in normal salt solution, in air-tight containers, the fat can be preserved indefinitely. In almost every instance the oozing, as noted by the colored urine, will cease in twenty-four hours.

This use of fat has also been tried in a number of nephrotomies for the removal of calculi from the parenchyma, and on several pyelotomies; also on one ruptured kidney by Dr. Kolischer. In the latter case the bleeding stopped immediately following the suturing of the fat over the rupture, and some months later was functionating without any hematuria.

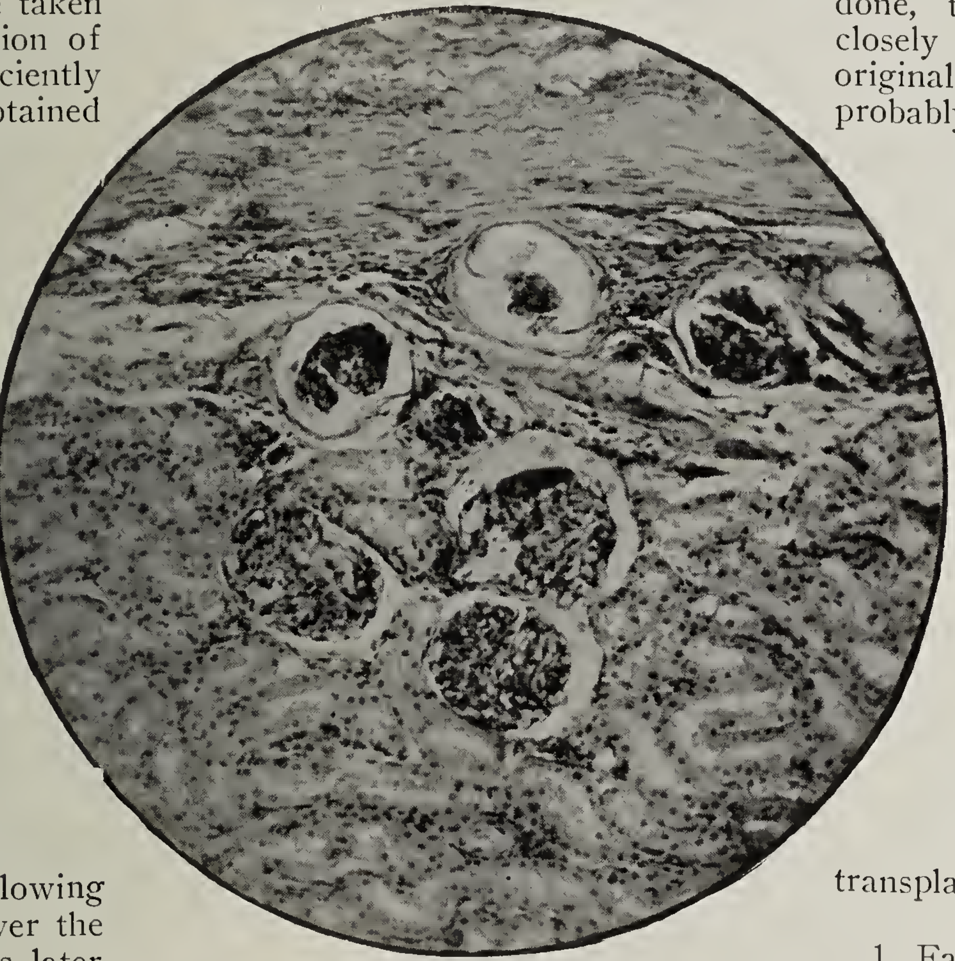

Fig. 6.—Kidney decapsulated, covered with fresh fat and then injected with staphylococci. Sixty-nine days after operation. (Note: New capsule of converted connective tissue. Glomerulitis.)

The study of sections taken from the areas in which the fat was transplanted shows a typical metaplasia of reticular connective tissue, becoming fibrous. Grossly, in most instances where the trauma was sufficiently extensive, secondary contraction reduces the kidney to one half or one quarter its normal size. The process begins promptly, and in twenty-four hours the fibrin deposits show beginning organization. The ultimate change is reached in three to four months in the absence of infection, and somewhat later in the presence of bacteria. Infection, however, does not change the end-results at the site of the transplant, though the renal parenchyma remote from the transplant gives evidence of bacterial invasion.

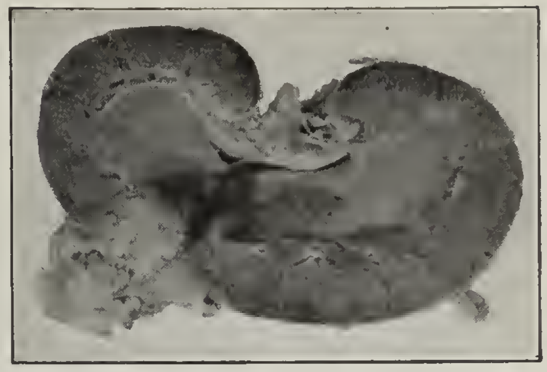

Fig. 5.—Scalpel plunged from cortex down to pelvis. Wound then plugged with fat. Twenty-eight days after operation.

A new capsule forms where decapsulation has been done, the structure of which closely resembles that of the original kidney capsule. This probably explains why the Edebohls operation for the relief of chronic interstitial nephritis ultimately fails.

In every specimen examined there is considerable necrosis of the renal tissue for some distance from the point of trauma. This necrosis should suggest refraining from the unsurgical procedure of cutting into the kidney for the search of calculi. The necrotic area is replaced by fibrous tissue, and in later months cannot be distinguished from the changed fatty transplant.

SUMMARY

1. Fat is a valuable hemostatic following prostatectomy and in operations on the kidney.

2. The change into fibrous connective tissue is complete in from three to four months.

3. Infection does not alter the metaplasia, though it delays it.

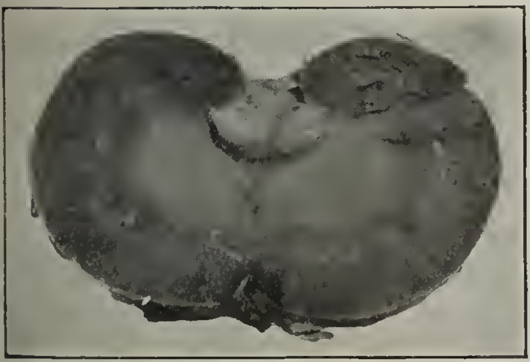

Fig. 7.—Deep nephrotomy. Fresh fat sutured in wound. Four weeks after operation.

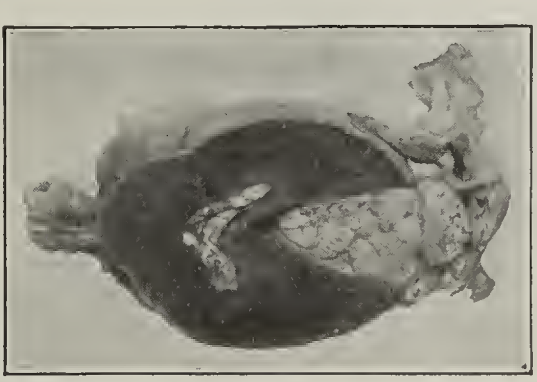

Fig. 8.—Nephrotomy filled with fat, one week old. Thirty-seven days after operation.

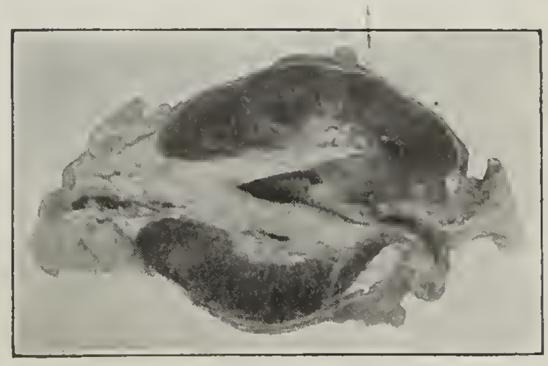

Fig. 9.—Deep nephrotomy, filled with fat and infected with twenty-four hours' colon bacillus culture. Two and one-half months after operation.

4. When placed over a decapsulated kidney, a new capsule is formed.

5. Incision into healthy kidney is followed by extensive necrosis, which is replaced by fibrous tissue.

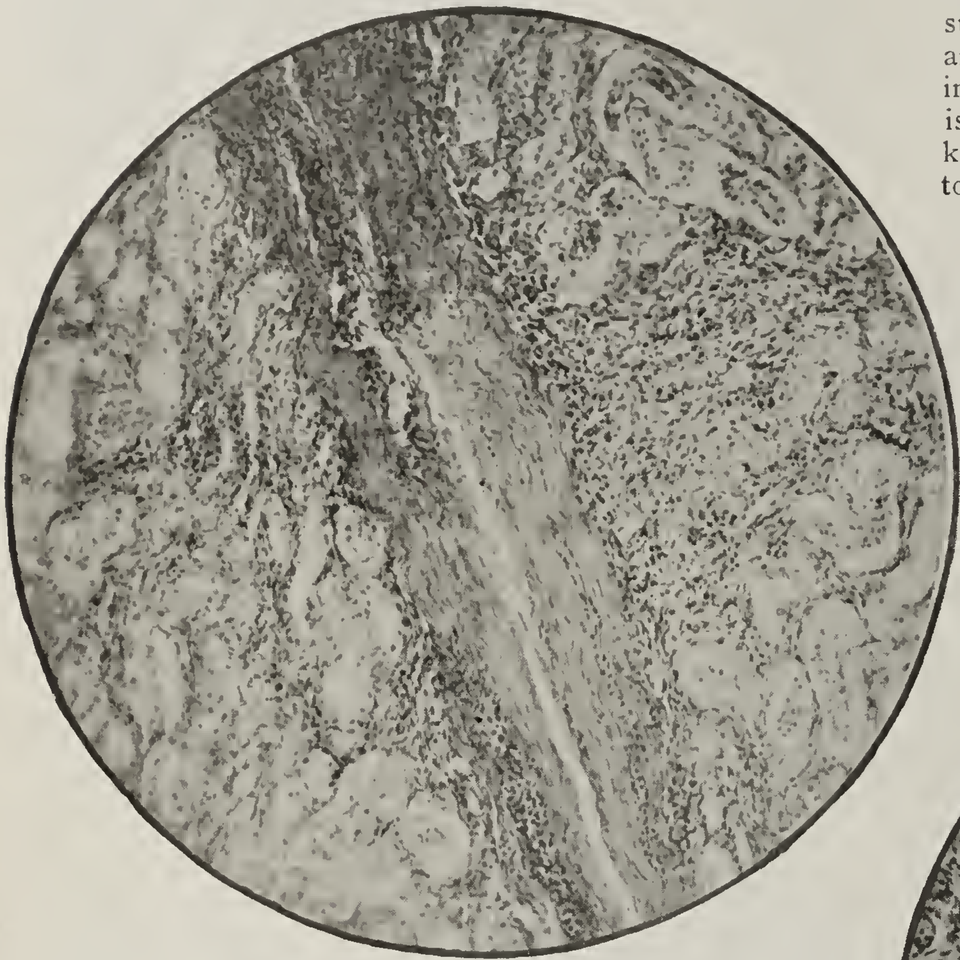

Fig. 10.—One deep nephrotomy at either pole, filled with human fat, one day old. Seventy-six days after operation. Kidney was shrunken to one quarter its normal size. (Note: Change of fat into fibrous connective tissue. Extensive change in tubules.)

Contrary to the usual sequence, clinical experience preceded the laboratory work, and I am indebted to Dr. G. Kolischer for the inspiration leading to this work.

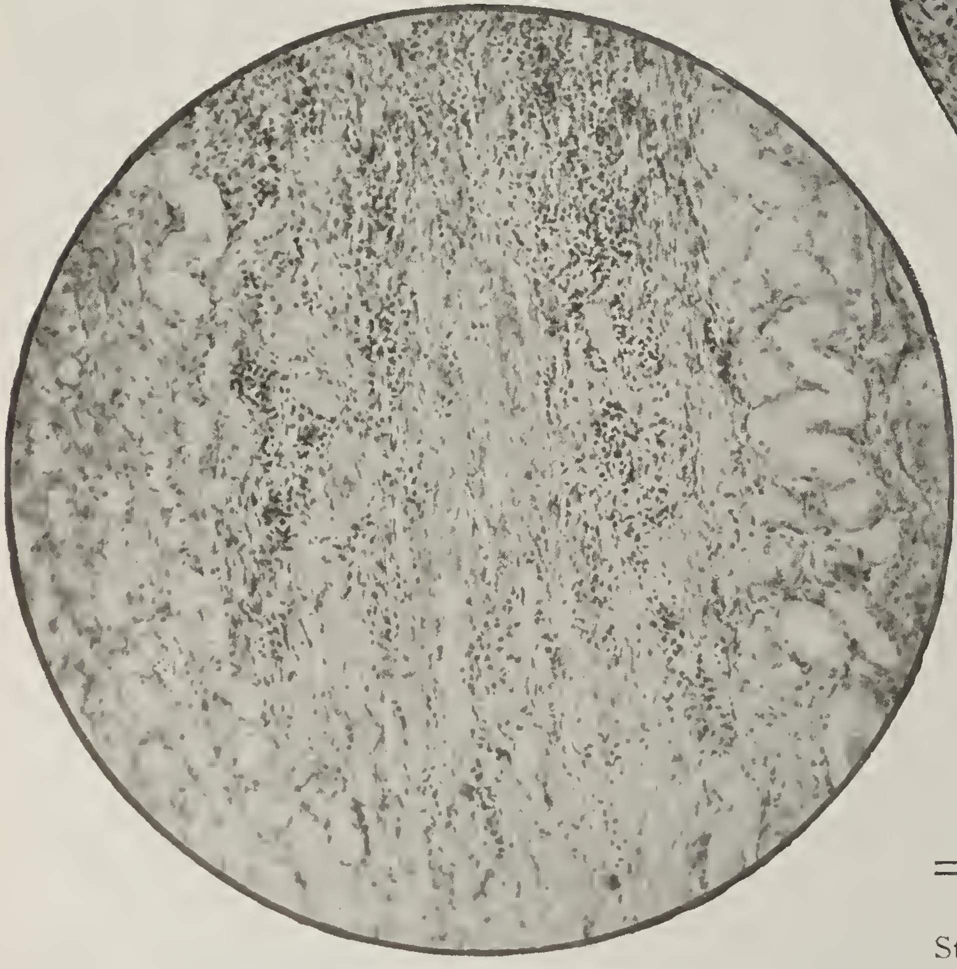

Fig. 11.—Nephrotomy filled with fat and injected with culture staphylococci. Two months after operation.

ABSTRACT OF DISCUSSION

Dr. G. Kolischer, Chicago: I hope that these experiments will encourage you to use this transplantation of fat in renal and bladder surgery rather extensively. For the efficiency of this method I have plenty of clinical evidence. I want to mention three types of procedure. The first is the reinforcement of the pelvis of the kidney after pyelotomy. After the incision in the pelvis is sewed up we leave the ends of the sutures long, and then we pull up a flap of the peritoneal fat and tie it over the pelvis with the long ends of the suture; in that way the oozing stops immediately. The second type is the padding of the kidney incision for a rupture in the kidney or after a nephrotomy. The third type is in prostatectomy: I am convinced that a great many of our prostatectomized patients used to die by simply oozing themselves to death through the bladder. In order to prevent hemorrhage we place a piece of fat in the cavity, and anchor it with a few stitches.

Dr. H. J. Scherck, St. Louis: About a year ago Dr. Kolischer suggested this method to me, and since that time I have had occasion to use fat in three cases of traumatized kidneys in a railroad hospital, and in all of the cases the result was entirely satisfactory. I have used it a number of times in prostatic surgery where the bleeding seemed to be excessive, and found it entirely satisfactory.

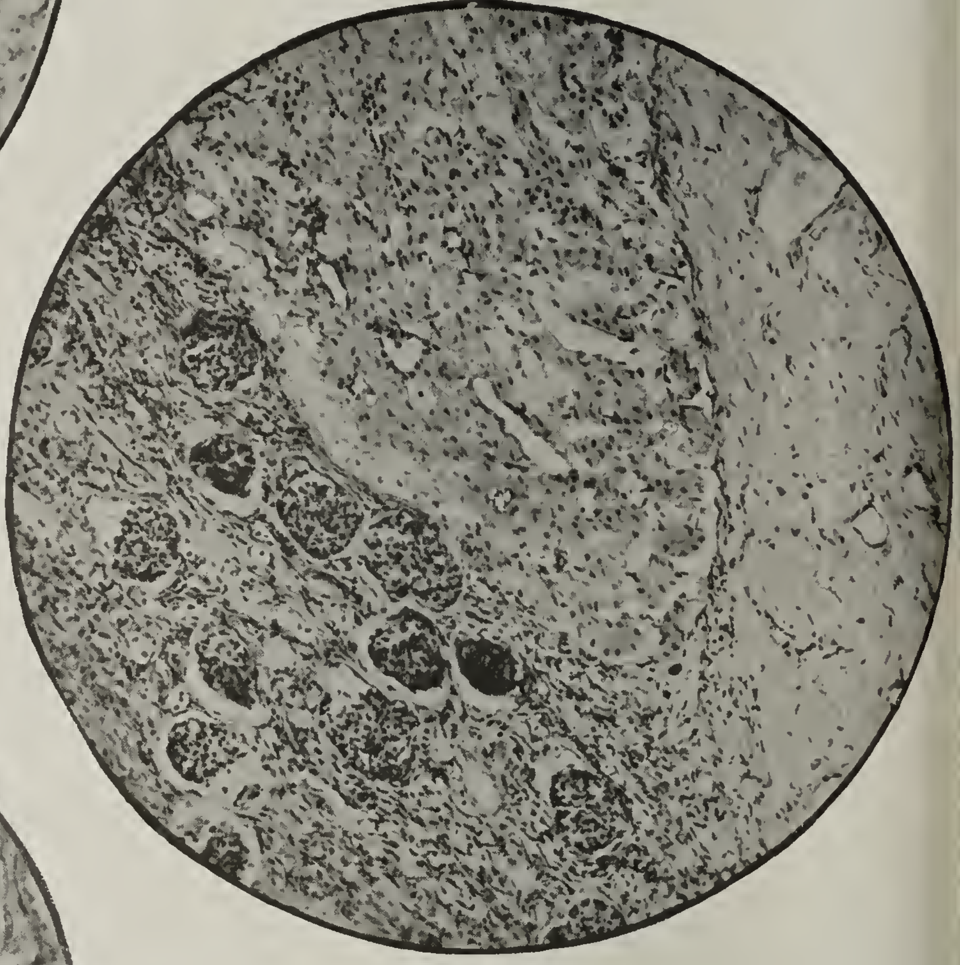

Fig. 12.—Two nephrotomy wounds filled with fat and infected with B. coli. Three and one-half months after operation.

Dr. David W. MacKenzie, New York: I got the fat suggestion from Dr. Charles Gibson of New York, who has tried it, I believe, in a number of kidney cases, sometimes without drainage. I have always drained. I have never used it in the prostate. It seems very simple.

Dr. Irvin S. Koll, Chicago: I want to emphasize the fact that you need have no hesitancy in removing the fat from a dog. Put it in air-tight containers on ice and it will keep indefinitely. I think it is of advantage to do this, because where you remove it from the abdominal wall in a prostatectomy it delays the operation, leaves an open space, and it takes time to ligate the bleeding vessels.

Spotted Fever.—According to the annual report of the Idaho State Board of Health, Rocky Mountain spotted or tick fever decreased one half during 1916 as compared with the previous year. In 1915 there were 349 cases, resulting in fourteen deaths. In 1916 there were only 148 cases, eleven resulting in death. The disease has been studied since 1910 by the state and federal authorities, and the reduction in the number of cases is attributed to these investigations.

MIGRATION OF SHELL FRAGMENT FROM RIGHT FEMORAL VEIN TO RIGHT VENTRICLE OF HEART

GENERALIZED GAS BACILLUS INFECTION *

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NEW YORK

History.—The patient, F. A., Eighth Zouaves, was brought, June 16, at 3:30 a. m., to the ambulance. Four hours previously he had received a perforating shell wound of the left thigh 4 cm. above the knee, and a penetrating shell wound of the right thigh. A fluoroscopic examination of the thigh and lower abdomen failed to reveal any foreign body. Unfortunately the upper abdomen and thorax were not examined. The failure to find the shell fragment was puzzling, as the depth and direction of the wound seemed to preclude the possibility of the particle having fallen out.

The patient was in a condition of mild shock. The temperature was 97.2, pulse 126, respiration 28. Physical examination of the chest and abdomen was negative.

Operation.—The contused skin edges were cut away, the wound laid open, and the projectile tract lightly but methodically excised. No foreign bodies were discovered. At the bottom of the wound of the right thigh, the femoral vessels were found embedded in a clot; the femoral vein was bruised but apparently intact. Two Carrel instillation tubes were inserted, and 20 c.c. of Dakin's hypochlorite solution were delivered to the wound every two hours.

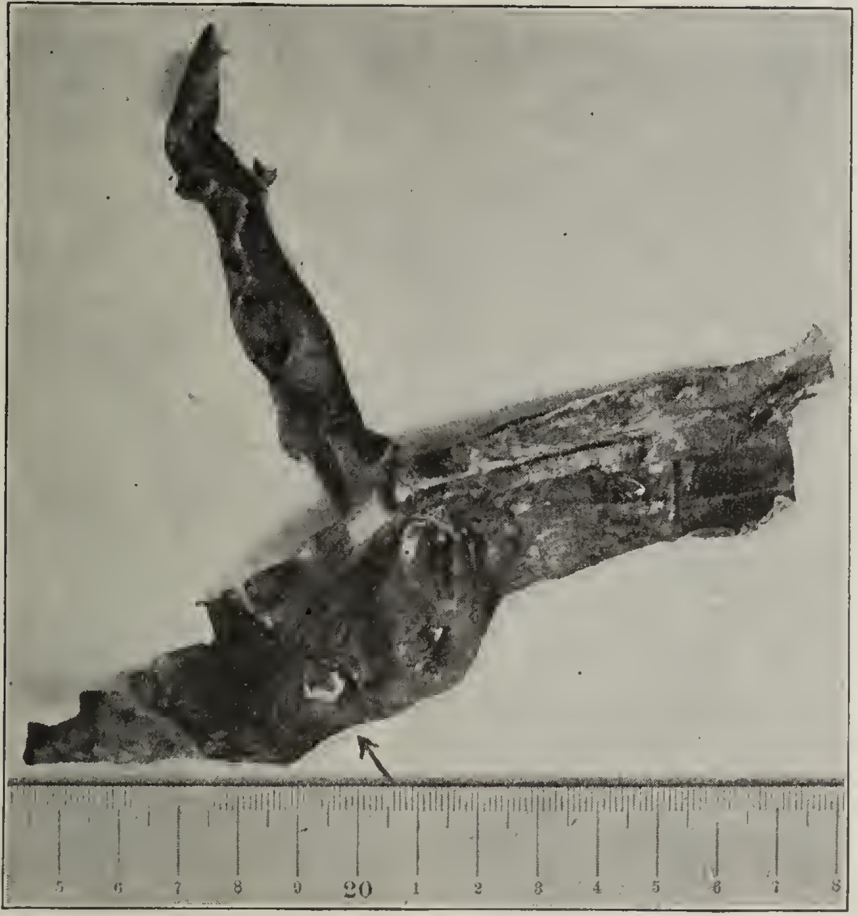

Fig. 1.—Femoral vein and artery, showing the wound in the femoral vein.

The patient appeared drowsy and slept the major portion of the first two days. On the third day the abdomen became greatly distended, and he complained of pain and tenderness over the spleen and right kidney. The distention was partially relieved by lavage and enemas. Jaundice appeared on the morning of the fourth day, and was accompanied by pain and tenderness over the liver. The temperature rose to 102.2, the pulse to 132, and the respiration to 32. Fine moist râles were heard at the left base. The area of cardiac dulness had increased, a distinct pericardial rub was heard, and the cardiac sounds were indistinct. A provisional diagnosis of general gas bacillus infection with pericarditis and pneumonia was made. In the afternoon there was a temporary improvement, followed by sudden death at 5:30. Throughout the course the wound remained sterile.

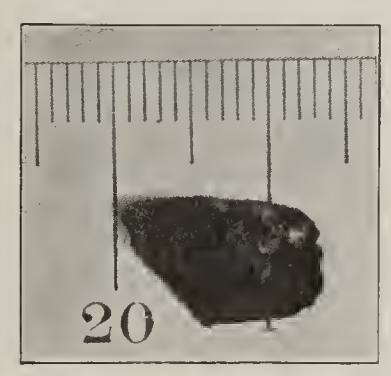

Fig. 2.—The shell fragment carried by the blood stream from the right femoral vein to the right ventricle.

Necropsy (Dr. Proctor).—The body is that of a man, aged 31, medium frame, fairly well nourished. The skin is deeply jaundiced. There are no wounds of the abdomen or thorax. The wounds of the thigh are clean. The wound of the right thigh is 10 cm. below and 5 cm. posterior to the anterior superior spine of the ilium. The tract leads forward, downward and inward to the femoral vein (Fig. 1). In the external wall to the vein there is a small valve-like wound sealed by an organized clot. There is no local evidence of gas infection. Both lungs are edematous; there is a fibropurulent pericarditis with free gas in the pericardial cavity. The heart is enlarged, and its external surface is covered with a fibropurulent exudate. The cut section of the heart gives a gaseous crepitation. There is a rough shell fragment free in the cavity of the right ventricle (Fig. 2). The shell fragment measures 1.5 cm. in length, 0.9 cm. in width, and 0.5 cm. in thickness, and weighs 1.81 gm. There are fibers of clothing adherent to the irregular surface of the shell. The liver, spleen and kidneys are enlarged. On cut section all give gaseous crepitation. There is no obstruction to the gallbladder or gallducts.

Revised Diagnosis.—Perforating wound of the left thigh, penetrating wound of the right femoral vein, migration of the shell fragment to the right ventricle of the heart. General gas bacillus infection. No local infection of the wound.

Besides the extreme rarity of the case, the following points are worthy of notice:

1. The carrying of a rough shell fragment by the blood stream from the right femoral vein to the right ventricle, the patient living four days and eighteen hours.
2. The sealing up of the wound in the vein.
3. The sterilization of the local wounds by the Carrel method, the generalized gas infection having undoubtedly arisen from the clothes on the shell fragment.

A fluoroscopic examination of the upper abdomen might have revealed the presence of the shell fragment. It then would have been a simple matter to milk the fragment into an unimportant vein from where it could have been easily removed. This has already been done in the case of a shrapnel ball.[1]

50 East Fifty-Third Street.

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[1] Grandgérard: Presse méd., Aug. 27, 1916, p. 365.

* The heart, shell fragment and vein were shown before the Surgical section of the New York Academy of Medicine, Oct. 6, 1916.

End-Result Investigation.—The investigation of surgical end-results is a matter of serious importance. The employment of special workers to carry on end-result investigations in the field is now the practice of a number of hospitals. Despite the cost involved, such proposals should be sympathetically received by hospital administrators. The hospital is one of the greatest of existing social institutions, supported in this country at a total cost which staggers the imagination. The value of its output must not be assumed, but must be proved. The altruistic hospital surgeon will not permit his equanimity to be disturbed by the revelations of end-result investigations; if the disclosures are sometimes surprising, they are always instructive.—S. S. Goldwater, M.D., *Modern Hospital,* November, 1916.

LYMPHOGENOUS ASCENDING INFECTION OF THE URINARY TRACT *

DANIEL N. EISENDRATH, A.B., M.D.
AND
OSCAR T. SCHULTZ, A.B., M.D.
CHICAGO

In an earlier communication[1] we reported the results of a series of experiments which showed that infection of the upper urinary tract can take place when an emulsion of organisms is injected into the bladders of rabbits and dogs. Our studies in this first series enabled us to conclude that the paths along which the infection travels are the lymphatics of the wall of the ureter and of the renal pelvis. The view that infection reaches the kidney from the bladder by way of the lumen of the ureter must, we feel, be abandoned, except for those cases in which an almost complete obstruction exists. In our first paper we reviewed the work of earlier investigators, which was performed under conditions seldom met with in the human being. In the majority of experiments cultures were injected into the ligated ureter. Under these conditions it was not surprising to find organisms within seven hours in the tubules of the kidney.[2]

Other investigators, like Sweet[3] and Sweet and Stewart,[4] implanted the cut ends of the ureters into the intestine. They called attention to the same perivascular areas of infiltration as we have found and to the probability that the infection travels by way of the interstitial lymphatics of the ureter. Their method is open to criticism because the changes which take place after reimplantation of the ureter into the intestine are so intense and occur so early that it is impossible to follow the paths of infection. It also opens up the lymphatics in a manner practically never met with in our clinical cases. Hess[5] injected cultures into the bladder and found no changes after intravesical inoculation alone, but these results may have been due to the small amount injected and the long interval which elapsed between the time of the experiment and the time microscopic examination was made. Our technic was the same in both series of experiments. The organisms employed were *Bacillus coli, Staphylococcus aureus* and *Bacillus proteus.*

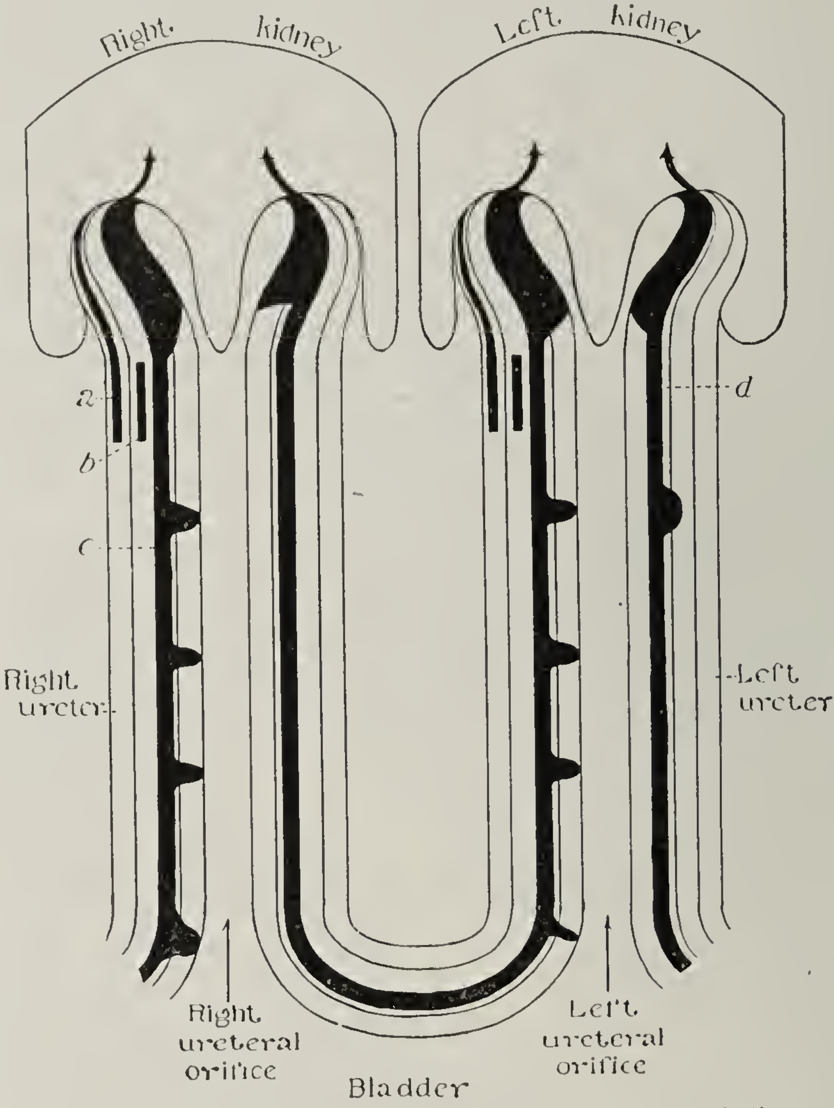

Fig. 1.—Diagram of Experiment 423. Shaded areas indicate paths of infection as indicated by inflammatory infiltration, which could be followed from the bladder to the kidney; *c*, submucous infiltration, with occasional extension into the mucosa; *b* and *a*, infiltration in muscular and periureteral coats; *d*, submucous infiltration in left ureter, extending at one level into the muscular coat.

An emulsion of sterile salt solution and scrapings of four agar slant cultures of the organisms was injected through a silver cannula into the bladders of female animals.[6] Before this intravesical inoculation some of the urine was obtained for cultures, so as to determine the presence of any preexisting infection. The cultures taken from the urine before the experiments were sterile in all of the animals of both series. Every precaution was taken to avoid injury to the urethra and bladder, and a minimal degree of force was used in injecting the emulsion. By following this method we imitated the conditions existing clinically as closely as possible. There was absolutely no interference with the sphincteric action present at the vesical end of the ureter, our idea being to permit the organisms to invade the bladder mucosa and be carried into the intramural and periureteral lymphatics of the ureter through the anastomosis of the lymphatics of the bladder and ureter, previously discovered by Stahr,[7] and Bauereisen,[8] referred to in our first communication.[1]

Our animals were killed at varying intervals with strychnin, and cultures were immediately made from the heart's blood, both kidneys, and from the bladder. Serial sections of the entire ureter and renal pelvis were made in order to follow the paths of infection from one level to the next higher in longitudinal sections. Portions of the bladder at some distance from the vesical end of the ureter and areas from every portion of the kidney were also examined in serial sections.

We employed only dogs in our second series, because of the presence of slight inflammatory changes in the rabbit controls of the first series. All of the blood cultures of the second series were negative. The organism injected was found at necropsy in the bladder of two animals, but never in the kidneys, out of a total of thirteen experiments.

The ureter and renal pelvis showed evidence of involvement of varying grade in every dog. In three of the animals, one inoculated with *B. coli* and two with *B. proteus,* the kidney was also involved.

We believe that our method of injecting the organisms reproduces as closely as possible the conditions found clinically in infections of the lower urinary tract. The negative cultures of the urine obtained before injection prove the absence of any previous infection. The negative blood cultures in twenty-six animals of the first series and in thirteen of the second series eliminates the possibility of a hematogenous infection.

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* From the Nelson Morris Institute for Medical Research of the Michael Reese Hospital, Chicago.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Eisendrath, D. N., and Kahn, J. V.: Rôle of the Lymphatics in Ascending Renal Infection, The Journal A. M. A., Feb. 19, 1916, p. 561.

[2] Schmidt and Aschoff: Die Pyelonephritis, Jena, 1893.

[3] Sweet: Univ. Penn. Med. Bull., 1910, **23**, 233.

[4] Sweet and Stewart: Surg., Gynec. and Obst., 1914, **18**, 460.

[5] Hess: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, **26**, 135.

[6] The animals were anesthetized and the external genitals thoroughly cleansed and the labia retracted before the canula was introduced so as to eliminate any possibility of introducing infection from the vagina.

[7] Stahr: Arch. f. Anat. u. Physiol., 1900, p. 41.

[8] Bauereisen: Ztschr. f. gynaek. Urol., 1911, **2**, 235.

The details of the experiments will be published elsewhere, but the summarized microscopic findings in two typical experiments are given herewith. In Experiment 423 an emulsion of *B. coli* was injected into the bladder and the dog was killed five days later. In this animal the inflammatory infiltration, as shown in Figure 1, follows the lymphatics of the submucous coat from the bladder into the ureter. Near the upper ends of the two ureters the outer coats become markedly involved and the renal pelvis is the seat of an intense, subacute, inflammatory reaction. From the pelvis the infiltration can be followed into the parenchyma of the kidney along the course of the intrarenal lymphatics. The lining epithelium of the ureter and of the renal pelvis is intact, except where it has become secondarily invaded by inflammatory foci which had their origin in the subjacent coat (Fig. 1).

Throughout the urinary tract the inflammatory process is characterized by focal lymphoid infiltration about smaller blood vessels and lymphatics. In Experiment 431, a dog killed five days after injection of *B. proteus* into the bladder, the involvement is somewhat different in that it is most marked in the upper portion of the urinary tract (Fig. 2). In the renal pelvis the inflammatory reaction becomes quite intense and from the pelvis extends up into the medullary tissue of the kidney in the form of intertubular perivascular bands of lymphoid infiltration. In the ureters of this animal the only change of any importance to which we would call attention is swelling and proliferation of the endothelium of the lymphatics, about some of which there is a very narrow zone of lymphoid infiltration.

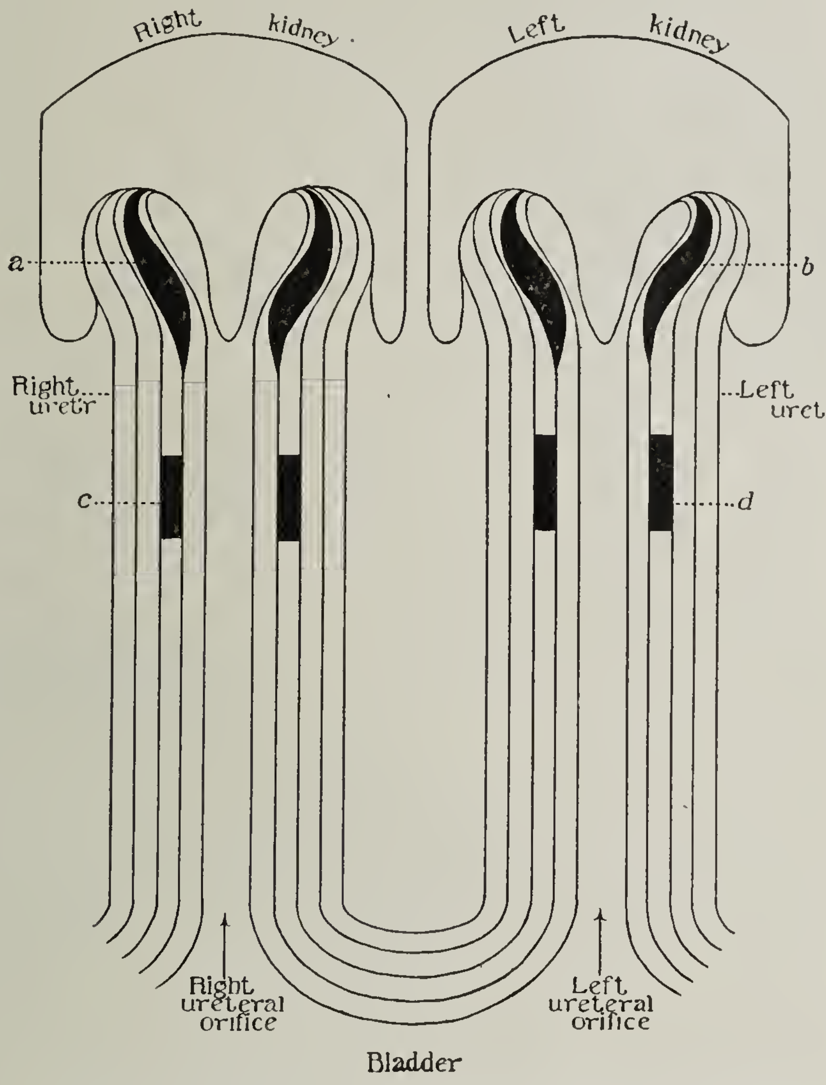

Fig. 2.—Diagram of Experiment 431. Shaded areas indicate regions of infiltration in submucous and mucous coat of right (*a*) and left (*b*) renal pelves; the infiltration in the submucous coat of the ureters is shown at *c* and *d*.

Seven uninoculated dogs were examined as controls, the examination in each case being based on serial sections of the entire urinary tract from the bladder to the kidney. All were negative with one exception, in which the ureter and renal pelvis showed slight foci of perivascular infiltration, similar to those found in animals killed at longer periods after inoculation. This finding in one control dog does not invalidate our experiments, but rather strengthens them and indicates that dogs are susceptible under natural conditions to ascending infections of the urinary tract by way of the interstitial lymphatics of the ureter.

The microscopic findings in our second series agree in every respect with those of the first series of experiments. The most marked reaction occurs after *B. coli* and the least after *Staphylococcus aureus*, while after *B. proteus* there is a reaction intermediate between the other two. Common to all of the experiments was the intact condition of the lining epithelium of the urinary tract. The inflammatory changes followed the course of the lymphatics from the bladder to the ureter and from this in turn to the renal pelvis and kidney in such a large number of experiments that we believe there can no longer be any doubt about the paths in ascending infections of the urinary tract.

A glance at Figure 3 will impress one with the importance of the clinical application of our experimental work. Organisms can be carried to the kidney from the bladder, prostate or seminal vesicles in the male, even though no obstruction exists in the lower urinary tract and the ureterovesical sphincter is intact. In the female a similar transport of organisms from the bladder to the kidney can occur. Bauereisen[9] has recently directed attention to the anastomosis of the lymphatics of the internal genitalia with those of the bladder and ureter. He believes that some of the cases of cystitis following gynecologic operations are due to this communication. In some of the experiments of our first series the tendency of the inflammatory changes to follow the course of the periureteral lymphatics was very striking. It is quite possible that the pyelitis of pregnancy and the puerperium may be due to the migration of organisms from the genitalia directly to the periureteral lymphatics without the presence of an accompanying cystitis. Our work would also offer the most plausible explanation for the pyelitis of infancy and childhood, which occurs predominantly in girls. Infection of the bladder in such cases from the vulvovaginitis, so commonly present, with ascending infection by way of the interstitial lymphatics of the ureter, can readily occur.

CONCLUSIONS

1. While infection of the bladder or lower ureter may reach the renal pelvis or the kidney either by way of the lumen of the urinary tract or by way of the mural lymphatics, experimental and clinical evidence indicates that complete or almost complete obstruction to the urinary outflow is necessary for ascent of infection by way of the lumen of the urinary tract.

2. We have shown experimentally that in the absence of complete obstruction the infection may and does pass upward from the bladder by means of the lymphatics of the ureteral wall.

3. Depending on the virulence of the organism and on the susceptibility of the host, the involvement may

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[9] Bauereisen: Ztschr. f. gynäk. Urol., 1914, **4**, 1.

remain limited to (1) the bladder and ureter, (2) it may pass upward to the pelvis, or (3) it may invade the renal tissues. When the kidney itself becomes involved, the inflammatory agent is carried from the renal pelvis to the parenchyma by the lymphatics of the intertubular and perivascular tissues.

4. In the human being the lymphatic network constitutes the most important path of ascending infection when pyelitis or pyelonephritis follows cystitis not associated with complete obstruction to the urinary outflow.

5. In the absence of cystitis the renal pelvis or the kidney itself may become involved by the transport of infection from the pelvic organs or from the lower intestinal tract through the anastomosing lymphatic channels, which anatomic study has shown to be present.

ABSTRACT OF DISCUSSION

Dr. G. Kolischer, Chicago: Up to recent years it was believed and stated in a kind of axiomatic way that there were only two sources of renal infection, the hematogenous infection and the direct. Now it is demonstrated that micro-organisms may travel up into the kidney from the bladder, from the genitals, especially in the female, without being carried through the lumen of the ureter; they are carried through the lymphatics, without any obstruction, where the flushing from the kidney to the bladder is still intact. This will do away with the indifference shown in certain quarters toward infection of the genito-urinary tract, especially in women. It will be necessary to attend to all these processes in the lower genito-urinary tract in women very thoroughly, so as to prevent pyelitis, especially in women, and in pregnant women. We will be able to save many cases which would become infected and lost otherwise.

Dr. E. O. Smith, Cincinnati: Dr. Kretschmer has shown in his cystographic work that even normal bladders have regurgitation of fluid into the pelvis of the kidney; so we may still have infection going up the ureter without obstruction, and there may be pyelitis without obstruction anywhere along the line of the ureter. It has been demonstrated that the normal kidney will take care of a considerable amount of infectious material, and in order to have an infection of the kidney, even though it reaches the kidney through any one of the three routes, there must be something that is damaging that kidney. A normal kidney will take care of perhaps all that will go through this lymphatic tract. I would like to ask Dr. Eisendrath to explain just why these pelves become infected without an infection of the kidney by the infection carried through the lymphatic stream?

Dr. Edwin Beer, New York: I do not quite see how one can conclude that the infection started in the lymphatic channel and not within the ureter. I am firmly convinced that lymphatic infection along the ureter is very important. Yesterday Dr. Crabtree told me that in a series of about fifty cases of pyelonephritis they had a positive blood culture of colon bacilli in 30 per cent. I would like to ask Dr. Eisendrath whether he controlled his animals, took blood cultures, so as to disprove a hemic infection plus the lymphatic infection? My evidence of the importance of the lymphatic infection is in tuberculosis of the kidney. In the earliest types of tuberculosis of the kidney one may find, and I have seen it, the tuberculous ulcer starting in the notch which Dr. Eisendrath called attention to, the angle where the papilla is inserted into the kidney. I do not think many of us doubt, from the experimental work that has been done, that tuberculosis of the kidney is a hemic infection. The interesting point brought out by cases I have observed, in which the ureter is removed secondarily, is the fact that the microscopic examination of the ureter will show in the great majority of cases that the mucous membrane is intact, but that there is a lymphatic tuberculosis, a periureteritis. The question arises, Is there not an analogy between the tuberculous cases and the colon infections which would allow us to harmonize the results of the clinical observations of Cabot and Crabtree, and the experimental work of Eisendrath?

Dr. Irvin S. Koll, Chicago: A few years ago I made bold to coin the expression "lymphomania," because I was afraid that our interpretation of the experimental work on kidney infection was becoming too reactionary. Some of my earlier kidney experimental work shows definitely that we are overestimating the importance of the lymphatic tract. There can be no doubt that the lymphatics carry a large percentage of the infections of the kidney from the lower urinary tract, but I can present a number of sections from the kidney that show definitely that we get a distinct glomerulitis without any evidence of round cell infiltration around the lymphatics.

Dr. Daniel N. Eisendrath, Chicago: We made blood cultures on every known medium on every animal that was killed (they were killed with strychnin), in a thorough bacteriologic manner, and in not a single case did we find a positive culture from the blood. Furthermore, we made cultures from the urine in every case, and did not find a positive result in that. At necropsy, in addition to cultures from the blood, we made cultures from both kidneys and from the bladder, and in a number of these we recovered the same organism which we injected. Dr. Smith brought up a point which I am going to bring out in the paper; the longer an experiment lasted, the less did we see. In other words, it seemed that what we found was frequently not possible of clinical demonstration over eleven days after the animal became infected. We see first little traces of infection in the bladder, and perhaps up the ureter a few little cells, nothing else. My belief has always been that we seldom, if ever, get a pure pyelitis; that there is almost invariably an infection of the parenchyma of the kidney. I think Dr. Chute was one of the first to call attention to that. In regard to the ques-

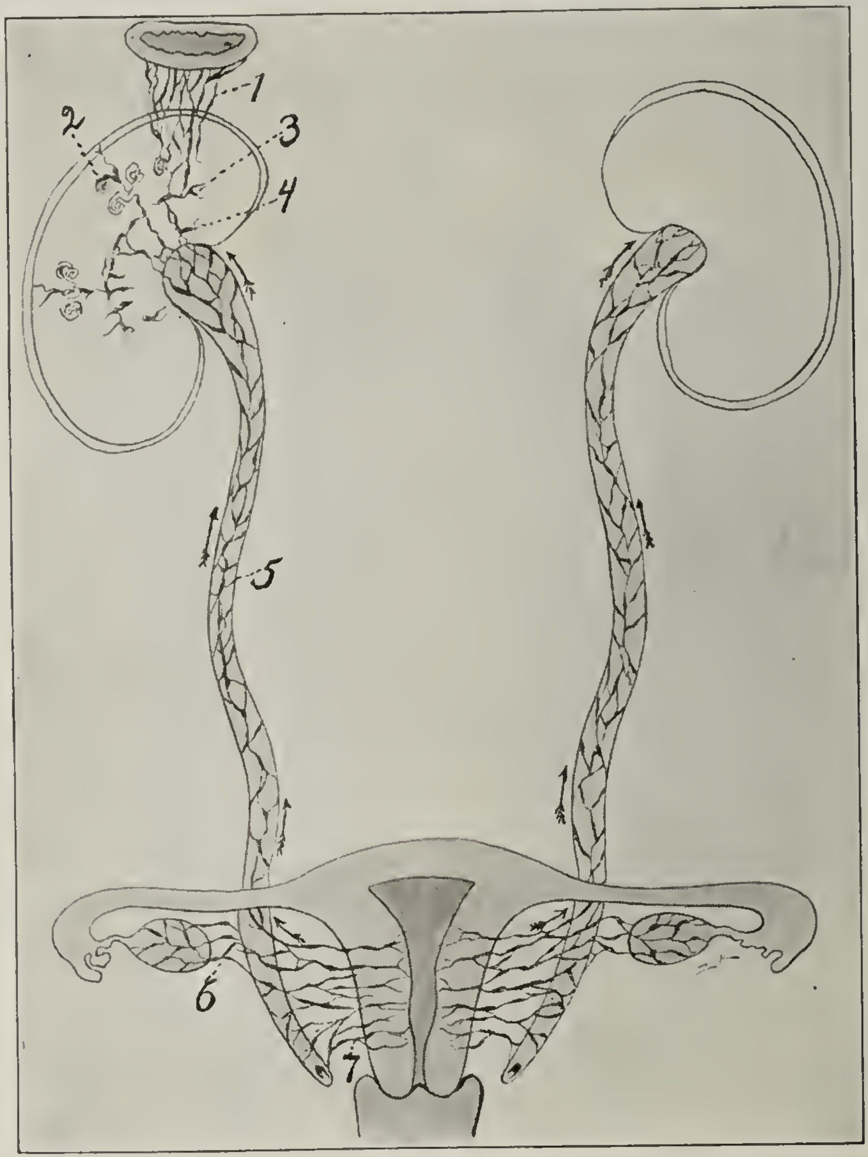

Fig. 3.—Relation of lymphatics of the ureter to those of the internal genitalia of the female and to the colon; 1, lymphatics from colon to cortex of kidney; 2, 3 and 4, periglomerular boundary zone and intertubular lymphatics of kidney (Kumita); 6, communication of periureteral lymphatics (5) with those of uterus, tubes and ovaries.

tion which Dr. Beer raised as to the transmission within the kidney itself, I am becoming more and more convinced that after the infection once starts in a single place, it travels from that into the kidney itself. That is something we are working on now, the intrarenal lymphatics. That is the only way in which we can explain some of these cases in which there are five or six foci not connected with each other. I believe the same thing is true of tumors. If a hypernephroma starts in one portion of the kidney we can explain its spread to distant parts in that way. Dr. Koll stated that he found a glomerulitis and no evidence of inflammation. I cannot reconcile the two statements.

TWO CASES OF TRICHOPHYTOSIS BARBAE CURED BY THE USE OF STRICKLER'S RINGWORM VACCINE*

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Owing to the results obtained by the use of Strickler's ringworm vaccine[1] in two cases so treated, it is felt that their publication may be of stimulating interest. In undertaking the treatment of these cases, both of *Trichophyton megalosporon-ectothrix,* little hope was entertained that the results would be so striking, as the directions for use in the package kindly sent us by Dr. Strickler stated that practically all the cases in which it had been used were of the microsporon type.

The patients under discussion were both Italians, swarthy, with coarse skins and black, heavy beards.

Case 1.—F. F., aged 22, freight handler, with negative physical examination, first became aware of the trouble four weeks previous to his entrance into the hospital. A small pustule appeared on the lower lip. This was soon followed by others, and the disease rapidly spread over the entire bearded region of the face (Fig. 1). Various remedies were tried, with no result.

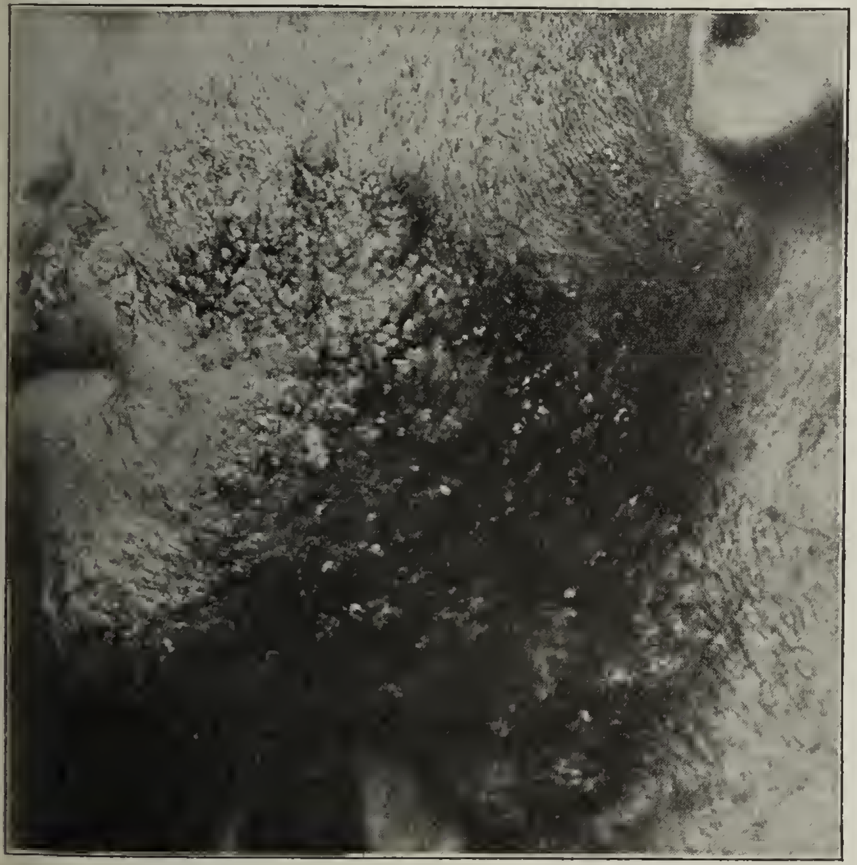

Fig. 1.—Before use of vaccine.

With the exception of the small area around the mouth and that just in front of the ears, the entire bearded region of the face and neck was involved, and there was a similar area on the left forearm. The beard was long and had not been shaved for two weeks. The face was swollen. There was some redness, with local edema, and the lesions were all infiltrated, particularly in the submental region. A large number of yellow pustules involving the hair follicles covered the entire face. In some places they were clumped into little tumors or nodules. The hairs were so easily extracted that they came out with the plain petrolatum dressing.

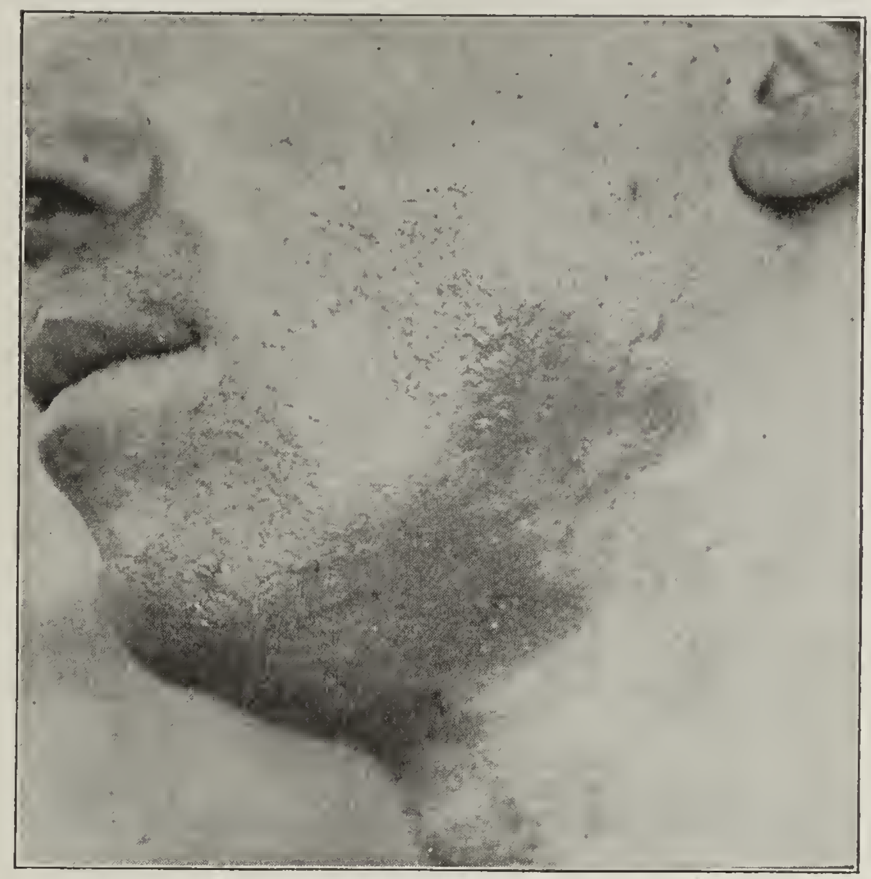

Fig. 2.—After use of vaccine.

Case 2.—S. C., aged 27, laborer in a spaghetti factory, could impart little of his history, as he only spoke an Italian patois. Physical examination was negative. It was learned later that two other males in the family had similar trouble.

On entrance to the hospital, the right side of the face was greatly swollen, with a suggestion of abscess formation at a point just inferior to the angle of the jaw. Considerable inflammation and a slight amount of induration were present. Minute pustules were noted around the base of the lesion and scattered over it, pierced by a hair. An area about the size of a half-dollar had become almost denuded of hairs in the tip of the tumor, and the pus came from some of the follicles in this area. Around the border of the clear area were small verrucose growths, giving it a cobblestone appearance.

Microscopic examination of both cases disclosed the *Trichophyton megalosporon-ectothrix* fungus.

Both patients remained in the hospital throughout the treatment. Nothing was applied locally except plain petrolatum. The period between injections was six days. All injections were made subcutaneously between the scapulae.

Patient 1, March 18, was given an initial dose of a full ampule, 2 c.c., of the vaccine as prepared by Dr. Strickler.

March 21, the temperature of the patient was 100 F.; March 23, normal. On the evening of this day, however, the patient complained of a severe pain in the upper right abdominal quadrant. The temperature rose to 100.5 F. The surgeon was called in consultation, and a diagnosis of acute cholecystitis was made. Hot packs and the usual remedies were applied, and the patient immediately recovered.

He was given a second ampule, March 28, when the face began to improve. The inflamed appearance had markedly decreased and the edema had subsided.

May 13, the patient was dismissed cured, there being no evidence whatever of the disease (Fig. 2). Six injections, in all, were administered.

Patient 2 was given an initial dose of 2 c.c. of Strickler's vaccine, March 18.

There was a slight local reaction. March 21, the temperature rose to 101 F. and gradually subsided by March 24.

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* From the Barnard Free Skin and Cancer Hospital.

[1] Strickler, Albert: The Vaccine Treatment of Ringworm of the Scalp, The Journal A. M. A., July 17, 1915, p. 224.

There seemed to be some increase in the swelling, the tissues felt more infiltrated, and the patient complained of considerable pain.

The second injection was given March 24, after which no reaction followed. Improvement had, however, already appeared in the lesion. The swelling was gradually subsiding, March 30, when the last injection was given.

The patient was discharged, May 13, entirely free of the disease.

The results in these two cases have been striking and, of course, far superior and far more quickly obtained than by any other method we have heretofore used.

DECOMPRESSION CRANIOTOMY IN BULLET WOUND OF BRAIN AND HEMIPLEGIA

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History.—D. M., man, aged 74, born in Ireland, of small stature, weight 120 pounds, was brought to the Polyclinic Hospital in the evening of Jan. 16, 1916. He was perfectly conscious, and gave his history frankly without showing any great excitement or any evidences whatever of shock. He said that two men entered his small basement store and at the point of a revolver demanded money. He gave them what he had, and in leaving, one of them fired at him, striking him in the face just below the left eye. Almost immediately he lost the sight of the left eye.

Examination.—Just below the left eye was a small ragged wound, the size of a bullet, from which blood was freely oozing. There was also considerable hemorrhage from the left nostril. This was controlled by packing the nose with gauze, but even then it continued to ooze for two or three hours afterward. The temperature was 99, pulse 85, respiration 20. The left pupil was widely dilated, and did not react to either light or accommodation. The wound was thoroughly cleansed, and with a probe, the course of the wound was determined to be upward and inward to the orbital bone. No further attempt was made to locate the bullet. For drainage a small piece of folded rubber tissue was inserted into the wound and a sterile dressing applied. Three thousand units of tetanus antitoxin as a prophylactic dose were given intramuscularly, after which the patient was admitted to the ward on the service of Dr. William Sharpe.

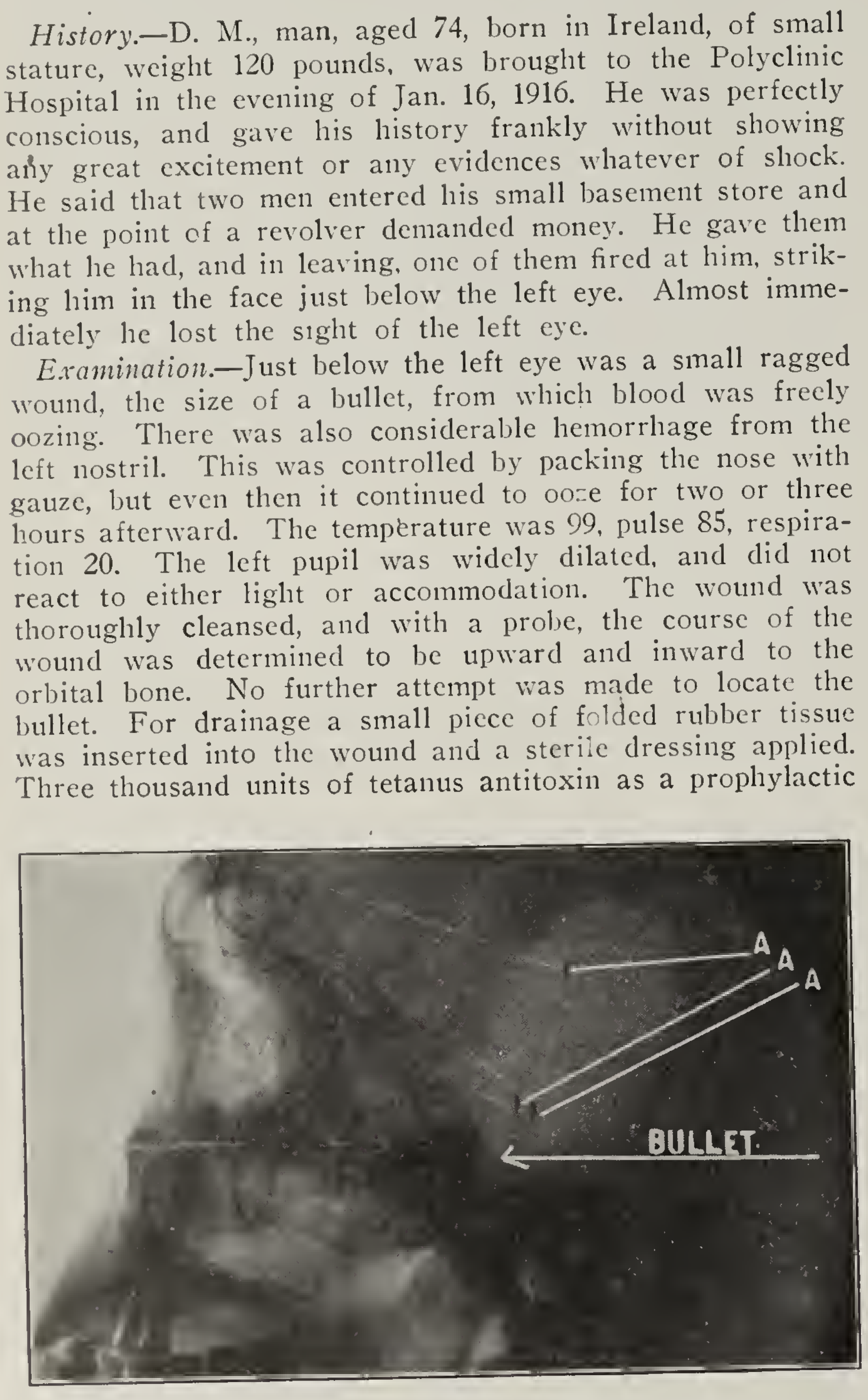

Fig. 1.—Location of bullet, and fragments along its course. *A, A, A,* silver wireclips placed over branches of middle meningeal artery in the dura at the time of operation.

The following morning, January 17, we found the patient with a complete right-sided hemiplegia. There were no signs of aphasia; there were a Babinski reflex of the right foot and beginning signs of medullary compression. The temperature was 100, pulse 60, respiration 16.

The cerebrospinal fluid by lumbar puncture was found by measurement under pressure and blood tinged.

Ophthalmoscopic examination revealed slight obscuration of the optic disk of the right eye, more marked on the nasal half.

These signs were present: 1. Hemiplegia of right side. 2. Beginning signs of medullary compression, as evidenced by lowered pulse rate, rise in temperature and diminished respiration. 3. The cerebrospinal fluid under pressure, shown by lumbar puncture and ophthalmoscopic findings.

The combined symptoms and signs of hemorrhage on the brain, together with other clinical signs, were also positive.

Operation.—I performed a left cranial decompression. A vertical incision was made in the skin from a point just above the zygoma, on the left side about one-half inch anterior to the external auditory meatus upward about 3 or 4 inches to the middle of the parietal crest. The temporal fascia and muscle were incised longitudinally and retracted, care being taken not to tear away the attachment of the muscle to the parietal bone and thereby weaken its closure. With a Doygen perforator and burr a small opening was made in the lower and thinnest portion of the squamous portion of the temporal bone. With rongeurs the bone was cut away as far back as the retracted muscle would permit, in an oval shape to the diameter of 2 or 3 inches. The dura appeared tense and distinctly bluish underneath. When it was incised, quite a quantity of free dark blood escaped, but no clots were found. After the flow of blood ceased there was no evidence to be seen of any injury to the cortex. No attempt was made to search for the bullet (the location of which is shown in Figure 1). The dura was opened in a stellate manner and left so. A folded rubber tissue drain was placed in the lower angle of the wound subdurally into the middle fossa, then muscle, fascia and skin were securely sutured. Sterile dressing and roller gauze bandage were applied to the head and the patient returned to bed in good condition. The temperature was 99.6, the pulse 78, and the respiration 22.

Fig. 2.—Patient, Oct. 10, 1916, aged 75.

Postoperative Course.—The wound healed by primary union. There was temporary incontinence of urine and feces. A discharge from the left eye ceased February 1. The left eye was totally blinded. There was no impairment of vision of the right eye. March 19, the patient was discharged with complete use of the right arm and hand; he still walked with the aid of a cane, but did not drag the foot. He has now passed his seventy-fifth birthday (Fig. 2), walks without a cane, is as mentally bright as before his accident, and continues to carry on his business—a small grocery store. He does not drag his feet, and has a firm grip to his right hand. The present weight is 118 pounds.

SUMMARY

The patient has always lived a temperate life, but his complete recovery, I believe, can be summarized as follows:

1. Prompt surgical relief of intracranial pressure before the onset of medullary edema with signs of compression or shock.
2. Release of subdural hemorrhage before any injury to the cortex from irritation by the formation of blood clots.
3. Selection of the subtemporal route with vertical incision for the decompression operation, thereby giving best opportunity for drainage and also perfect closure over the removed bone area.

175 West Seventy-Second Street.

COAGULATION TIME OF THE BLOOD IN PNEUMONIA *

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AND
ROGER I. LEE, M.D.
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A recent article in The Journal[1] on the coagulation of the blood in pneumonia seems to us rather misleading, not only in its deductions but also in the methods employed.

Anders and Meeker determined the coagulation time by obtaining blood from puncture of the ear or finger. Any such method of obtaining blood for determining the coagulation time is so clearly open to error that it should be discarded. While the method of obtaining blood by venous puncture and allowing it to clot either directly or by recalcifying the oxalated plasma at room temperature in glass tubes evidently intrudes artificial conditions, which doubtless interfere somewhat with accuracy, nevertheless it can be emphatically stated that the obtaining of blood by rapid venous puncture is a necessary step in making observations of any value on the coagulation time of the blood.[2]

The main reason for insistence on this point is that all tissues contain a substance (tissue juice, thrombokinase, thromboplastin, cytozyme, etc.), which is a potent factor in coagulation and is similar to the action of the blood platelets, which markedly hasten coagulation of the blood. For the purpose of determining coagulation time, blood should be obtained in as near the natural state as possible, so that the platelets, etc., are not unduly altered or the initial stages of coagulation unduly hastened. Tissue puncture of the ear or finger necessarily introduces some of the "tissue juice" into the blood and allows the blood to be unnecessarily altered and thus vitiates observations of coagulation time.

Lee and White,[3] among others, have already shown that a normal coagulation time of blood from the ear is of no significance unless delayed. We have repeatedly observed a normal coagulation time when blood was obtained from the ear, but a delayed time when blood was properly obtained from a vein. In cases of hemophilia, for example, blood from a vein showed a marked delay in its coagulation time, while blood from the ear frequently clotted in normal time. There is, of course, no doubt that the true coagulation time is usually markedly prolonged in true hemophilia. From such observations it seems clear to us that the coagulation time should always be determined with blood drawn by a clean puncture of a vein rather than with blood by puncture of the skin with the inevitable introduction of additional coagulating factors.

Anders and Meeker[1] found the coagulation time of the blood in pneumonia shorter than normal before the crisis and essentially normal after it. On the other hand, other workers, and particularly Dochez,[4] to whom they make no reference, showed quite the reverse condition. Dochez found during the disease usually a delay, never a shortening in the coagulation time, which became normal shortly after the crisis. Dochez suggested that, together with the recognized increased fibrinogen in the blood in pneumonia, there might be an increase in antithrombin to account for the delayed coagulation time. Dochez used a careful and excellent technic for determining the coagulation time of the blood, which was drawn from a vein. Our results from a study of twenty cases (six previously reported[3]) which were obtained by a similar though cruder method[3] in that ordinary small glass tubes were used and the observations were made at room temperature, are entirely in accord with those of Dochez. We never found the coagulation time less than normal. It was nearly always delayed, at times quite markedly so, more usually in very sick patients. The coagulation time became essentially normal shortly after the crisis. Our figures show variations from six and one half to thirty-eight minutes, usually from fourteen to eighteen minutes for the coagulation time in the cases of pneumonia before the crisis. A long series of normal controls vary between five and ten minutes.

Our observations have not as yet reached a point at which we feel that we can state positively the exact nature of the interference with the normal complicated mechanism of coagulation which prolongs the coagulation time in pneumonia. We have, however, made the following observations on the blood in pneumonia: The clots retracted in apparently normal fashion. Some clots retracted rather weakly, coincident with a diminished number of platelets. The reclotting phenomenon was observed in three cases in which a marked delay in the coagulation time was noted. This reclotting phenomenon in the blood of pneumonia is quite similar to some other observations (reported[5] and unreported) in other groups of cases which showed a delayed coagulation time. The red cells in the oxalated plasmas of our cases settled out with remarkable rapidity, and this also frequently occurred in the whole blood, as shown by the white character of the upper part of the clot even in those bloods which clotted in but slightly delayed time. This phenomenon is perhaps associated with an altered viscosity of the blood. In twelve of our cases the prothrombin time[6] (the time required for a given amount of oxalated plasma to clot in the presence of the optimum amount of calcium) was estimated and, like the coagulation time, was usually delayed, although our impression is that it was usually relatively less delayed than the coagulation time.

The optimum amount of calcium required to determine the prothrombin time was the same for the pneumonia plasmas as for the controls, thus illustrating that there was ample available calcium for the purposes of coagulation.[7] The antithrombin, determined by a modification of Howell's method,[8] was usually normal, in some cases high, and rarely slightly diminished. These variations are unexplained. They did not occur in any definite relation to the prothrombin time or the coagulation time. The fibrinogen was increased, as has often been observed. In three instances in which we found the antithrombin normal but the prothrombin time and coagulation time delayed, it was noted that the oxalated plasmas of the pneu-

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* From the Medical Service of the Massachusetts General Hospital.

[1] Anders, J. M., and Meeker, G. H.: Coagulation Time in Lobar Pneumonia, The Journal A. M. A., Nov. 25, 1916, p. 1591.

[2] Howell, W. H.: The Condition of the Blood in Hemophilia, Thrombosis and Purpura, Arch. Int. Med., January, 1914, p. 76. See also Footnotes 3 and 4 and other references given there.

[3] Lee and White: Am. Jour. Med. Sc., 1913, **114**, 495.

[4] Dochez, A. R.: Jour. Exper. Med., 1912, **16**, 692.

[5] Minot, G. R., and Lee, R. I.: The Blood Platelets in Hemophilia, Arch. Int. Med., October, 1916, p. 474.

[6] Minot, G. R.; Denny, G. P., and Davis, Daniel: Prothrombin and Antithrombin Factors in the Coagulation of Blood, Arch. Int. Med., January, 1916, p. 101. Minot, G. R.: Jour. Med. Research, 1916, **33**, 503.

[7] Minot, Denny and Davis (Footnote 6), Lee, R. I., and Vincent, Beth: The Relation of Calcium to the Delayed Coagulation of Blood in Obstructive Jaundice, Arch. Int. Med., July, 1915, p. 59.

[8] Minot, Denny and Davis (Footnote 6).

monia blood clotted slightly faster than the control plasmas when equal suitable amounts of either a fresh suspension of blood platelets or kephalin (active thromboplastic substance) solution were added with appropriate amounts of calcium. One possible explanation is that with the excess of fibrinogen there is presumably some other altered relationship in the character or amount of other coagulating factors, so that when any one substance which accelerates the coagulation is introduced into the plasma, the initial stage of coagulation is more readily started or more quickly completed.

Furthermore, with perhaps an excess or altered character of the factors entering into the late stages of coagulation in which fibrinogen participates, the complete coagulation time is shortened. Such might explain the results obtained by Anders and Meeker, since by their technic there must have been introduction of some "tissue juice" and some undue modification of the platelets. Under these circumstances, the first stages of coagulation were perhaps completed in normal fashion, and the later stages were permitted to proceed more rapidly than normal. This would suggest that in the blood in pneumonia there may be a lack of the substance akin to "tissue juice," or increased need of it. With the methods used by Dochez and ourselves, there is much less interference with the initial stages of coagulation, and consequently we have found the coagulation time quite constantly delayed in our cases of pneumonia.

A few words in regard to the rôle of calcium may not be out of place, since Anders and Meeker discuss the rôle of calcium in coagulation.

The importance of calcium in coagulation has long been recognized. Because calcium can be readily administered, it has been used widely as a therapeutic agent in all sorts of pathologic hemorrhage. There is much confusion concerning the efficiency of calcium therapy. Most of the reports are without value, as they are either frankly clinical or depend on tests of coagulation time of blood taken through the tissues. In observations of pathologic coagulation of blood, at the bedside, in experimental animals and under all sorts of abnormal conditions in the test tube in the laboratory, we[7] have so far been able to ascribe only one condition of abnormal coagulation time of clinical significance to a lack of calcium. The condition is common in obstructive jaundice of several weeks' duration. In this condition the amount of calcium is actually increased, but there seems to be insufficient calcium available for purposes of coagulation. This lack of available calcium can be corrected by the administration of large doses of calcium salts clinically, in the test tube and in experimental animals.

CONCLUSIONS

The determination of coagulation time of blood is at best uncertain under the necessarily artificial conditions of any test. Determination, however, of the coagulation time of blood obtained by neat technic from venous puncture seems to be reasonably accurate. Observations of coagulation time of blood taken through the tissues is obviously unreliable. The coagulation time of blood in pneumonia is generally prolonged. The deduction on the basis of tests made by ear puncture that the coagulation time of blood in pneumonia is shortened is unwarranted.

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DOES THE SPINAL FLUID FROM HUMAN POLIOMYELITIS CONTAIN THE SPECIFIC INFECTIVE AGENT?*

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Repeated attempts to demonstrate the virus of poliomyelitis in the spinal fluid of human poliomyelitis both by cultures and by animal inoculation have all proved negative. Flexner and Lewis[1] have demonstrated its presence in the spinal fluid from an infected monkey drawn three days after the time of the intracerebral injection of virus. This fact suggests that it may be present in the fluid at some stage of the incubation period. If it is present, it is probable that it diminishes rapidly with onset of the symptoms, but may not wholly disappear. It is possible that the virus is present in the later stages in such minute quantities that it cannot be demonstrated by animal inoculation.

Nuzum and Herzog[2] have recently reported the finding of a gram-positive coccus in 90 per cent. of the spinal fluids from positive cases of acute poliomyelitis. This organism was isolated with apparent ease, even from spinal fluids withdrawn several weeks after the onset of paralysis. The organism was grown under aerobic conditions and subcultures grew readily on glucose agar slants.

During the epidemic in New York City, this laboratory cultured upward of 1,200 fluids from patients with acute poliomyelitis in all stages of the disease. The medium used was 1 per cent. glucose ascites agar under aerobic conditions. Except for a few evident contaminations, our cultures remained sterile.

The experiment here recorded was undertaken to determine whether or not the aggregate of a number of spinal fluids from positive cases of human poliomyelitis contains sufficient virus to infect a monkey.

The fluids from forty patients with poliomyelitis were centrifuged at high speed for three quarters of an hour. As our clinical work consists chiefly of the diagnosis of suspicious cases, these fluids were derived from cases early in the disease, most of them in the preparalytic stage. The sediments, amounting to 1 c.c. of very turbid fluid, were injected intracerebrally into Rhesus 23. Culture tubes of glucose ascitic agar inoculated with some of the sediment remained sterile.

No effects were noted, and after an observation period of two months, this animal was inoculated with 0.5 c.c. 10 per cent. suspension of VII gen. monkey virus. After an incubation period of eleven days, paralysis appeared in the left leg. The paralysis then involved the right leg but failed to progress further. The animal is alive and improving.

CONCLUSION

It would appear from the foregoing experiment that there is present little, if any, virus demonstrable either by culture or animal inoculation in the fluids of human poliomyelitis in the early stages.

216 East Fifteenth Street.

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* From the Bureau of Laboratories, Department of Health, City of New York.

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LONG NITROUS OXID-OXYGEN ANESTHESIA: REPORT OF CASE

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The opinion seems to prevail among those who have had no experience with "gas" anesthesia that it is useful only in minor surgery, for operations requiring only a brief anesthesia, and for operations of necessity on patients who cannot withstand the depression or acidosis produced by ether or chloroform. Those who have done considerable operating under nitrous oxid-oxygen anesthesia know this opinion to be a fallacy. Almost any operation can be done under it, and it should unquestionably be the anesthesia of choice where there is the least possibility of the patient's chances of recovery being lessened by operative shock or postoperative depression or acidosis. Cases in which it has been used in major surgery for operations of from one and a half to three hours are by no means rare. A few cases of four hours' duration have been reported. But as far as my search of the literature has disclosed, there is no case on record as long as the one herewith reported—four hours and forty minutes.

REPORT OF CASE

History.—Mrs. H., aged 72, well developed, admitted May 2, 1916, had acute intestinal obstruction. A diagnosis of carcinoma of the sigmoid was made. The cecum was enormously distended with fecal matter. Cecostomy and appendectomy were done under nitrous oxid-oxygen; the operation lasted ninety minutes, and anesthesia was uneventful. The patient was discharged, May 13, with an artificial anus. Since then she had had complete obstruction of the lower bowel. She was readmitted, October 9, for sigmoidectomy and closure of the fecal fistula. Operation was performed, October 10, under nitrous oxid-oxygen anesthesia, preceded by morphin sulphate, 1/6 grain hypodermically. An incision in the left lower quadrant was "blocked" by novocain, 1 : 400, and quinin and urea hydrochlorid, 1 : 500. Sigmoidectomy was performed with great difficulty, and then a lateral anastomosis of the colon. The incision was closed. The old cecostomy wound was then opened without "nerve block," and portions of the cecum and ileum were found to be bound in an indescribable mass and riddled with sloughed openings. It was necessary to perform three separate anastomoses, removing as many portions of the bowel.

Anesthesia.—Induction proved a trifle difficult, owing to spasm of the jaws and unfavorable condition of the teeth. This rendered breathing difficult and unsatisfactory until relieved by insertion of a Ferguson-Hewitt artificial airway, after which respiration was quiet and even. Operation was begun five minutes after the anesthetic had been started. Three and one half ounces of ether were used throughout the four hours and forty minutes, being administered with the gases at irregular intervals, chiefly during the early part of the first stage of the operation, to secure greater relaxation of muscles. The patient's color remained good throughout (after insertion of the airway), and the highest respiration rate was 32. The preanesthetic pulse was 84, and the rate did not go above 100 until the last half hour, being 116 immediately after the anesthetic. No stimulants were employed until within fifteen minutes of the end of the operation, when 20 drops of camphorated oil were given, followed in five minutes by 1/6 grain of morphin sulphate. There was only occasional retching and no vomiting, except once immediately after the anesthetic was removed. The patient was conscious and replied to questions five minutes after.

Postoperative Course.—The patient left the operating room at 3:10 p. m.; the pulse was 116, and respiration 26. The feet and legs were slightly cold and cyanotic, though the entire skin was dry. At 4 p. m., the patient complained of dyspnea. Atropin sulphate, 1/100 grain, was given hypodermically. The patient complained of being too warm.

At 4:25 p. m., the pulse was 112, and respiration 20. Oxygen inhalation was given for five minutes.

At 5 p. m., the pulse was 114, respiration 20, and temperature 97. The color and skin condition were good. From this time to 11:30 the patient continued in remarkably good condition. Just before midnight the pulse became rapid and thready, respiration progressively labored, and temperature rising. From then on there was only brief response to stimulation, and symptoms suggested acute cardiac dilatation. Death occurred at 5:30 a. m.

COMMENT

In just what degree, if any, the long anesthesia contributed to the fatal termination can only be conjectured. The case is cited to show that long sustained nitrous oxid-oxygen anesthesia is feasible, and that difficult operations can be performed under it which could not be completed under ether or chloroform.

DELIVERY UNDER GAS AND OXYGEN OF TWO PATIENTS WITH LOST CARDIAC COMPENSATION

W. T. Getman, M.D., Buffalo

Case 1.—Mrs. E. S., aged 32, sextipara, had had measles when a child, no illness since, and no history of rheumatism or infectious disease. For three years she had been troubled with dyspnea and swelling in her limbs so that it was difficult to do her housework. For the past seven months she had been unable to walk, or to sleep except when sitting up. Edema increased steadily.

Examination on admission to the Buffalo General Hospital revealed great edema of the feet, legs, thighs, vulva, abdomen and face. The heart was dilated and very irregular. The apex beat was just outside the anterior axillary line. A systolic murmur was heard over the entire cardiac area. The hemoglobin was 58 per cent. The urine showed a trace of albumin and a few granular casts. A diagnosis of mitral insufficiency with lost compensation, was made.

The patient had been pregnant eight and a half months. She had had no difficulty in her five previous labors, and her pelvic measurements were normal. For nine days after admission she was in the medical ward in the service of Dr. De Lancey Rochester, and by the Niemeyer pill and strychnin the edema was somewhat reduced and the dyspnea slightly improved, though she still had to sleep in the sitting posture.

When her labor commenced she was transferred to the obstetric service. She stood the first stage pains fairly well, but when expulsive efforts began at the end of dilatation, she became cyanosed and almost pulseless. I decided on version and extraction, and as ordinary anesthesia was out of the question, she was brought to the end of the delivery table in a sitting position, nitrous oxid and oxygen were administered, and she was delivered of a full term living child in five minutes by version. She stood the gas and oxygen nicely, and in the week following improved rapidly, being able to sleep lying down and having little dyspnea. On the ninth day after confinement, while perfectly quiet, she suddenly developed acute cardiac dilatation, and died six hours later.

McKenzie states that a pregnant woman with lost compensation is in danger of acute dilatation for at least two weeks after delivery.

Case 2.—Mrs. N. B., aged 43, primipara, had had a mitral regurgitation for five years. She had attacks of cholecystitis at intervals. Eleven years before she had had a ventral suspension done for retroversion. For three months she had noticed edema of the feet and legs, and had had to sleep sitting up on account of dyspnea.

The heart was dilated and irregular. The apex beat was 1 inch outside the nipple line. The child was lying in the transverse position, probably on account of traction on the fundus from ventral suspension. As the patient was a primipara, version and extraction could not be considered, and cesarian section under gas and oxygen seemed the safest.

Three days before her estimated date of confinement, I did a high Davis operation and delivered a living full term child. The operation was completed in thirty-five minutes under light gas and oxygen anesthesia, and the patient made an uneventful recovery, leaving the hospital in two weeks.

I am reporting the delivery of these two patients under gas and oxygen as I think neither patient would have survived an ordinary labor with any of the anesthetics ordinarily used.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 461)

Nephritis

DISTURBED FUNCTION IN NEPHRITIS

Aschoff[72] states that the majority of primary contracted kidney cases develop as a result of vascular disturbance, "a sclerosis of the finest branches of the renal artery beginning relatively early in life and leading secondarily to the formation of atrophic foci in the parenchyma and to hyaline degeneration of the glomeruli, with a resultant focal inactivity and atrophy of the tubules belonging to them." The whole process is slow and passive. This slowly developing sclerosis of the fine arteries of the kidneys causing typical Bright's disease is not similar to the arteriosclerotic kidney of later life, when aortic disease precedes it, as in the latter case some parts of the kidneys may not be involved. It is self-evident that the more filter tissue incapacitated by arteriosclerosis the more efficient must be the circulation in the healthy parts of the filter. Hence the high blood pressure, cardiac hypertrophy and polyuria is nature's compensatory mechanism. Furthermore, the healthy glomeruli of the kidneys may hypertrophy so as to make the excretion from the kidneys sufficient without the assistance of the impaired sections.

In secondary contracted kidneys the previous history is that of an inflammation. In these cases the whole kidney filter is involved and the kidneys cannot react to any emergency demand on them; hence edema and uremia frequently occur. Usually a diminished amount of urine is passed, sometimes resulting in polyuria. In this condition the metabolism is the same as in primary contracted kidneys, namely, there is increased blood pressure, etc.

Tests of function will show the ability of the recovered or still intact portions of the kidney to excrete, but do not show the excretory ability of the scar tissue. It has also been demonstrated by Baetjer[73] that in certain conditions of nephritis there may be not only a normal but also an increased eliminative power at some particular period. Hence one test, and even a repeated test with one substance, is not sufficient to demonstrate the health of the kidneys.

In the secondary contracted kidney the tubules connected with each diseased glomerulus gradually lose their power to function, to a greater extent than in primary contracted kidneys. The larger the number of glomeruli impaired or entirely incapacitated, the less the amount of urine excreted. The polyuria of hypertension and the consequent increased circulation in the unimpaired glomeruli should not be confounded with the polyuria caused by irritative toxins which injure the filter apparatus. Rapid impairment of normal function occurs in acute nephritis.

Oertel does not find that the amount of contraction of the kidneys bears any relation to the amount of cardiac hypertrophy.

Unless there is urea and nonprotein nitrogen retention in the blood, some other cause than kidney lesions is usually responsible for hypertension. Lead, once a common cause of contracted kidneys, is now of little importance ordinarily, as workers in lead exercise more care than formerly. Accidental chronic lead poisoning, however, from water pipes, hair tonics, etc., is still not of uncommon occurrence, although this cause of chronic nephritis, arteriosclerosis or other systemic disturbance is probably many times overlooked.

Ophüls[74] says that subacute and chronic glomerulonephritis, in the majority of cases, is due to chronic sepsis; hence the danger, long unrecognized, of chronic infection of the mouth, nose and adjacent sinuses. After the study of a thousand necropsies, Ophüls reaches the conclusion that the amyloid kidney, subacute and chronic (the so-called large white kidney) is also the usual result of chronic sepsis.

An interesting estimate of the general resistant power of the system in the nephritis of acute infections is suggested by Carles and Mauriac,[75] namely, that the more serious the infection, the more fragile the leukocytes; also that leukocytes break down more readily in nephritis than in health. This difference in their fragility in nephritis and in health, with the same technic, they find to be 50 per cent. Consequently, even a mild complication of nephritis in acute infection makes the prognosis grave.

Probably all poisons act primarily on the different parts of the convoluted tubules, the resulting variations in function being due to the parts of the kidneys most affected and to the effect on the blood pressure.

PRACTICAL INTERPRETATIONS OF EXPERIMENTAL NEPHRITIS

Uranium is perhaps the irritant most frequently used to produce experimental nephritis. Fitz[76] has shown that in acute uranium nephritis in rabbits the excretion of amylase is reduced and the nonprotein nitrogen of the blood is increased during the inflammation, but that the excretion returns to normal as the kidneys heal.

Mosenthal[77] has shown that all grades of nitrogen retention may be caused by varying the dose of uranium. With large doses the nitrogen excretion is diminished. With small doses the nitrogen not only may remain normal, but even may be increased. This he thinks may be due to the irritant causing a greater destruction of nitrogen in the body. He believes that a greater excretion of nitrogen by the intestine does not necessarily mean a vicarious elimination, representing, perhaps, only an increased nitrogen metabolism. The nitrogen output in the urine may be decreased even when the bulk of urine passed is sufficient. This seems to indicate that nitrogen is excreted by the convoluted tubules, but does not prove that the circulation of the glomeruli is not disturbed in uranium nephritis.

Underhill,[78] and later Underhill in collaboration with Wells and Goldschmidt,[79] showed that subcutaneous injections of sodium tartrate caused degeneration of the tubular epithelium. From later experiments he concludes that the convoluted tubules excrete urea, and that the glomeruli excrete chlorids and water.

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73. Baetjer, W. A.: Superpermeability in Nephritis, Arch. Int. Med., June, 1913, p. 593.
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75. Carles and Mauriac: Jour. de méd. de Bordeaux, 1913, **43**, No. 18.
76. Fitz, R.: The Relation Between Amylase Retention and Excretion and Nonprotein Retention in Experimental Uranium Nephritis, Arch. Int. Med., April, 1915, p. 524.
77. Mosenthal, H. O.: Nitrogen Metabolism and the Significance of the Nonprotein Nitrogen of the Blood in Experimental Uranium Nephritis, Arch. Int. Med., December, 1914, p. 844.
78. Underhill: Jour. Biol. Chem., **12**, 115.
79. Underhill, Wells and Goldschmidt: Jour. Exper. Med., **18**, No. 4.

Oertel,[80] in reviewing the subject of experimental nephritis, finds that when the sodium chlorid excretion is interfered with the urine concentration is low; when there is a diminished amount of urine excreted lactose excretion is slow, but sodium chlorid and potassium iodid excretion is normal, and in these instances the trouble is largely vascular; and when there is polyuria there is vascular hypersensitiveness.

More recently Myers, Fine and Lough[81] have studied the retention of creatinin, uric acid and urea in the blood in nephritis, and conclude that a uric acid retention without urea or creatinin retention shows early interstitial nephritis. Later in the disease urea is retained, and still later, creatinin. Kraus[82] had already shown that creatinin is more or less retained in acute uranium nephritis.

Frothingham, Fitz, Folin and Denis[83] found that in uranium experimental nephritis the excretion of phenolsulphonephthalein and the nonprotein and urea retention in the blood followed the course of the inflammation and returned to normal when the kidneys healed, and varied with the amount of kidney tissue involved. The recovery of the permeability of the kidneys to phenolsulphonephthalein may be rapid in this experimental nephritis, the test showing the condition of the kidneys at that particular period; but nonprotein nitrogen and urea may be much longer retained in the blood, and consequently the blood test for nonprotein nitrogen is a more positive indication of the condition of the kidneys.

Other poisons used in causing experimental nephritis or which accidentally cause acute irritant nephritis are chromium, mercuric chlorid, cantharides, croton oil, sodium arsenate and crotalus venom.

Without edema there is probably no retention of chlorids.

It seems to have been demonstrated[84] that, in experimental nephritis, diuretics, even the simplest, are irritant and harmful to the kidneys, and even if there is temporarily an increased output of urine and solids, there soon is a diminution of this output, and the lives of the animals are shortened. This coincides with the clinical findings that in most cases of nephritis, certainly in all cases of acute exacerbations in chronic nephritis and in acute nephritis, diuretics are harmful.

It seems to have been demonstrated that anything which increases the creatinin of the blood in nephritis, as muscular exertion or physical strenuosity, or infection or fever, adds to the danger from the kidney disease.

Brown[85] showed that hematin poisoning of the kidneys may occur during severe malarial intoxication, and that all grades of degeneration of the tubular epithelium may occur, with albumin, casts and blood in the urine.

Leopold and Bernhard[86] find that the nonprotein nitrogen of the blood, and the phenolsulphonephthalein test have the same values during health and in renal disease in children as in adults.

Zondek[87] believes, after carefully studying children with nephritis and with orthostatic albuminuria, that if the nephritis is of the vascular type and the glomeruli unable to excrete sodium chlorid and urea, the tubules assume this extra work. Hence, if the intake of salt is reduced, the tubules are better able to attend to excretion of nitrogenous substances; therefore, in glomerular inflammation, that is, vascular disturbances, it is not necessary to exclude nitrogen and salt from the diet at the same time. In other words, if proteins are temporarily excluded from the diet, a little salt may be allowed. Zondek found that by excluding salt the residual nitrogen of the blood was greatly reduced. These findings suggest variations in diet.

O'Hare[88] has studied the excretion of sodium chlorid, nitrogen and water in nephritis. In normal individuals he found that on an increased sodium chlorid and nitrogen diet the urinary excretion became normal in forty-eight hours, but with diseased kidneys it may not return to normal in this period. He finds that the excretion of sodium chlorid generally is impaired in nephritis before there is much disturbance of water or nitrogen excretion. The excretion of nitrogen is greatly impaired only in severe cases. Excretion of sodium chlorid, water and nitrogen may be impaired in mild cases, even with normal phenolsulphonephthalein excretion and normal nonprotein nitrogen of the blood.

ANESTHESIA AND KIDNEY FUNCTION

It should be remembered that renal function as evidenced by one test of the phenolsulphonephthalein output is not sufficient, as this varies daily in a given patient. If the phenolsulphonephthalein was markedly retained, one test would be sufficient as indicative of the condition of the kidneys, as far as anesthesia was concerned. In advanced age the excretion of phenolsulphonephthalein is slower than normal, and this should be considered in operations on the aged.

Renal function as estimated by the phenolsulphonephthalein test has been found by Miller and Cabot[89] to be generally decreased in operations under ether, and is especially decreased after laparotomies. The decrease is best noted in the first twelve hours after the operation, and the more ether used and the longer the operation, the greater the decrease in the excretion of phenolsulphonephthalein, even to total inhibition in some instances. Shock (low blood pressure) caused a marked decrease. The lower the vitality of the patient, as from some serious condition like cancer, the more sluggish the phenolsulphonephthalein output. They found no definite relation of the decrease of phenolsulphonephthalein excretion to postoperative albuminuria.

Slemons and Morriss[90] have shown that the rest nitrogen is increased in both maternal and fetal blood after chloroform anesthesia.

(To be continued)

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85. Brown, W. H.: The Renal Complications of Hematin Intoxication and Their Relation to Malaria, Arch. Int. Med., September, 1913, p. 315.

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88. O'Hare, J. P.: Study of Salt, Nitrogen and Water Excretion in Nephritis, Arch. Int. Med., June, 1916, p. 711.

89. Miller, R. H., and Cabot, Hugh: The Effect of Anesthesia and Operation on the Kidney Function, as Shown by the Phenolsulphonephthalein Test, Arch. Int. Med., March, 1915, p. 369.

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SATURDAY, FEBRUARY 17, 1917

THE VENTILATION OF THE LUNGS IN PNEUMOTHORAX

In his well known essay on the factors of safety in the living organism, Meltzer[1] called attention to Nature's extravagance in furnishing most of the important organs with a large surplus of tissue above the amount necessary to perform their ordinary physiologic tasks. This provision is a great blessing, serving to avert many a disaster which might follow impairment or a greater scantiness of functional matter. Meltzer reminded us that life may continue though a great part of the lungs is destroyed, if only the disease which caused the destruction comes to a standstill. In some cases of pneumonia one lung can be entirely consolidated without seriously impairing the process of ventilation. Furthermore, a patient whose thorax is freely opened to evacuate a one-sided pleural abscess has less dyspnea after the opening than before. In empyema, as in pneumonia, it is essentially the infection and intoxication with their reactions which cause the apparent disturbance in the respiratory mechanism, and not so much the mechanical interference with the ventilation of the corresponding lung. Since the classic experiments of Regnault and Reiset, many investigators have stated that compression of one lung, or a unilateral pneumothorax, exerts little influence on the respiratory exchange of gases.

An even more specific and, so to speak, quantitative study of this question has been reported in connection with an attempt to find out on man what effect a great reduction in the functioning lung surface would have on the various factors of respiration. The observations were made in persons with pneumothorax by Means and Balboni[2] at the Massachusetts General Hospital, Boston. They make it evident that at rest all the factors of respiration, gaseous exchange, carbon dioxid tension, and the mechanical factors, are normal in persons with a collapsed lung; that the well known reaction to carbon dioxid resulting in more rapid breathing is normal up to the point at which respiration is trebled or sometimes quadrupled; but that beyond this point a limit may be reached.

Here again is clear evidence that the ventilation of the lungs can be accomplished in an entirely normal manner in spite of a greatly reduced vital capacity. One lung is as efficient as two except when an increase at least threefold in contrast with normal ventilation is called for. Means and Balboni have shown as the only difference between normal persons and persons with a collapsed lung that the latter when called on to increase their ventilation reach their limit a little sooner than the former. Furthermore, the histories of patients bear out what might be expected in view of the foregoing, namely, that there will be no dyspnea in pneumothorax except after moderate exertion. Thus does the liberal surplus of functional tissues prevent disease from hampering our activities or spoiling the pleasure of living.

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[1] Meltzer, S. J.: The Factors of Safety in Animal Structure and Animal Economy, the Harvey Lectures for 1906-1907, Philadelphia, J. B. Lippincott Company, 1908, p. 170.

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THE VENEREAL DISEASE PROBLEM—III

The English Venereal Disease Act

The order of July 12, 1916, of the Local Government Board puts in operation in England and Wales a system of state provisions for the diagnosis and treatment of venereal disease. This order is practically an enactment into law of the recommendations of the Royal Commission on Venereal Diseases.[1] Its detailed provisions so closely follow the recommendations of the commission that a consideration of them would be but a repetition of the analysis of the recommendations. The essential purpose of the order is to furnish, as a sanitary measure, universal opportunity for prompt diagnosis and treatment of the venereal diseases. The cost of this is to be met to the extent of 75 per cent. from the imperial treasury, and only 25 per cent. from local government funds. Existing institutions are to be improved so that they can be utilized for this work, and new institutions are to be avoided as far as possible. The venereal clinics are to be a part of general clinics, and every effort is to be made to relieve the scheme of the stigma of the venereal diseases.

Facilities for diagnosis and treatment are to be furnished throughout England and Wales. The institutions are to be accessible, evening clinics are to be provided, and embarrassing or deterrent restrictions are to be avoided as far as possible. Treatment is to be given to all, regardless of their residence or means; but patients who are not objects of charity are to be referred, if possible, to private practitioners of their choice who, in conducting the treatment, are to receive the cooperation and advice of the medical officials in charge of the government clinics. Arrangements are to be made for supplying salvarsan or its substitute to practitioners for the treatment of their patients. The order shows evidence of appreciation of the importance of obtaining the cooperation of general practitioners, and of increasing the expert knowledge of venereal diseases among them. The clinics are to be made centers of instruction for practitioners and students.

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[1] The Venereal Disease Problem—I, editorial, The Journal A. M. A., Feb. 3, 1917, p. 375; II, Recommendations of the British Royal Commission on Venereal Diseases, Feb. 10, 1917, p. 463.

Like the report of the royal commission, the order of the Local Government Board avoids radical steps. It is a measure which carefully takes into account the social conditions under which it must be operated. The privacy of the individual is not to be invaded. His secrets are to be protected. He is simply to be given universal opportunity for treatment, and every effort made to induce him to avail himself of it. The weak point of the plan, which apparently is unavoidable at present, is the fact that there are no adequate provisions for compelling attendance for treatment until the patients have passed beyond the contagious stage. This is a requirement which sooner or later must be embodied in state measures for the control of venereal diseases. The only body in the community which may regard the measure as a radical step is the medical profession. The measure is socialistic in its tendencies; but so are most measures for the public good, and it is fully justified on the ground of its general importance as a sanitary measure to the whole people. However much it tries to protect the private practitioner, it will tend somewhat to the sacrifice of his income. That is true of every measure for the control of infectious diseases. As past experience shows, this will not deter the medical profession in the end from giving the scheme its whole-hearted support. It will doubtless have opposition until it justifies its existence by its results.

The order is in many respects epochal. It marks the first effort of an English-speaking country or, indeed, of any large state, to deal with the venereal problem on a large scale by providing facilities for diagnosis and treatment. There is a vast difference between the state of public mind of so short a time as ten years ago, when it was impossible to get the English government even to appoint a commission to consider the venereal disease problem, and the state of public opinion today, which causes the government to put into the form of law the recommendations of a commission on venereal diseases within four months after its report is issued.

This act presents, under political and social conditions much like those of the United States, an organized effort by a state to reduce the prevalence of the venereal diseases by providing universal opportunities for treatment. As such its results will be of great interest to us. It may be said at once that the effort is well worth the making. Whether or not it solves satisfactorily the problem of the venereal diseases, it gives every prospect of being of sufficient benefit to justify its cost. It is to be hoped that it will obtain the support both of the medical profession and of the public to the extent necessary for its success.

UREA AND UREMIA

The observation that normally the kidneys can excrete very large quantities of urea without evidence of what has been regarded as renal "fatigue" [1] might well stimulate an inquiry as to whether urea itself can manifest toxic properties in the body. Now that it is understood to be far more difficult to raise the concentration of urea locally in the circulating fluid and tissues than was assumed before the days of modern detailed blood and tissue analysis, the possible harmfulness of urea itself in the body has lost some of its former probability. Accordingly, instead of grossly ascribing the apparent intoxication in so-called uremia to urea, a more critical attitude has arisen. It must be admitted today[2] that, in certain patients, toxic symptoms occur when the urea and the total incoagulable nitrogen of the blood are either not increased or are increased to such a small extent that the symptoms observed can hardly be attributed either to the urea or to an increase in the total incoagulable nitrogen of the blood. This appears to be particularly true of those cases of uremia in which generalized epileptiform convulsions dominate the symptomatology. In such cases particularly, the search for a specific toxic substance seems indicated, and N. B. Foster[3] has reported the isolation of a toxic base from the blood of patients suffering from the convulsive form of uremia. As extremely large doses of urea seem, on the evidence of recorded investigations,[4] to be required to produce definite toxic effects in experimental animals, skepticism regarding the real toxicity of urea has further arisen.

For these reasons, as Hewlett and his collaborators remark,[2] the view has become generally accepted that the toxic effects of urea in any concentration encountered in patients are negligible, and that the symptoms of uremia are due to the action of the other and more poisonous substances. They have therefore undertaken the somewhat heroic and certainly disagreeable task of determining once again the possible toxic effects of urea by experiments in which men served as subjects. The investigations of the level of urea nitrogen in the blood in well defined cases of uremia of characteristic asthenic type show that urea concentration is usually not less than 100 mg. per hundred c.c. of blood, and that marked clinical symptoms almost invariably attend concentrations of 200 mg. As urea diffuses rapidly from the blood into the tissues, the quantities of urea taken by healthy persons by mouth must be very large in order to attain comparable concentrations in the blood, particularly in view of the rapid elimination from the body by way of the kidneys in such normal subjects.

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[1] The Problem of Kidney Fatigue, editorial, The Journal A. M. A., Feb. 10, 1917, p. 464.

[2] Hewlett, A. W.: Gilbert, Q. O., and Wickett, A. D.: The Toxic Effects of Urea on Normal Individuals, Arch. Int. Med., November, 1916, p. 637.

[3] Foster, N. B.: The Isolation of a Toxic Substance from the Blood of Uremic Patients, Tr. Assn. Am. Phys., 30: 305, 1915.

[4] Herter, C. A., and Wakeman, A. J.: On Alterations in the Composition of the Blood Resulting from Double Nephrectomy, Jour. Exper. Med., 4: 117, 1899. Marshall, E. K., Jr., and Davis, D. M.: Urea: Its Distribution in and Elimination from the Body, Jour. Biol. Chem., 18: 53, 1914.

It was found that by giving approximately 100 gm. of urea by mouth over a short interval of time it is possible to increase the concentration of urea in the blood of normal persons to levels of from 160 to 245 mg. per hundred c.c. The investigators point out that such concentrations are comparable with those encountered in the asthenic type of uremia, and that if the symptoms in the latter condition are in any way dependent on the concentration of urea in the blood and tissues, symptoms should occur under the conditions of their experiment. They found, indeed, that at such levels of blood urea definite symptoms occur. These consist of headache, dizziness, apathy, drowsiness, bodily weakness and fatigue. These cerebral and bodily symptoms were most pronounced at the time of maximum concentration of urea in the blood.

It seems probable, therefore, in the words of the authors mentioned, that when as a result of nephritis the blood urea exceeds a concentration of 150 mg. per hundred c.c., the symptoms of bodily and mental asthenia may be explained in part as being due to the high concentration of urea in the body fluids and tissues. This by no means excludes the possibility that other substances may play a rôle in producing the symptoms of this type of uremia; indeed, the fact that animals die only when extraordinary doses of urea are administered suggests that the fatal outcome of asthenic uremia in man may be due to other substances than urea.

BRAZILIAN TRYPANOSOMIASIS — CHAGAS' DISEASE

When we speak of human trypanosomiasis, we think only of the sleeping disease of Africa. In Brazil, however, there occurs an entirely different form of human trypanosome disease, which was described in 1909 by Carlos Chagas.[1] It was in the course of an antimalarial campaign that certain observations were made which led to the discovery of this "new disease." Chagas noted that patients with fever, lymphatic and thyroid enlargements, and other symptoms, but without malarial organisms in the blood, lived in houses which harbored an insect which sucks human blood. Studying this insect more closely, he found that it contained trypanosomes, and by letting it bite monkeys and other vertebrates he could produce a form of trypanosomiasis. In the next place, he found that the blood of infants in the region contained the same trypanosome, and by injecting guinea-pigs with such blood he could produce trypanosomiasis in them. As one of the chief characteristics of the trypanosome thus discovered is sporulation without fertilization — schizogenesis — it accordingly was named *Schizotrypanum cruzi.* The insect in question is known as *Conorhinus megistus.* The cone-nose beetle, another species of the same genus, is widely distributed in the United States, and in some localities it may infest beds and suck human blood.

The human disease caused by the *Schizotrypanum cruzi* is endemic in certain regions of Brazil, and occurs there in various forms. In infants it usually is an acute disease with fever and other general symptoms, enlargement of lymph nodes, of the spleen, the liver and the thyroid, with a kind of myxedematous condition of the skin, and trypanosomes in the blood. Death may occur with meningo-encephalitic phenomena. After from twenty to thirty days of acute symptoms, the fever may fall, the parasites in the blood diminish in number, and the attack pass into a chronic phase. In older persons the disease usually is chronic; progressive enlargement of the thyroid is a marked feature, and there may be cutaneous pigmentation, muscular weakness, irregular heart action, and even cerebral diplegia. While symptoms of hypothyroidism may be quite distinct, typical cretinism with idiocy does not appear to occur in such marked form as in European regions of endemic goiter.[2] The evolution of the trypanosome in the insect host has been traced quite fully,[3] and there seems to be no doubt that in nature the bite of the conorhinus and possibly other insects is the regular mode of transmission of the disease, which, however, may be congenital. In man and other vertebrates the trypanosome first lives in the blood, whence it passes into the tissues, practically no organ being spared, the flagella and undulating membrane being lost, and a rounded form not unlike that of the leishmania assumed. Intercellular and intracellular agglomerations of small rounded bodies are found which, when liberated, may assume the typical trypanosome form. The skeletal muscles seem to be the seat of choice, then the adipose and connective tissue, the heart muscle, lymph nodes, etc. The parasite may multiply in muscle tissue without causing a definite reaction. In man the serous membranes, especially the peritoneum and pericardium, have been found greatly increased in thickness, and the lymph nodes, liver, spleen and heart enlarged. There may be marked parasitic and cellular infiltration; and other changes in the heart muscle and in the brain, especially in the acute form, may be multiple parasitic foci with invasion of the neurocytes. The thyroid is enlarged regularly, with infiltrations and fibrous changes, and, as stated, the effects of disturbed thyroid function are seen in the clinical picture.

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[1] Nouvelle trypanosomiase humaine, Mem. do Inst. Oswaldo Cruz, 1909, **1**, 159; Nouvelle entité morbide de l'homme, ibid., 1911, **3**, 219.

[2] Novaes: La trypanosomiase et son rapport avec le corps thyroïde Rev. méd. de la Suisse romande, 1916, **36**, 592.

[3] Rocha-Lima: Ueber das Verhalten des Erregers der brasilianischen Trypanosomiasis des Menschen in den Geweben, Verhandl. d. deutsch. path. Gesellsch., 1912, p. 454; Zum Verhalten von Schizotrypanum Cruzi in Warmblutern und Arthropoden, Arch. f. Schiffs- und Tropen Hyg., 1914, **16**, Suppl. 5. Brumpt: Le trypanosoma cruzi évolué chez le Conorhinus megistus, le Cimex lectularius, le C. Boneti et l'Ornithodorus moubata, Bull. Soc. de path. exot., 1912, **5**, 360; Pénétration du Schizotrypanum cruzi à travers la muqueuse oculaire saine, ibid., 1912, **5**, 723. Naegler: Experimentelle Studien über die Passage von Schizotrypanum cruzi durch einheimische Tiere, Zentralbl. f. Bakteriol., 1913, orig., **71**, 202.

Whether morbid conditions associated with goiter, occurring in other parts of the world, are of the same or similar nature as this interesting Brazilian disease we have yet to learn.

PHILOLOGY AND PATHOLOGY

Sometimes the man of letters who, in criticizing the follies of others, ventures out of his field, presents a spectacle quite as amusing as any which he satirizes. In a recent book, "On the Art of Writing," by Sir Arthur Quiller-Couch, occurs some animated comment on that useful, if hybrid, word "antibody." Sir Arthur's sprightly English is worth quoting:

> But I have another word for our men of science. It was inevitable, perhaps, that Latin—so long the universal language—should cease in time to be that in which scientific works were written. It was impossible, perhaps, to substitute, by consent, some equally neat and austere modern language, such as French. But when it became an accepted custom for each nation to use its own language in scientific treatises, it certainly was not foreseen that men of science would soon be making discoveries at a rate which left their skill in words outstripped; that having to invent their terms as they went along, yet being careless and contemptuous of a science in which they have no training, they would bombast out our dictionaries with monstrously invented words that not only would have made Quintilian stare and gasp, but would affront the decently literate of any age.
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> After all, and though we must sigh and acquiesce in the building of Babel, we have some right to examine the bricks. I was waiting, the other day, in a doctor's anteroom, and picked up one of those books—it was a work on pathology—so thoughtfully left lying in such places; to persuade us, no doubt, to bear the ills we have rather than fly to others capable of being illustrated. I found myself engaged in following the antics of certain bacilli generically described as "antibodies." I do not accuse the author (who seemed to be a learned man) of having invented this abominable term; apparently it passed current among physiologists and he had accepted it for honest coin. I found it, later on, in Webster's invaluable dictionary; etymology, "body" (yours or mine), "anti," up against it; compound, "antibody," a noxious microbe.
>
> Now I do not doubt the creature thus named to be a poisonous little wretch. Those who know him may even agree that no word is too bad for him. But I am not thinking of *him*. I am thinking of *us;* and I say that for our own self-respect, whilst we retain any sense of intellectual pedigree, "antibody" is no word to throw even at a bacillus. The man who eats peas with his knife can at least claim a historical throwback to the days when forks had but two prongs and the spoons had been removed with the soup. But "antibody" has no such respectable derivation. It is, in fact, a barbarism, and a mongrel at that. The man who uses it debases the currency of learning; and I suggest to you that it is one of the many functions of a great University to maintain the standard of that currency, to guard the *jus et norma loquendi,* to protect us from such hasty fellows or, rather, to suppeditate them in their haste.

We have no wish to dwell on the novel conception of antibody here advanced for the delectation of pathologists, and shall only express the hope that some day Sir Arthur will push his researches a little farther than Webster's dictionary. It is impossible to refrain, however, from drawing attention to the implication presented by another mongrel word which pops out with delightful spontaneity in the easy flow of Sir Arthur's gentle diatribe. When he chanced on the debased and barbaric word "antibody" he was waiting, he says, "in a doctor's anteroom." Meticulous pedants may be pardoned for wondering why a "sense of intellectual pedigree" is not offended by the use of the word "anteroom," but is revolted by "antibody."

In point of fact, the novelty in a language has always to fight its way into good society. Once its position is made good it is accepted by writers of high and low degree, often, indeed, with touching unconcern, by the very persons who would preserve the "purity" of a language against newcomers of exactly similar lineage. Whatever be the case with respect to precise scientific nomenclature, which some believe stands on a different footing, there is no doubt that our ordinary language grows through additions based on usage and not according to strict rules of procedure. The hybrid may claim a right to live equally with the mutant.

Current Comment

THE FUNCTION OF THE PROSTATE

The student of medicine who searches for physiologic wisdom in regard to the functions of the prostate will be sorely disappointed. Structurally the prostate consists of glandular, connective and nonstriated muscular tissues. The latter are said to be arranged both longitudinally and circularly in relation to the glandular tissue; and the organ also is supplied with numerous nerve cells. Among the conjectures made in reference to this anatomically complex and therefore presumably physiologically active outfit has been the hypothesis that as a muscular structure the prostate possesses the properties of a sphincter for the bladder. This has been denied on the basis of available experimental evidence by G. Walker.[1] He believed that the prostatic musculature has as its prime function the discharge of the secretion prepared in the glandular portions. Marshall's[2] more recent review of the behavior of the prostate indicates that its musculature contracts during ejaculation, thus forcing its own secretions into the urethra and aiding in propelling the seminal fluid along this portion of the urogenital tract. The nature of the contractions, whether tonic or rhythmic, has not been indicated. J. A. Waddell[3] has contributed some facts regarding the innervation of the prostate and its consequent response to certain drugs. In the latter respect it resembles the vas deferens[4] and the seminal vesicle.[5] Like other portions of the internal generative tract which have been examined, the prostate possesses a motor parasympathetic as well as a motor sympathetic innervation. The problem of the real function of the prostatic secretion itself is left unsolved. It has been noted that the spermatozoa are practically motionless while in the seminiferous tubules of the testis, but become actively motile in the vas deferens, or when mixed with prostatic secretion. This observation, however, is far from solving the questions at issue, especially since removal of the prostate and seminal vesicles in animals seems to prevent the possibility of fertilizing, although the testes remain apparently intact.[6]

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[1] Beitrag zur Kenntnis der Anatomie und Physiologie der Prostata nebst Bemerkungen über die Vorgänge der Ejaculation, Arch. f. Anat., 1899, p. 313.

[2] The Physiology of Reproduction, 1910, p. 258.

[3] The Pharmacology of the Prostate, Jour. Pharmacol. and Exper. Therap., 1916, **9.** 179.

SOME ASPECTS OF PLACENTAL FUNCTION

A century and a half have elapsed since John Hunter or his brother William Hunter—or, if it serve truth better, both of these—discovered the real nature of the connection between the mother and the fetus, thereby laying the foundation for our present knowledge of the structure of the placenta. There is no direct channel of communication between fetal and maternal circulation. The placenta represents the fetal organ for respiration, nutrition and excretion. As to the nature of the exchanges which go on between the two related organisms and the mechanisms involved in the transference, practically nothing is known. The structure of the parts concerned favors an interchange of products between the mother and the fetus. An extensive vascular bed, chiefly secured by division of the large fetal vessels into a myriad of smaller ones, is further enlarged by the arrangement of the smallest of these; they form loops which hang toward the maternal blood. The vascular loops surrounded by connective tissue, which, in turn, is covered by epithelium, constitute the chorionic villi. These tiny, finger-like projections are immersed in lakes of maternal blood. They act both as receptors of nutriment for the fetus and as its excretory agents. Beyond these facts, we are told by Slemons and Morriss,[7] from whom the foregoing description is borrowed, knowledge of the physiology of the villi is fragmentary. How substances pass from one circulation to the other through the layers of the chorionic connective tissue and epithelium—which, together with the wall of the fetal vessels, constitute the placental partition—is a question which is answered thus far only hypothetically. It has been assumed that the placenta takes some undefined sort of active participation in the preparation of the fetal nutriment. In this "vitalistic" conception, placental enzymes have recently been made to play a part, as is so often the case when physiologic obscurity necessitates so vague a hypothesis. The supporters of the "mechanistic" theory of placental function, on the other hand, believe that the placenta behaves essentially as a permeable membrane. Slemons and Morriss have studied the comparative chemical composition of fetal and maternal blood. As nearly as possible the specimens were obtained simultaneously, just after birth occurred. In a considerable number of normal obstetric patients the average rest-nitrogen was found to be 25 mg. per hundred c.c. in both maternal and fetal bloods; the urea-nitrogen was likewise essentially the same in the two circulating fluids. This identity of content, particularly in the case of urea, indicates conclusively that this substance passes through the placenta by diffusion. Complications accompanied by an increase of urea in the maternal blood—toxemias of pregnancy, syphilis, decompensated heart lesions, and others—were also attended with a corresponding increase in the fetal blood-urea. This novel finding in pathologic cases clearly confirms the diffusibility of urea through the placenta. Whether or not there is an equally ready transfer of all the other soluble blood constituents, commonly included under the term rest-nitrogen of the blood, needs to be ascertained for each of the individual substances concerned. A ready equalization on each side of the placental partition seems more than probable, however, in the light of these new blood analyses.

THE FATE OF TRYPSIN IN THE STOMACH

The proteolytic enzyme of the pancreatic secretion has long been regarded as exceedingly sensitive to acids. In the presence of even low concentrations of acids, the tryptic power seems to be permanently diminished or completely lost. Many believe that gastric juice is peculiarly destructive to the proteolytic pancreatic ferment by virtue of the action of pepsin on the enzyme. There is a practical aspect to this. On the one hand it concerns the possible survival of tryptic power when intestinal contents are regurgitated into the stomach, as occasionally happens. On the other hand, the futility of administering trypsin preparations by way of the mouth must be gaged in part by the fate of the enzyme in its contact with the gastric contents. Judging by experiments which Long and Hull[1] have conducted in vitro, it appears that the common proteolytic enzyme of the pancreas, isolated as trypsin, is capable of withstanding a rather long digestion in presence of hydrochloric acid and pepsin, provided sufficient protein of some form is present to combine with all or part of the acid and so bring the hydrogen-ion concentration down to a certain level. They[2] have now corroborated these findings by a study of what happens in the living stomach of animals under conditions which might well obtain in the human stomach at times when trypsin is ingested. Long and Hull report new experiments in which the secretion of pepsin and acid was abundant, and from this point of view the conditions for the persistence of trypsin were not favorable. Yet, in the larger number of experiments, the latter ferment was not destroyed by the other combination when sufficient protein was present to bring the concentration of the free acid down to a certain value. Trypsin seemed to be destroyed or greatly weakened only when the acid was in excess with pepsin. From these observations it appears, further, that possibly some tryptic digestion may occur even within the stomach when the free acid is low from protein combinations; and the destruction or weakening of the trypsin is a function, probably, of the hydrogen-ion concentration. The trypsins employed in these experiments were relatively strong products. It is not to be concluded that these results even remotely suggest that the administration of a few grains of the various commercial products claimed to contain trypsin or pancreatin would have any therapeutic significance. In the dosages employed, such preparations are, as has been shown elsewhere, too weak to have any appreciable action.

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[4] Waddell, J. A.: The Pharmacology of the Vas Deferens, Jour. Pharmacol. and Exper. Therap., 1916, **8**, 551.

[5] Waddell, J. A.: The Pharmacology of the Seminal Vesicles, Jour. Pharmacol. and Exper. Therap., 1916, **9**, 113.

[6] Steinach, E.: Untersuchungen zur vergleichenden Physiologie der männlichen Geschlechtsorgane, insbesondere der accessorischen Geschlechtsdrüsen, Arch. f. d. ges. Physiol., 1894, **56**, 304.

[7] Slemons, J. M., and Morriss, W. H.: The Non-Protein Nitrogen and Urea in the Maternal and Fetal Blood at the Time of Birth, Bull. Johns Hopkins Hosp., 1916, **27**, 343.

[1] Long, J. H., and Hull, Mary: On the Assumed Destruction of Trypsin by Pepsin and Acid, I, Jour. Am. Chem. Soc., 1916, **38**, 1620.

[2] Long, J. H., and Hull, Mary: On the Assumed Destruction of Trypsin by Pepsin and Acid, II, Observations on Animals, Jour. Am. Chem. Soc., 1917, **39**, 162.

FOOD SUPPLY AND GROWTH OF POPULATION

The bodily welfare of man is dependent in large degree on a satisfactory solution of the problems of food, clothing and shelter. With the rapid growth of population the need of suitable nutrients increases at a corresponding rate. Economic foresight accordingly leads the critical observer of the increasing number of persons who demand sustenance to inquire whether the sources of supply continue to be adequate and whether they are likely to keep pace with the demands of the expanding nation in the years to come. Prophecies of impending crises have been made from time to time by serious minded scientists and economists. One writer, basing his view on the contention that wheat is the most sustaining food grain of the Caucasian race, has ventured the belief that if prophecies based on population statistics are trustworthy, the crisis will be on us before the end of the century. It must be remembered, however, that the acreage devoted to agriculture is still expanding and that conservation processes as well as other factors, such as improved transportation facilities and changing customs in diet, are helping to improve the outlook. New food possibilities are frequently being brought within the range of present needs. In 1900 the population of the United States was 76 millions; now it is estimated at over 100 millions — a growth of 33 per cent. The latest report of the secretary of agriculture gives some indication of the extent to which the supply of a variety of food products has kept pace with the growing demand occasioned by this increment of population. The total production of most items on the food supply lists, such as poultry, fish, cereals, potatoes, citrus fruits and orchard fruits, during the sixteen years in which 26 millions of persons were added to the numbers to be fed, shows no diminution per capita. The sugar production is the only one showing a significant increase. Meat and dairy products constitute 37 per cent. of the average diet, fish 2 per cent., cereals 31 per cent., Irish and sweet potatoes 13 per cent., and other vegetables 3 per cent. It is notable that, notwithstanding the rapid increase in population, the production per capita of the commodities indicated, with the exception of meats and dairy products, has remained approximately the same or has increased.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Tuberculosis Foes Meet.—A joint conference of the San Francisco and California Associations for the Study and Prevention of Tuberculosis was held at the St. Francis' Hotel, San Francisco, January 25. The following physicians were reelected members of the board of directors: Drs. Mariana Bertola, Walter B. Coffey, Attilio H. Giannini, Charles G. Levison, Harry M. Sherman and William C. Voorsanger, all of San Francisco.

Intern Examination.—The Civil Service Commission of the County of Los Angeles announces an open competitive examination for intern in the Los Angeles County Hospital, to be held, March 2, at various places throughout the country. Applicants must be at least 21 years of age, citizens of the United States and must make application on blank forms, which will be sent on request, to the Los Angeles County Civil Service Commission. There are eighteen positions to be filled in July, 1917, and ten in January, 1918. The service is for eighteen months, and the compensation includes full maintenance and uniform. All successful candidates must be graduates of medical institutions of recognized standing.

ILLINOIS

Tuberculosis Hospital for Springfield.—St. John's Hospital, Springfield, will build a tuberculosis sanatorium to cost $500,000. It will be 6 miles east of Springfield on a site of 153 acres. Work will be begun in March.

Smallpox in Mining Camps.—Over 100 cases of smallpox have been reported in mining camps at Tovy, Bulpitt, Kincaid and Jerseyville. The situation is in charge of Dr. Edwin B. Godfrey, state board of health epidemiologist.

Library for Society.—Sangamon County Medical Society has established a medical library in the lecture room of St. John's Hospital, Springfield. A number of medical books and magazines have been donated, and it is hoped to open the library in March.

Chicago

Personal.—Dr. Jacob J. Minke returned to Chicago, February 8, after eight months' service in a military hospital at Pardubitz, near Prague, Bohemia.

Dr. Billings Convalescent.—Dr. Frank Billings, who has been ill with pneumonia at his home, has safely passed the crisis and is steadily improving.

Women's Clinics.—The Women's Medical Club of Chicago held clinics for women physicians of Illinois, February 12 to 16. February 14 a banquet was held at the college club rooms. Clinics were held at various hospitals during the week.

Scarlet Fever at University.—February 8, two additional cases of scarlet fever were reported in the Delta Upsilon fraternity house at the University of Chicago. Thirteen members of the fraternity were placed under quarantine and part of Hitchcock Hall was also quarantined.

New Red Cross Unit.—A new Red Cross unit was formed at St. Luke's Hospital, February 10, with Mrs. Heaton Owsley as chairman. The organization will be divided into two classes under the direction of Dr. Lewis L. McArthur, and will meet at St. Luke's and Michael Reese hospitals.

INDIANA

Fire at Hospital.—Fire at West Baden, February 11, destroyed the hospital at the West Baden Hotel, with a loss of about $25,000. No lives were lost.

County Hospital Opened.—The Bartholomew County Hospital, Columbus, built at a cost of $100,000, was opened, February 6. This is the first hospital to be built in the state under the law giving counties the right to erect public county hospitals on petition of the requisite number of tax payers.

Personal.—Dr. J. Rilus Eastman, Indianapolis, who has been chief surgeon in charge of a hospital in Vienna for several months, will return about February 20. Dr. Henry O. Bruggemann, Fort Wayne, who had expected to sail for Rotterdam, February 5, to take Dr. Eastman's place, has given up the trip on account of the severance of diplomatic relations between the United States and Germany.——Dr. Robert C. Johnson, Frankfort, has been appointed first lieutenant, M. C., Ind. N. G., and assigned to Ambulance Company No. 1, succeeding Dr. Donald C. McClelland, Lafayette, resigned.——Drs. Julius E. Hiatt, Edson K. Westhafer and George H. Smith, Newcastle, suffered a loss of their offices, furniture and fixtures by fire, February 6.——At the annual meeting of the Indiana Society for the Prevention of Tuberculosis held in South Bend, Dr. Alfred Henry, Indianapolis, was elected president and Dr. Roscoe L. Sensenich, South Bend, vice president.

MARYLAND

Hospitals Offered to Government.—The Eudowood Sanitarium at Towson and the General and Marine Hospital at Crisfield have been offered to the government in case of war.

Personal.—Dr. Ernest H. Gaither and Dr. Dwight H. Mohr, Baltimore, have been appointed on the staff of the Franklin Square Hospital.——Dr. Howard A. Kelly, Baltimore, who has been ill with pneumonia in Florida, is recovering and will return to Baltimore within a few weeks.

Infant Mortality.—The Baby Welfare Association has issued a report showing the relative standing of the ten largest cities in the country with regard to the infant mortality rate. The ten cities and the order in which they stand are St. Louis, New York, Philadelphia, Boston, Cleveland, Pittsburgh, Chicago, Detroit, Buffalo and Baltimore, the rate ranging per thousand from eighty-nine in St. Louis to 118 in Baltimore. While Baltimore stands tenth in actual infant mortality rate, the city has made the largest reduction in the infantile death rate of any of the ten cities.

NEW JERSEY

Site for Hospital Offered.—Edward Seifert has offered 28 acres on the New Homestead Road to the Rockland County Tuberculosis Hospital.

Smallpox at Railway Camp.—Following a case of smallpox in a camp of the Erie Railway, at Jersey City, 300 workmen, mostly Mexicans and negroes, were vaccinated, January 28.

War on Mosquitoes.—The New Jersey Mosquito Extermination Association has asked the legislature for $100,000 for the current year to pay for work done by the municipal authorities and salt marsh counties to rid the state of mosquitoes. According to the New Jersey state entomologist, nearly 200,000 acres of marsh in Ocean, Burlington, Atlantic and Cape May counties remain to be drained.

Personal.—Dr. Jacob C. Price, director of the state department of health, gave a luncheon in Trenton, January 11, to the chiefs of various departments, in honor of Dr. Millard Knowlton, who has been in charge of the bureau of education and publicity since its beginning, and who has resigned to take up the study of public health at Harvard University. ——Capt. Frank Y. Neer, Paterson, assigned to Fifth Infantry, has been promoted to major, succeeding Major Joseph V. Bergin, resigned.——Lieutenant Craig, Ridgewood, has been promoted to captain.

NEW YORK

New Laboratory Site.—The state department of health has purchased a site for a new laboratory at Albany, at a cost of $40,000.

State Society to Come to Utica.—The Medical Society of the State of New York will meet at Utica, April 23 to 26. Headquarters will be at the state armory.

Ambulance Company Officers Entertained.—The officers of the Second Ambulance Company, which returned from the border a short time ago, were entertained at dinner by the officers of the Rochester Base Hospital, at the rooms of the Rochester Physicians' Association. Dr. John M. Swan presided.

Hospital Wanted for Westchester.—Three hundred thousand dollars has been appropriated for a hospital at East View. The present county hospital has accommodation for 110 patients, and during the last year there were at least 185 patients who needed hospital treatment. The new hospital will cost $1,200,000, and will accommodate 600 patients.

Reduction of Infant Mortality.—In spite of a recent epidemic of infantile paralysis, the infant mortality rate for the state, outside of New York City, for 1916 was ninety-four per thousand, a reduction of six points from 1915 and of twenty points from 1911. There was also an actual reduction of 481 deaths of infants during the year. The death rates from scarlet fever, typhoid fever, diphtheria and tuberculosis were the lowest in the history of the state.

Personal.—Dr. Raymond Sanderson has resigned as director of the Ulster County Laboratory, Kingston, to accept the position of pathologist at Vassar Hospital, Poughkeepsie.——Dr. Franklin N. Barrows has been appointed assistant health commissioner of Buffalo.——Dr. James Taylor Harrington has been appointed commissioner of health of Poughkeepsie, succeeding Dr. Lewis H. Marks, resigned.——Dr. John H. Pryor has been elected president of the Buffalo Association for the Relief and Control of Tuberculosis.

Compensation Cost.—The State Industrial Commission states that the aggregate amount of compensation paid in New York state under the workmen's compensation law during 1916 was $11,500,000, which includes $5,000,000 for deaths, nearly $4,500,000 for permanent injuries and nearly $2,000,000 for temporary injuries. This does not represent the total economic loss from accident and it does not include the cost of medical benefits, the administration of the compensation law, or the wages and medical loss of injured employees not covered by the compensation. This would probably make the direct and indirect loss of the year amount to nearly $30,000,000.

New York City

Harvey Society Lecture.—The next of the series of Harvey Society Lectures will be given at the New York Academy of Medicine, February 24. Prof. John R. Murlin of Cornell University will lecture on "The Metabolism of Mother and Offspring Before and After Parturition."

Three Ambulances for City.—The Militia of Mercy has presented to the city three ambulances, used since last September for transporting infantile paralysis victims from their homes to hospitals for after-treatment. These ambulances cost $4,500 each, and have transported 5,000 patients since last September.

New Tuberculosis Procedure.—At a conference with Chief Justice McAdoo on the control of unruly consumptives, Judge McAdoo suggests that unruly consumptives be brought before him for possible commitment to the custody of the department of corrections for disorderly conduct. Hereafter this method will be adopted.

Nasal Diphtheria Prevalent.—An unusual number of cases of nasal diphtheria have been brought to the attention of the department of health by the physicians of Willard Parker Hospital. The disease runs a mild course and resembles an ordinary rhinitis. Physicians are urged to be on the lookout and to send cultures of rhinitis in infants to the department laboratory for diagnosis.

Conference on Hospital Social Service.—The seventeenth meeting of the New York Conference on Hospital Social Service was held at the New York Academy of Medicine, February 7. The topic of the evening was "Children." Papers were presented by Dr. Henry D. Chapin on "Preventive Care of Children"; by Dr. Charles R. Conklin on "Preventive Work for Chorea," and by Dr. Frederick L. Brush on "Home Convalescence."

Increased Death Rate.—During the week ending February 3, there were 200 deaths more than in the corresponding week of 1916. Of the 1,754 persons who died in the city, 239 deaths were from lobar pneumonia, 121 from bronchial pneumonia, forty from influenza and twenty-one from bronchitis, a total of 421 deaths from respiratory diseases. The death rate for the week was 15.95 per thousand, which compares unfavorably with 14.41, the rate for the corresponding week of 1916.

Examination for Oculist.—The Municipal Civil Service Commission will receive at the Municipal Building up to February 23, applications for the position of oculist, grade two. Applicants must be between 21 and 45 years of age, and must present a license to practice medicine in the state of New York, and evidence of at least one year of internship or three years' service in the outpatient department of a hospital giving special training in diseases of the eye. Duties are supervision and responsibility for the diagnosis and treatment of diseases, physical abnormalities and other conditions of the eyes in the City Hospital Clinic or other institutions. Compensation varies from $1,030 to $1,380 a year. Oculists are usually required to work twenty-one hours a week in the department of health.

OKLAHOMA

Personal.—Dr. Benjamin S. Gardner, Marietta, fell from a porch at his home recently, dislocating his hip.——Dr. Joseph W. Bone, Sapulpa, who has been ill for several months, is reported convalescent.

OREGON

Date Fixed for State Meeting.—The next annual meeting of the Oregon State Medical Association will be held in Portland, June 28 to 30.

State Board Asks Larger Staff.—The state board of health in its report asks for a school nurse for the inspection of schoolchildren and the supervision of school sanitation; an epidemiologist as deputy health officer, and a field representative for public educational work.

Personal.—Dr. Harry F. McCay, Portland, has been appointed county physician of Multnomah County, to succeed Dr. E. P. Geary.——Dr. Spiro Sargentich, Portland, was the guest at a dinner given by fifty physicians of the city recently, at which he detailed some of his experiences as a surgeon in the Serbian army.

PENNSYLVANIA

To Disinfect School Pencils.—A bill introduced into the senate, February 7, provides for the daily disinfection of all pencils and penholders used by the school pupils.

Typhoid Fever.—Dr. Howard Hull of the state department of health, Harrisburg, is investigating the typhoid epidemic in Rush Township, Center County, where he found eighty-eight cases instead of the thirty-five originally reported by the health board. It is planned to open a temporary hospital at Osceola Mills, in the infected territory.

Economic Topics Discussed.—The Lehigh Valley Medical Association met in Palmerton, February 1. Dr. John W. Luther, chief surgeon of the New Jersey Zinc Company, Palmerton, spoke on "The Physical Examination of Employees"; Major Robert U. Patterson, M. C., U. S. Army, director of the Bureau Service of the American Red Cross, on "The Relation of the Red Cross to Civilian Physicians and the Military Service," and Dr. Francis D. Patterson, Harrisburg, chief of the Division of Industrial Hygiene and Engineering of the Department of Labor and Industry, on "The Relation of the Physician to Some of the Problems of Modern Industry."

Personal.—Dr. Henry A. Gorman, first assistant physician at Mont Alto Sanatorium for five years, was elected senior resident physician of the Harrisburg Hospital, January 29.——The residence and office of Dr. Willet E. Hughes, Ashley, were damaged by fire to the extent of $4,500, January 30.——Dr. William C. White, medical director of the Tuberculosis League Hospital, Pittsburgh, has accepted an invitation to go to France and assist in restoring the health of French soldiers who have returned from the front suffering from pulmonary tuberculosis.——Dr. Robert M. Patterson, Beaver Falls, is recovering from an operation for appendicitis.——Dr. Robert H. Jeffrey, Uledi, has been appointed director of the safety department of the W. J. Rainey Company, Uniontown, to succeed Dr. Samuel A. Baltz, resigned.

Philadelphia

Memorial to White.—In memory of the late Dr. William White, his widow has presented a motor ambulance to the American Ambulance corps on the western war front.

New Field Hospital Established.—Dr. Eugene Swayne, at a meeting held January 18, organized a new field hospital company to be known as Field Hospital Company No. 3, N. G. Pa.

New Officers.—The newly elected officers of the Philadelphia Pediatric Society are: president, Dr. John F. Sinclair; vice president, Dr. William Duffield Robinson; secretary, Dr. A. Graeme Mitchell, and treasurer, Dr. Charles V. Dorwarth.——Section of Ophthalmology of the College of Physicians: Dr. William T. Shoemaker, chairman, and Dr. J. Milton Griscom, clerk.

Alumni Day.—Alumni Day will be celebrated at the University of Pennsylvania, February 21, with a luncheon in Houston Hall; an alumni meeting at which information about the medical merger will be given, and a dinner by the provost to visiting alumni in the evening. February 22, the exercises of University Day will be held at the Academy of Music. The address will be delivered by President Jacob Gould Shurman of Cornell University.

Personal.—Dr. L. Webster Fox has been reelected president of the Pennsylvania Home Teaching Society and Free Circulating Library for the Blind.——Dr. Francis Abbott has returned to the war zone in France.——Dr. Hugh B. O'Donnell was injured, January 19, in a collision between his automobile and a trolley car.——Dr. Horace Phillips has been appointed visiting physician in the psychopathic ward of the Philadelphia Hospital, succeeding Dr. Albert C. Buckley, resigned.——Dr. David N. Husik has been appointed laryngologist and otologist to the Philadelphia General Hospital, succeeding Dr. Charles P. Grayson, resigned.

CANADA

Personals.—Col. Herbert A. Bruce, Toronto, was tendered a complimentary banquet by many medical friends in Toronto, February 14.——Capt. Robert J. Wilson, Toronto, is home from the Ontario Military Hospital, England, having come out as medical officer with a party of wounded soldiers.——Col. John Taylor Fotheringham, Toronto, has been made a C. M. G.

University News.—At the McGill annual class dinner it was announced that 1,800 graduates of McGill were serving abroad; that 132 had been killed and 163 wounded. One of the fellows of the medical faculty has received the V. C., four the D. S. O., one the C. M. G., one the Order of the Bath and seven have been mentioned in dispatches. The forty-three graduates of the class of 1917 have volunteered in a body.

Insanity in Quebec Increasing.—The annual report of the Verdun Hospital for the Insane shows that at the close of 1916 there were 766 patients as inmates, an increase of forty over 1915. The 1916 figures comprise 382 men and 384 women. Twenty returned soldiers were admitted during the year, of whom thirteen were being treated at the close of the year. The total number of patients undergoing treatment throughout the year was 962, as against 911 in 1915. Dr. Burgess, the superintendent, stated that the principal causes of insanity were mental anxiety due to family afflictions, business worries, disappointments, etc. Drink and drugs came a poor second, while senility, heredity and vice filled up the rest of the list. During 1916, 131 patients had been discharged, and there were sixty-one deaths, general paresis leading as the cause of death.

GENERAL

Sioux Valley Medical Association Meeting.—The Sioux Valley Medical Association will hold its next annual meeting at Sioux Falls, S. D., in June.

Red Cross Base Hospital at Milwaukee.—The Milwaukee Chapter of the American Red Cross has raised $30,000 for a base hospital, of which Dr. John L. Yates will be in charge.

Indian Service News.—Dr. Joseph A. Murphy, medical supervisor, has resigned.——Dr. Robert W. Bell of the San Juan Reservation, N. M., has been placed on the active list, M. R. C., U. S. Army.

New Journal of Endocrinology.—The first issue of a quarterly to be known as *Endocrinology: The Bulletin of the Association for the Study of Internal Secretions* has just appeared. It is edited and published by the secretary at Glendale, Calif.

Railway Surgeons to Meet.—The tenth annual meeting of the Association of Surgeons of the Illinois Central and the Yazoo and Mississippi Valley Railroad companies will be held in New Orleans, March 30 and 31, with headquarters at the Hotel Grunewald.

McIntire Prize.—The American Academy of Medicine announces two prizes from the McIntyre fund, one to be awarded in 1918, and the other in 1921. The subject for 1918 is "The Principles Governing Physicians' Compensation in the Various Forms of Social Insurance." The committee to award this prize consists of Drs. John L. Heffron, Syracuse, N. Y.; Reuben Peterson, Ann Arbor, Mich., and John Staige Davis, Richmond, Va. The subject for 1921 is "What Effect Has Child Labor on the Growth of the Body?" The committee consists of Drs. Thomas S. Arbuthnot, Pittsburgh; Winfield Scott Hall, Chicago, and James C. Wilson, Philadelphia. The prize for 1918 will amount to $100, and in 1921 to $250. Detailed terms governing the competition may be secured from the secretary of the academy.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital, Philadelphia, $5,000, to maintain a bed for the members of the Harriet Holland Memorial Church Sunday School, by the will of Ella B. Morris.

The John S. Billings Memorial Fund, for the purchasing of books for the New York Public Library, and the Anna Palmer Draper Fund, $450,000; Polyclinic Hospital, New York, $47,767; Children's Aid Society; New York Association for Improving the Condition of the Poor; New York Skin and Cancer Hospital, and Laboratory of Surgical Research of the New York University, each $23,883, by the will of Mrs. Mary Palmer Draper.

New York Association for Improving the Condition of the Poor, and New York Association for the Blind, each $10,000, by the will of Mrs. F. T. Lord.

Postgraduate Hospital, New York, $2,000, the proceeds of a sale and entertainment for the benefit of the Babies' Ward.

FOREIGN

Psychopathic Prize.—The late Dr. Valentin Magnan, formerly president of the Paris Academy of Medicine, has bequeathed to that organization the sum of $5,000, the income of which is to be awarded triennially to the author of the best work on a psychopathic subject.

Swiss Neurologic Journal.—The Swiss Neurologic Association at its recent annual meeting voted to found with the Alienist Association a journal to be the official organ of the two societies and publish their transactions and original articles.

From Cuba.—Dr. R. Menocal, professor of clinical surgery and skin diseases at the University of Havana, has been appointed secretary of the national public health service, better known as the "Sanidad y Beneficiencia." The profession in Cuba tendered him a banquet on the occasion. He takes the place left vacant by the death of Dr. Enrique Nuñez. Prof. F. Dominguez Roldan was appointed dean of the medical faculty in place of Menocal.

Deaths in the Profession Abroad.—E. Cervera, one of the leading surgeons in Spain, director of the Instituto Rubio since the death of Rubio, aged 61. He is said to have been the model of a good physician who was at the same time a most skilful operator. He founded a department at the institute for research on cancer, and published a number of works on abdominal and nerve surgery, and on the gastro-duodeno-hepatic associations of pancreatic disease.

Cooperation with International Health Board.—The president of the state of Rio de Janeiro, according to W. C. Downs, commercial attaché at Rio (*Commerce Reports,* February 8), has been given authority to facilitate the mission of the International Health Board by decreeing sanitary measures, taking the necessary steps to obtain the aid of municipal councils and meeting necessary expenses by opening the required credit. A decree covering these points will be submitted to the legislative assembly at its first regular meeting for definite approval.

Presentation of Bloch's Portrait.—An oil portrait of Prof. O. T. Bloch was hung recently with appropriate ceremonies in the hall of the Surgical Academy at Copenhagen, in preparation for his approaching seventieth birthday. The surplus left from the subscriptions for the portrait was presented to him, and he turned it over to the building fund of the medical society. He was for a long time on the editorial staff of the *Hospitalstidende* and has published numerous works in this and in Scandinavian, British and French surgical journals. He has also published several books, including one on the history of treatment of wounds from the earliest to modern times.

Association of Medical School Inspectors in the Netherlands.—Replies to a questionnaire sent out to the members of the Netherlands Vereeniging van Schoolartsen show that the advice of medical inspectors is seldom sought when a new schoolhouse is contemplated, and still more rarely is it heeded. In three new schoolbuildings the schoolrooms are on the north and the locker rooms take up the south exposure. In others the playgrounds are to the north of the building. At the recent annual meeting a number of speakers emphasized the importance of open-air schools in the fight against tuberculosis. They complete the cure for children who have taken a course of treatment in a sanatorium. The ferry boat open-air schools of New York were commended. The fact that some other member of the family has or has had tuberculosis should entitle a child to admission into the open-air school, but "open" and surgical tuberculous patients belong in institutions. The association, in connection with the association of language teachers, voted to found a special journal.

Inconsistencies of Recent French Legislation on Taxation of Pharmaceuticals.—G. Linossier comments in the *Paris médical* on a recent law imposing a tax on pharmaceutic specialties. A tax is imposed on pharmaceutic specialties of which the formula is not published and which an older law prohibited from being sold. Officials are in a quandary, as infractions of the old law have been overlooked to an extent impossible under the new law. Pharmacy inspectors find it difficult to forbid the sale of remedies on which the state has already collected a revenue tax. The restriction of the tax to pharmaceuticals with secret formulas hits French manufacturers in particular, as most French pharmaceuticals are merely combinations of known drugs put up in an attractive way under a fancy name. The owners do not like to publish the formulas, as any one could then make them up. German pharmaceuticals are mostly new synthetics, the composition of which is known and which are exempt under the new law. Linossier admits that the legislators had no intention of favoring German pharmaceuticals but blundered merely from ignorance, and asks whether or not it is the proper thing to entrust such matters to incompetents.

Foreign Exchanges in 1916.—The first week in February brought an unusually large batch of European medical journals. The mail included the December numbers, making the volumes for 1916 complete for those received during the year. With the exception of Germany, until last week weekly exchanges have arrived as regularly as in the years before the war. They have come unfailingly from England, France, Holland, Italy, Russia, the Scandinavian countries, Spain and Switzerland. The monthlies in some of the countries have taken two years to complete their 1915 volumes, but they are now complete and are starting on their 1917 volumes. The Swiss *Correspondenz-Blatt* announced that it had skipped the November and December issues on account of a labor strike. The issue of the Netherlands weekly for July 29 failed to arrive, and also No. 2 of the big quarterly issued by the Swedish Medical Association. With these exceptions the file is complete for twelve exchanges from France, with three others not quite complete yet; one complete each from the Netherlands, Finland, Russia and Spain; three from Italy; three from Japan; seven from the Scandinavian countries and two from Switzerland. A few other journals from various countries show several gaps. Besides the above, the four journals from the leading South American states have arrived with a regularity unknown until 1915. Only about half of the issues of the five big German weeklies were received during 1916. They have been published; abstracts from the missing numbers have appeared occasionally in the Holland and Scandinavian journals. The *Zentralblatts* stopped coming in November, 1915, and only one lone *Zentralblatt* arrived in 1916. The above includes merely the journals in foreign languages that it has been the custom to review regularly in the current literature department.

WAR NOTES

Praise for Wisconsin Surgeon.—A surgical unit sent to Austria last summer in charge of Dr. John R. McDill, Milwaukee, has received high praise for efficiency from Prof. von Eiselsberg, in charge of Austrian military hospitals.

American Surgeons Abroad.—Drs. Carl Edwin Allison, Somerville, Mass.; James V. Ricci, Providence, R. I.; Jerome F. Potts, Washington, D. C.; William M. Findley, New York; Frederick A. Simmons, Wakefield, Mass.; J. Franklin Harvey, Boston; Charles Curtis Allen, Topeka, Kan.; Leo Thomas Kewer, Waverley, Mass.; Charles F. Gormly, Providence, R. I.; William H. Mackay, Worcester, Mass.; Audley O. Sanders, Boston; Stanley Bridges, Worcester, Mass., and Guy Watt, Worcester, sailed from New York, February 10, for service in the British hospitals on the western front.

PARIS LETTER

Paris, Jan. 18, 1917.

The War

IMPROVEMENT IN THE ORGANIZATION OF THE MILITARY SURGICAL SERVICE

The undersecretary of state of the military health service has adopted various noteworthy measures of organizing the surgical service of the army. For instance, a consulting surgeon has been appointed for each army corps. Surgical squads have been formed to assist at the base hospitals whenever there has been a great deal of work. Each of these squads consists of a surgeon and his usual aids, assistant surgeon, anesthetist and trained assistants. This combination accomplishes results far superior to those obtained heretofore by isolated surgeons who had to work with untrained help picked at random.

INTER-ALLY CONFERENCE FOR THE STUDY OF PROFESSIONAL REEDUCATION

As stated in a previous letter, this conference will be held in Paris, March 6, at the initiative of the Belgian government, supported by the French government. The program of this conference will be as follows: First section—Physical reeducation: (*a*) physiotherapy and medical gymnastics; (*b*) prosthetic apparatus; (*c*) professional work. Second Section—Professional reeducation: (*a*) aspect of professional life; (*b*) When shall professional reeducation begin? Of what shall it consist? (1) Intellectual and (2) manual departments; (*c*) mechanical aids: working arms, orthopedic appliances and special equipment for the use of invalids; (*d*) organization of schools: large general schools, small special schools, methods of teaching, utilization, existing institutions and facilities. Third Section—The placing and adaptation of invalids: (*a*) in agriculture and the minor industries and business; (*b*) in industry: war industries and others; (*c*) relation of the able-bodied and invalids in shops as to salaries and division of work, etc. Fourth Section—Economical and social interests of invalids: (*a*) obligatory reeducation; (*b*) reeducation after the war of men who were unable to take advantage of this service during the hostilities; (*c*) absolute invalids; (*d*) permanent protection of the mutilated and crippled; mutual societies, cooperative societies, official organizations and private institutions. Fifth Section—The blind, the deaf, etc.: (*a*) their reeducation; (*b*) their placing; (*c*) their economic and social interests.

VALUE OF NERVE SUTURE IN WAR SURGERY

Drs. Chiray and E. Roger reported to the Société médicale des hôpitaux de Paris on cases of nerve suture. They insist that in order to draw valuable conclusions it is necessary to classify the observations carefully and to base them only on cases of nerve suture after complete section. Chiray and Roger found that nerve suture is followed by negative results in 29 per cent. of the cases; sensory response to electric stimulation, without motor response, occurs in 48 per cent., and motor and sensory restoration occurs in 23 per cent. Return of sensation always precedes return of motion. Motion returns in the radial nerve after five months, in the ulnar after eight months, in the median after seven months, in the sciatic and popliteal after from two to five months. The radial, sciatic and external popliteal nerves seem to give the best results. Experience has shown that early operation is the most effective; nevertheless, operations performed at the fourth or the sixth month are often successful. Chiray and Roger emphasize the importance of total resection of all fibrous tissue, coaptation of the severed ends without tension and without bruising. The particular method of operation does not seem to have any decisive bearing on the result. End-to-end suture and nerve grafting give equally good results. Chiray and Roger are convinced of the importance of postoperative treatment, particularly the use of a prosthesis and of the local ionization of potassium iodid. Dr. Albert Frouin, who has done considerable research work on the suture of nerves after complete section, reported to the Société de biologie the results he obtained. He makes an immediate suture, using silk floss instead of catgut for suture material, and the finest needles obtainable so that he can suture the perineurium without injuring the axis cylinders. Seventeen animals operated on in this manner walked very well on the soles of their feet after fifteen days.

CULTURE OF MEDICINAL PLANTS

M. de Poumeyrol recently presented to the general syndicate of the French drug trade a report on the harvest and culture of medicinal plants in France. The war has caused a considerable decrease in importation of these products, which come almost exclusively from other countries, and it is necessary to take steps to remedy this state of affairs. Russia has created a special section in her agricultural department, and has distributed to farmers seeds amounting in value to 9,000,000 rubles. She has also appropriated premiums, and arranged for loans to those who will cultivate these plants. M. de Poumeyrol's report requests that tests be made in agricultural and rural schools; that a manual be placed in the hands of those who would like to engage in this culture; that the necessary advice be given to those who want to cultivate medicinal plants now growing in a wild state, and that measures be taken by transportation companies to modify the tariff on these articles, which is already too high.

POISONING BY EXHAUST GASES IN AUTOMOBILE AMBULANCES

Dr. Tanon called the attention of the Réunion médico-chirurgicale de la V-e Armée to the danger of heating auto ambulances from the exhaust pipe when the motor is not working right and the joints are not sealed hermetically. Fumes are discharged into the interior of the car. These fumes are noxious. In some cases they have caused fatal results. Although the quantity of carbon monoxid contained in the gases is small, the lesions observed at the necropsy are those of carbon monoxid poisoning. The products of incomplete combustion do not cause death in the animal. They do not destroy the red blood cells, nor do they reduce the hemoglobin. Blood impregnated with carbon monoxid is capable of reabsorbing oxygen, but greater activity of the respiratory apparatus and the respiratory center is required. The first symptoms experienced appear to be the result of a toxic action on the respiratory center. Physicians at base hospitals should instruct the chauffeurs as to the dangers of exhaust heating systems. Every conveyance heated in this manner should be inspected regularly and often, and repaired as soon as even a trace of gas is detected.

LONDON LETTER

London, Jan. 22, 1917.

Sanaphos versus Sanatogen: a Comedy of Quackery

The vicissitudes of the German nostrum Sanatogen, since the beginning of the war, have been described in previous letters. They are not yet ended, and may be described as a comedy in three acts:

Act I. Taking advantage of the animosity against everything German, a British company starts a new nostrum under the name of Sanaphos, and, with the usual blatant boastfulness, proclaims it a soverign remedy and an improvement on Sanatogen.

Act II. The government sells the assets of Sanatogen to a British company (The Journal, Dec. 16, 1916, p. 1861) which announces that "the business will be conducted on those thorough scientific lines which have in the past given the Germans almost a monopoly in the production of skilful organic compounds." "Many physicians," it was also stated, "informed us that they were disappointed with the effects of the numerous imitations of Sanatogen."

Act. III. The wrath of the Sanaphos people has been aroused by this move, and they have sent to physicians the following circular letter as a rejoinder:

> In accordance with the strange policy adopted by our Government in connection with Enemy concerns, the German owner of Sanatogen has been allowed to capitalise his good will. [This is only another way of saying that the government has sold the good will, and the question what will be done with the proceeds remains for settlement after the war. The object, of course, is to make capital out of the anti-German feeling of the country.] Presumably the proceeds, and the accumulated profits collected for him by the State, will be held for his benefit at the end of the War. The new owners have in connection with their advertising scheme thought it right to attack their British competitors. We desire to make it clear that Sanaphos is not, and never was, an imitation of Sanatogen; but it is what it professed to be, viz.: an improvement on Sanatogen, as is proved by the following scientific statement. Considerable light has recently been thrown on the etiology of deficiency diseases and you will agree that nervous disorders come within this category. Healthy nutrition is the only restorative in such cases and that is why the nerve food Sanaphos is so remarkably successful. It does not supply mere constituents like casein and phosphorus compounds, but contains also the vitalising and activating entities vitamines and enzymes. In other words, it is not a moribund chemical combination of casein and phosphates, but provides in addition the quickening nourishing qualities characteristic of fresh uncooked milk due to undestroyed vital constituents. Sanaphos is therefore paramount in the treatment of deficiency diseases and its powerful restorative effects as a nerve food and general reparative is thus accounted for by well-established physiological facts. It is unique also in being soluble, presenting its constituents when mixed with water exactly in the same condition as milk, and is further reinforced with easily appropriated organic phosphorus compounds.

Investigation of Cerebrospinal Fever

In the first year of the war, outbreaks of cerebrospinal fever occurred among the newly enlisted young soldiers in several of the camps scattered throughout England. The director-general of the Army Medical Service at once arranged for an investigation of the disease by the Medical

Research Committee (a body appointed under the insurance act for the purpose of organizing medical researches). A central laboratory and thirty-seven district laboratories were equipped.

The report of the committee, which has just been published, is most important. It was found by agglutination tests that there were four different types of meningococci. From these a serum was prepared for the treatment of the disease. It was found that: 1. A case of cerebrospinal fever yields only a simple type of meningococcus from the cerebrospinal fluid, that is, a case is always strictly one type or another. 2. The type found in the nose is always the same as the type in the brain. 3. The germ is always present in the nose at the beginning of the attack; therefore every case of the disease is an instance of a "carrier" becoming a victim to his own carried infection. 4. Finally, "type breeds true" in every case; the types are not interchangeable. As soon as a case is diagnosed, serum is administered. Swabs are taken from the nose and from all contacts. The energy with which this is done is shown by the fact that in the case of an outbreak in a large garrison, a large section amounting to 10,000 men, the vast majority of whom had not been in contact with patients, were swabbed and 400 of these were isolated until they became free from organisms. The results of treatment indicate great improvement; thus out of thirty-three military cases treated in the London district alone last season by serum prepared under these methods, only three patients died, a result in marked contrast with the 40 to 60 per cent. mortality usually found before this serum was available.

The Suppression of Quacks

Lord Rhondda (president of the Local Government Board) received a deputation yesterday from a number of local authorities and medical bodies, who submitted their reasons for urging that unqualified practitioners should be prevented from undertaking the treatment of venereal diseases. The lord mayor of Birmingham expressed the opinion that public money should not be spent unless the best results could be obtained, and that the work should not be minimized by unqualified persons being allowed to treat venereal cases. These diseases, to be perfectly treated, should be taken in hand in the early stages, and in order to protect the work of the local authorities quack advertisements should be suppressed, and unqualified persons prevented from treating the patients. Dr. Frederick Taylor, president of the College of Physicians, said that theoretically all diseases should be treated by those who knew how to deal with them and for that reason the Royal College of Physicians asked that unqualified persons should be stopped.

Lord Rhondda, in reply to the members of the deputation, said that his department fully realized the burning nature of the great question. We had to consider not only the health of the present population, but also the health of future generations, and the need of bringing up a healthy race. Of all the matters which came before him he looked on this as one of the most urgent and important questions which his department had to deal with in the near future. Having taken that view and having put their hands to the plow, there would be no turning back. He thought he could give them that assurance. He wished to thank the Royal Commission on Venereal Diseases for the work it had done. He thought it was largely due to the commission that the country today was so impressed with the urgency of the matter. They would not expect him to commit the government definitely that day to any particular form of legislation, but he thought he could give them the assurance that legislation would be required, and that it would probably be brought in. He was perfectly satisfied that physicians were actuated by considerations of state policy and not self-interest.

Restriction of the Production of Alcoholic Drinks

The government has issued an order reducing the quantity of beer to be brewed from April 1 to 70 per cent. of the output of the preceding year. This means a reduction to one half of that of the year preceding the war. There is to be a corresponding restriction in the release of wine and spirits in bond.

The food controller, Lord Devonport, states that these steps are in no way to be deemed measures of temperance or social reform. The barley, sugar and other ingredients used in brewing are required for food. It is a question of bread versus beer. In the year preceding the war, ending March 31, 1914, the quantity of beer brewed amounted to 36,000,000 standard barrels. The production of beer will be restricted by the new order to 18,200,000 standard barrels. The food side of the reduction is represented by 286,000 tons of barley, 36,000 tons of sugar and 16,500 tons of grits, also a brewing ingredient. On the transport side there will be, first of all, a large saving in mercantile marine tonnage; and further, a considerable saving in land transport, such as railway and other forms of haulage. There will also be a consequent reduction in the amount of labor employed and fuel consumed in the process of manufacturing beer. This restriction of brewing will further have a direct favorable effect on the production of meat and milk, because it will set free for the use of agriculturists—the class which produces meat and milk—a greater percentage of offals (the residuum of the barley used in brewing) than at present produced from brewers' grains. At present the brewer returns 25 per cent. of the barley he uses in the shape of feeding offals. But the barley, when milled—as it is intended to be by this order—gives, in the first place, 50 per cent. of flour, which is, of course, direct human food, and, of the remainder, 40 per cent. is returned in the shape of what is termed millers' offals. The liquor interest has asserted both by advertisement and by misinformed press statements that any restriction of brewing would have the injurious direct effect on feeding stuffs used by agriculturists. As a matter of fact, under these restrictions, the contrary will be the case.

Association News

THE NEW YORK SESSION

Scientific Exhibit

The Scientific Exhibit as the New York Session will occupy the Belvedere on the ninth floor of the Hotel Astor. The Belvedere is the summer roof-garden restaurant of the hotel. It is a beautiful hall with a glass roof and sides, and occupies the entire width of the building. Probably never before has the Scientific Exhibit been so luxuriously housed. Applications for space and a plat of the Exhibit Hall will be sent on request to individuals or institutions desiring to make exhibits. Applications should be made as early as possible. Final assignment of space will be made Monday, April 2, 1917, and all applications for space must be received before that time. The exhibit will open at noon, Monday, June 4, and will remain open until noon, Friday, June 8. The Scientific Exhibit has come to be regarded as one of the features of the Annual Session, and the exhibit at New York promises to be one of the best ever held. Application blanks and further details can be secured from Dr. Frederick R. Green, Director Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

List of New York Hotels Recommended by the Local Committee on Arrangements

The local Committee on Arrangements, on recommendation of its subcommittee on hotels, urges those who plan to attend the coming annual session in New York, June 4 to 8, to address the management of the hotel of their selection to make reservation directly with the hotel. Those who plan to attend the New York session should make their selection and write directly to the hotel, stating the accommodations desired and indicating the rate they are prepared to pay. The management of the hotel should be advised of the day on which guests expect to arrive in New York, and the length of time they plan to remain. The local committee assures those who write for accommodations that they will receive a prompt response from these hotels. If, in any instance, a satisfactory arrangement with some one of the listed hotels is not made, write to the chairman of the subcommittee on hotels, Dr. Reginald H. Sayre, 17 West Forty-Third Street, New York.

The accompanying table lists a number of New York hotels indicating the accommodations which are offered and naming the rates per day. All rates are for accommodations on the European plan except when, as indicated, the American plan is also offered.

TABLE OF DAILY RATES AND ACCOMMODATIONS OFFERED BY NEW YORK HOTELS

Hotels, Number of Rooms and Street Addresses	Rooms without Bath		Rooms with Bath		Parlor, Bedroom and Bath or Connecting Rooms for One or More Persons*
	For One Person	For Two Persons	For One Person	For Two Persons	
Astor—1,000—Times Square General Headquarters; also headquarters of the Sections on Ophthalmology, on Laryngology, Otology and Rhinology and on Stomatology.	$.... $....	$.... $....	$ 4.00 to $ 6.00	$ 5.00 to $ 8.00	$ 9.00 to $12.00
Biltmore—1,000—Madison Ave. and 43d Headquarters of the Sections on Practice of Medicine, and Preventive Medicine and Public Health	....	....	4.00 to 5.00	6.00 to 7.00	....
Manhattan—700—Madison Ave. and 42d Headquarters of the Sections on Pharmacology and Therapeutics and on Dermatology.	2.50	....	3.50 to 4.00	5.00	....
McAlpin—1,600—Broadway and 34th Headquarters of the Sections on Diseases of Children, on Nervous and Mental Diseases, on Pathology and Physiology and on Gastro-Enterology and Proctology.	2.50 to 3.00	3.50 to 4.00	3.00 to 4.00	4.00 to 5.00	6.00 to 8.00
Waldorf-Astoria—1,200—Fifth Ave. and 34th Headquarters of the Sections on Surgery, General and Abdominal; on Obstetrics, Gynecology and Abdominal Surgery; on Genito-Urinary Diseases and on Orthopedic Surgery.	3.00	4.00	4.00	6.00	14.00 ....
Albemarle—525—Broadway and 54th	....	....	2.00	3.00	4.00 ....
Algonquin—250—59 W. 44th	....	....	2.50	3.50	5.00 to 6.00
Ansonia—1,600—Broadway and 73d	2.00	3.00	2.50	5.00	6.00 to 10.00
Arlington—175—18 W. 25th:					
European	1.50	2.50	2.00	3.00	3.00 to 4.00
American	3.00	5.50	3.50	6.00	4.50 to 7.00
Belleclaire—320—Broadway at 77th	....	....	2.50	3.50	5.00 to 6.00
Belmont—700—Park Ave. and 42d	2.50 to 3.50	3.50 to 4.50	3.50 to 8.00	4.50 to 9.00	....
Berkley—300—170 W. 74th	....	....	3.00	5.00	....
Blackstone—300—50 E. 58th	....	....	2.50	4.00	5.00 to 6.00
Breslin—500—Broadway and 29th	2.00 to 3.00	4.00 to 5.00	2.50 to 4.00	5.00 to 8.00	....
Bristol—180—122 W. 49th:					
European	1.50	2.00	2.00	3.00	4.00 to 6.00
American	3.00	5.00	3.50	6.00	7.00 to 12.00
Broztell—250—Fifth Ave. and 27th	....	....	1.50	2.50	....
Buckingham—260—5th Ave. and 50th	1.50	2.50	2.50	3.50	....
Calumet—140—340 W. 57th	....	....	1.50	2.50	....
Claridges—250—Broadway and 44th	2.50	3.50	3.00 to 6.00	4.00 to 8.00	8.00 ....
Clendening—230—202 W. 103d	....	....	1.50 to 3.00	2.00 to 3.00	....
Collingwood—250—45 W. 35th	1.50	2.00	2.50	3.00 to 3.50	5.00 to 7.50
Colonial—300—81st St. and Manhattan Sq	1.50	....	2.00	....	....
Continental—300—Broadway and 41st	....	....	2.00 to 3.00	3.00 to 4.00	....
Cumberland—250—Broadway at 54th	1.50 to 2.00	2.50 to 3.00	2.00 to 2.50	3.00 to 3.50	4.00 to 5.00
Earle—150—103 Waverly Pl.:					
European	....	....	2.00	3.00	4.00 to 5.00
American	....	....	3.50	5.00	6.00 to 7.00
Endicott—600—Columbus Ave. and 81st	1.00 to 1.50	2.00 to 2.50	1.50 to 3.50	250 to 5.00	....
Flanders—300—135 W. 47th	....	....	1.50 to 2.50	2.50 to 3.00	3.50 to 4.00
Fourteen East 60th—350	....	....	3.00 to 4.00	3.00 to 4.00	8.00 ....
Gotham—400—Fifth Ave. and 55th	....	....	4.00 to 5.00	5.00 to 8.00	....
Great Northern—400—118 W. 57th	....	....	2.50 to 3.00	3.50 to 4.00	5.00 to 7.00
Herald Square—310—114 W. 34th	1.50	....	2.00	....	5.00 ....
Hermitage—250—Seventh Ave. and 42d	1.50 to 2.00	2.50 to 3.00	2.00 to 3.00	3.50 to 5.00	....
Holland House—350—5th Ave. and 30th	....	....	3.00	4.00	5.00 to 8.00
Holley—200—Washington Sq. W.:					
European	....	....	1.50	2.50	....
American	....	....	3.00	5.00	....
Imperial—800—Broadway and 32d	2.00	3.00	2.50 to 3.00	4.00	5.00 ....
Judson—200—53 Washington Sq.:					
European	1.00	2.00	1.50	2.50	....
American	2.50	5.00	3.00	6.00	....
Knickerbocker—600—Broadway and 42d	2.50	4.00	3.50	5.00 to 8.00	....
Laurelton—150—145 W. 55th	....	....	2.00	3.00	....
Le Marquis—170—12 E. 31st:					
European	1.50	2.00	2.00	3.00	....
American	3.00	5.00 ..	3.50	6.50	....
Leonori—225—Madison Ave. and 63d	1.50	....	....	3.00	5.00 to 10.00
Lucerne—300—201 W. 79th	....	....	1.50	2.00	....
Madison Square—200—37 Madison Sq	....	....	2.00	3.00 to 3.50	4.00 to 8.00
Majestic—700—W. 72d at Central Park	2.00	3.00	2.50	4.00	6.00 to 8.00
Manhattan Square—300—50 W. 77th	....	....	2.50	3.00	3.50 to 10.00
Margaret—200—97 Columbia Heights, Brooklyn	1.00	....	2.00	....	3.00 ....
Marie Antoinette—500—Broadway and 66th	2.00	4.00	3.00	5.00	8.00 ....
Marlton—150—3 W. 8th	1.00 to 2.00	2.00 to 3.00	2.00 to 3.00	3.00 to 4.00	....
Martha Washington—425—29 E. 29th (women only)	1.50	2.50	3.00	4.00	....
Martinique—625—Broadway and 32d	2.00	3.00	2.50	3.50	6.00 ....
Murray Hill—600—Park Ave. and 40th	2.00	3.00	3.00	4.00	5.50 to 7.50
Nassau—500—Long Beach	....	....	4.00 to 5.00	5.00 to 8.00	....
Netherland—400—Fifth Ave. and 59th	1.50 to 2.00	....	2.00 to 4.00	3.50 to 5.00	....
New Grand—400—Broadway and 31st	1.00	....	1.50	....	....
Park Avenue—430—Park Ave. and 32d	1.50 to 2.00	2.50 to 4.00	3.00	4.00 to 5.00	....
Plaza—750—5th Ave. and 58th	....	....	3.50	4.00	7.00 to 10.00
Prince George—750—5th Ave. and 28th	....	....	2.50	4.00	....
Ritz-Carlton—425—Madison Ave. and 46th	....	....	5.00	7.00 to 10.00	....
Rutledge—250—Lexington and 30th (women only):					
European	1.00	2.00	1.50	2.50	....
American	2.50	5.00	3.00	6.00	....
St. Margaret—130—129 W. 47th	1.00	....	1.50	....	3.50 ....
St. Paul—225—50th St. and Columbus Ave	1.00	2.00	2.00	3.00	....
St. Regis—340—Fifth Ave. and 55th	4.00	5.00	5.00 to 6.00	6.00 to 10.00	....
San Remo—600—Central Pk. W. and 74th	....	....	2.00	2.50	4.00 to 5.00
Seville—475—Madison Ave. and 29th	1.50	2.50	2.50	3.00	....
Sherman Square—500—Broadway and 70th	....	....	2.00 to 2.50	....	....
Somerset—225—150 W. 47th	2.00	3.00	....	....	4.00 ....
Union Square—130—15th St. and 4th Ave	1.50 to 2.00	3.00 to 4.00	....	....	4.00 to 7.00
Vanderbilt—600—34th St. and Park Ave	....	....	3.00	5.00	....
Van Rensselaer—200—11th St. near 5th Ave:					
European	....	....	1.50	2.00	2.50 to 3.00
American	....	....	3.00	5.00	6.00 to 8.00
Wallick—400—Broadway and 43d	1.50 to 2.00	2.50 to 3.00	2.00 to 3.00	4.00 to 6.00	....
Webster—160—40 W. 45th	....	....	2.50	3.50	4.00 ....
Willard—130—252 W. 76th	....	....	1.50	2.00	....
Wolcott—300—31st St. and Fifth Ave	2.00	....	2.50	5.00	....
Woodstock—365—43d St. near Broadway	2.00	3.00	2.50	3.50	5.00 to 8.00
Woodward—400—Broadway and 55th	1.50	....	2.00	3.00	4.00 ....
York—250—Seventh Ave. and 36th	1.50 to 2.00	2.50 to 3.00	2.00 to 3.00	3.50 to 5.00	....

* For definite information concerning accommodations offered and rates, write to the hotels.

Marriages

Edward E. Montgomery, M.D., Philadelphia, to Miss Alice Jayne of Tarrytown, N. Y., at Yonkers, N. Y., February 6.

Albert Thomas Grills, M.D., to Miss Gertrude Chapman, both of Lorain, Ohio, in Cleveland, January 25.

Philip John Murphy, M.D., Washington, D. C., to Miss Helen Rasmussen of Chicago, February 3.

Monroe A. Maas, M.D., Selma, Ala., to Miss Beulah A. Houseman of Shrewsbury, Pa., January 24.

Francis Xavier Mahoney, M.D., to Miss Elizabeth C. Robinson, both of Boston, January 29

John Roscoe Steagall, M D. to Miss Gertrude Irene Still, both of Tacoma, Wash., January 18.

Waller Halladay Dade, M.D., Manila, P. I., to Miss Clara Everhart of Norfolk, Va., recently.

John P. Zohlen, M.D., Sheboygan, Wis., to Miss May Weiss of Milwaukee, January 17.

Henry J. Roth, M.D., to Miss Annabell McAuley, both of Chicago, January 27.

Deaths

William Mabon, M.D., New York; Bellevue Hospital Medical College, 1881; aged 56; a member of the Medical Society of the State of New York and American Medico-Psychological Association; assistant physician to the Morris Plains (N. J.) State Hospital from 1885 to 1887, and of the Utica (N. Y.) State Hospital from 1887 to 1895; superintendent of the Willard (N. Y.) State Hospital in 1895 and 1896, and of the St. Lawrence (N. Y.) State Hospital from 1896 to 1903; general superintendent of Bellevue and Allied hospitals, New York, in 1903 and 1904, and superintendent of the Manhattan State Hospital since 1906; lecturer on mental diseases in his alma mater in 1907; president of the New York State Commission in Lunacy from 1904 to 1906; one of the best known alienists in the country; died at his home, February 9, from pneumonia.

Eugene Adelbert Chapman, M.D., Stafford Springs, Conn.; University of Buffalo, N. Y., 1862; aged 77; formerly a member of the Connecticut State Medical Society; a veteran of the Civil War, and afterward captain and assistant surgeon, U. S. Army; quarantine officer at Brazos, Texas, in 1865; postmaster of Henderson, N. Y., in 1872 and 1873; coroner of Jefferson County in 1870 and 1886; for nine years a member of the board of county supervisors and once its chairman; county clerk of Jefferson County from 1900 to 1906; died at his home, January 29, from cerebral hemorrhage.

Amos Rufus Solenberger, M.D., Colorado Springs, Colo.; Northwestern University Medical School, Chicago, 1885; aged 63; a Fellow of the American Medical Association; for several years a practitioner of Chicago, and instructor of laryngology, rhinology and otology in his alma mater from 1896 to 1899; a member of the American Academy of Medicine and American Laryngological, Rhinological and Otological Society; a specialist on diseases of the ear, nose and throat; who went to Colorado in 1902 on account of ill health; died in Colorado Springs, February 4.

Asa Stone Couch, M.D., Scranton, Pa.; Homeopathic Medical College of Philadelphia, 1855; aged 83; one of the most prominent men of his school in the East; first president of the New York State Board of Medical Examiners and of the New York State Homeopathic Medical Society; one of the founders of the New York State Hospitals at Middletown and Tonawanda and president of the board of directors of each of these institutions; died at the home of his son in New York, February 2.

James Howell Billingslea, M.D., Westminster, Md.; University of Maryland, Baltimore, 1864; aged 73; a member of the Medical and Chirurgical Faculty of Maryland; for fifty-two years a practitioner of Westminster; president of the Union National Bank; Consolidated Public Utilities Company and *Democratic Advocate* Publishing Company; died at his home, January 29, from cerebral hemorrhage.

Ernest Edwin Martin, M.D., Mead, Colo.; College of Physicians and Surgeons, Chicago, 1900; aged 46; formerly a Fellow of the American Medical Association; for three years surgeon for the Union Pacific System at Carr, Colo.; formerly city physician of Del Norte, Colo., and physician of Rio Grande County; died in the Longmont Hospital, Longmont, Colo.; January 25, from pneumonia.

Henry J. Burwash, M.D., Chicago; McGill University, Montreal, 1879; L.R.C.P., London, 1879; aged 62; a Fellow of the American Medical Association; surgeon to the Norwegian Lutheran Deaconess Hospital; corporation surgeon for the General Accident Assurance Company; for a long time surgeon for the Northwest Mounted Police of Canada; died at his home, February 7, from pneumonia.

John Emil Wadsworth, M.D., Skowhegan, Me.; Medical School of Maine, Brunswick, 1896; aged 46; a Fellow of the American Medical Association; founder of the Somerset Hospital, Skowhegan; chairman of the State Board of Registration for Nurses; physician to the State Women's Reformatory, Skowhegan, and school physician; died at his home, January 29, from pneumonia.

Henry Aloysius Towle, M.D., Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1888; aged 56; a Fellow of the American Medical Association; laryngologist to the German Hospital and City Dispensary of Newark; a member of the visiting staff of St. James' and St. Michael's hospitals, Newark; died at his home, January 29, from heart disease.

James S. Porteus, M.D., Scranton and Taylor, Pa.; University of Pennsylvania, Philadelphia, 1873; aged 76; formerly a member of the Medical Society of the State of Pennsylvania; also a druggist; postmaster of Taylor from 1889 to 1894; for more than fifteen years visiting physician of the Pittston Poor District; died at his home in Taylor, January 26.

Fortis Monroe Noble, M.D., Bloomingdale, N. Y.; University of Vermont, Burlington, 1890; aged 52; formerly a member of the Medical Society of the State of New York; attending physician to St. Gabriel's Sanatorium, in the Adirondacks for twenty years; for two years coroner of Essex County; died at his home, January 19, from pneumonia.

John Leddell Seward, M.D., Orange, N. J.; University of Pennsylvania, Philadelphia, 1867; Hahnemann Medical College, Philadelphia, 1873; aged 72; governor and consulting physician to St. Mary's Hospital, Passaic, N. J.; surgeon of volunteers during the Civil War; died at the Interpines Sanatorium, Goshen, N. Y., January 29.

Clement P. Wilkinson, M.D., New Orleans; Tulane University, New Orleans, 1874; aged 65; from 1884 to 1888 president of the Louisiana State Board of Health; assistant quarantine physician and quarantine physician, and for a time acting assistant surgeon, U. S. Army; died at his home, January 31, from cerebral hemorrhage.

Charles Allison Oaks, M.D., Ingleside, Neb.; John A. Creighton Medical College, Omaha, Neb., 1902; aged 38; formerly a Fellow of the American Medical Association; a member of the Nebraska State Medical Association; second assistant physician at the Ingleside Hospital for the Insane; died, January 25, from pneumonia.

Frederick J. Harter, M.D., Herkimer, N. Y.; College of Physicians and Surgeons in the City of New York, 1880; aged 61; a member of the Medical Society of the State of New York; who served for several terms as president of the village of Moravia and local health officer; died at his home, January 20, from pneumonia.

James Strong Billingsley, M.D., Belleville, Kan.; Rush Medical College, 1883; aged 59; a member of the Kansas Medical Society; local surgeon of the Rock Island System, and secretary of the Republic County Board of Health; died in Stormont Hospital, Topeka, Kan., January 26, from endocarditis..

Carl von Arx Schneider, M.D., Gowanda, N. Y.; Cleveland Homeopathic Medical College, 1904; aged 37; a member of the Medical Society of the State of New York; assistant superintendent of the Gowanda State Hospital for eleven years; died in that institution, January 29, from typhoid fever.

Roderick Campbell McLeod, M.D., North Sydney, N. S.; New York University, New York, 1891; Lieutenant-Colonel, Canadian Army Medical Corps, and in command of the unit offered by the University of St. Francis Xavier, Nova Scotia; died in Bramshott Camp, England, January 7, from anthrax.

Albert Clarence Lane, M.D., Woburn, Mass.; Long Island College Hospital, Brooklyn, 1879; aged 65; a member of the Massachusetts Medical Society; who was taken to the Massachusetts General Hospital, Boston, January 26, for a surgical operation; died at that institution, February 1.

John A. Hoffmeyer, M.D., Buffalo; University of Buffalo, N. Y., 1880; aged 63; a member of the Medical Society of the State of New York; county medical examiner for Erie County in 1882 and for many years a district physician; died at his home, January 26, from heart disease.

Amelia Ann Duran Dickinson, M.D., Evansville, Ind.; Hering Medical College, Chicago, 1900; aged 42; a Fellow of the American Medical Association; assistant physician to the Southern Indiana Hospital for the Insane, Evansville; died in Evansville, February 8, from pneumonia.

George Henson Davis, M.D., Brooklyn; Long Island College Hospital, 1895; aged 43; formerly a member of the Medical Society of the State of New York; a member of the staff of Trinity and Bushwick hospitals, Brooklyn; died at his home, January 28, from disease of the throat.

Nicholas Henry Freeland, M.D., Tarrytown, N. Y.; Bellevue Hospital Medical College, 1867; aged 72; president of the Tarrytown Water Board; formerly surgeon of the Sixteenth Battalion, N. G., S. N. Y.; died at his home, January 24, from carcinoma of the stomach.

Samuel West, M.D., Idalia, Mo.; College of Physicians and Surgeons, Keokuk, Iowa., 1879; aged 61; a member of the Missouri State Medical Association, and for many years a practitioner and druggist; died at his home, January 22, from pneumonia.

Thomas William Musgrove, M.D., Sultan, Wash.; Harvard Medical School, 1871; aged 75; a member of the Washington State Medical Association; for five years town clerk of Sultan; died at his home in that place, January 23, from heart disease.

Julius L. Philipp Hoffmann, M.D., New York; University of Berlin, Germany, 1876; aged 76; formerly a member of the Medical Society of the State of New York; one of the first board of directors of the *Volkszeitung;* died at his home, January 25.

Ebenezer W. Schooley, M.D., Toledo, Ohio; Eclectic Medical Institute, Cincinnati, 1872; aged 75; formerly local surgeon for the Cincinnati, Hamilton and Dayton system; a veteran of the Civil War; died at his home, about January 18.

Edgar Hart, M.D., Pennington, N. J.; University of Pennsylvania, Philadelphia, 1871; aged 60; president of the Borough Board of Health and vice president of the board of trade; died at his home, January 28, from heart disease.

Johan Adam Lauer, M.D., Leavenworth, Kan.; Kaiser Wilhelms University, Strassburg, Germany, 1884; aged 68; for more than thirty years a practitioner of Leavenworth; died at Cushing Hospital in that city, January 23, from pneumonia.

Horace A. Talley, M.D., Wentzville, Mo.; Medical College of Virginia, Richmond, 1884; aged 63; while driving in his automobile over a grade crossing in Wentzville, January 30, was struck by a Wabash train and instantly killed.

William Berrien Burroughs, M.D., Brunswick, Ga.; Savannah (Ga.) Medical College, 1867; aged 74; a Confederate veteran; an authority on the history of Georgia and the South Atlantic Coast; died at his home, January 21.

Charles M. Wheeler, M.D., Stockton, Calif.; Bennett Medical College, Chicago, 1881; aged 66; who had been blind for about seven years as a result of exposure to Roentgen rays; died at his home, January 22.

Cassius J. Logans, M.D., South Glens Falls, N. Y.; University of Vermont, Burlington, 1879; aged 71; a veteran of the Civil War, in which he served in the United States Navy; died at his home, January 18.

Farrington Wilkes, M.D., Oakland, Calif.; University of California, San Francisco, 1894; formerly a member of the Medical Society of the State of California; died at his home, January 26.

Eliza Knowles Morgan, M.D., Lawrence, Kan.; Cleveland Homeopathic Medical College, 1864; aged 82; for many years a resident of Leavenworth, Kan., and director of the Cushing Hospital; died at her home, January 14.

William Lidderdale Goddard, M.D., Saulsbury, Tenn.; Memphis (Tenn.) Hospital Medical College, 1890; aged 68; a Fellow of the American Medical Association; died at his home, December 6, from nephritis.

James Buell Thompson, M.D., Prospect, Pa.; Jefferson Medical College, 1889; aged 55; a member of the Medical Society of the State of Pennsylvania; died at his home, December 24, from cerebral hemorrhage.

Jasper M. Stuart, M.D., McGehee, Ark.; Louisville (Ky.) Medical College, 1900; aged 49; formerly a Fellow of the American Medical Association; died at his home, January 18, from cerebral hemorrhage.

James K. Waters, M.D., Thurmont, Md.,; University of Maryland, Baltimore, 1869; aged 78; registrar of wills of Frederick County for six years; president of a bank, and a druggist; died recently.

David J. Merriman, M.D., Painesville, Ohio; Detroit Medical College, 1870; aged 81; formerly a member of the Ohio State Medical Association; died in the German Hospital, Cleveland, January 14.

William S. Hart, M.D., Lake Odessa, Mich.; Western Reserve University, Cleveland, 1881; aged 77; a pioneer practitioner and druggist of Ionia County, Mich.; died at his home, January 20.

John E. Younglove, M.D., Bowling Green, Ky.; Homeopathic Medical College of Missouri, St. Louis, 1861; aged 90; also a druggist; died at his home, January 2, from cerebral hemorrhage.

Charles Edward Humphrey, M.D., Bethlehem, Pa.; University of Pennsylvania, Philadelphia, 1863; aged 74; surgeon of U. S. Volunteers during the Civil War; died at his home, January 20.

David Seely Adams, M.D., Macomb, Ill.; Keokuk (Iowa) Medical College, 1900; aged 60; a Fellow of the American Medical Association; died at his home, January 24, from pneumonia.

John J. Devine, M.D., Tom Bean, Tex.; Atlanta (Ga.) Medical College, 1875; aged 65; formerly a member of the State Medical Association of Texas; died at his home, January 19.

David F. Sullivan, Frankfort, S. D. (license, South Dakota, 1887); aged 72; a practitioner since 1869; vice president of the Spink County Board of Health; died at his home, January 10.

Mary A. Latham, M.D., Spokane, Wash.; Cincinnati College of Medicine and Surgery, 1886; aged 72; died in the Sacred Heart Hospital, Spokane, January 20, from pneumonia.

Benjamin Franklin O'Daniel, M.D., Denver; University of Louisville, Ky., 1874; aged 66; died at Mount Airy Sanatorium, Denver, October 15, from chronic interstitial nephritis.

James Henry Wilkerson, M.D., Knoxville, Tenn.; Tennessee Medical College, Chattanooga, 1892; aged 50; a Fellow of the American Medical Association; died at his home, January 1.

Charles Valores Webb, M.D., Wallingford, Conn.; Hahnemann Medical College, Philadelphia, 1898; aged 44; died in the Middletown (Conn.) State Hospital, December 26.

Gordon White, Nashville, Tenn.; Baltimore College of Dental Surgery, 1879; aged 59; a Fellow of the American Medical Association; died at his home, December 6.

Morris Pitcher, M.D., Sardinia, N. Y.; Tuft's College Medical School, 1900; aged 31; a specialist in diseases of the eye, ear, nose and throat; died at his home, January 17.

Charles Hope Mullen, M.D., Foster, Ky.; University of Nashville, Tenn., 1858; aged 78; a veteran of the Civil War; died at his home, January 12, from senile debility.

William F. Phillips, M.D., Wilmore, Ky.; University of Louisville, Ky., 1893; who was stricken with paralysis eight weeks before; died at his home, January 19.

Nathan A. Mossman, M.D., New York; New York Homeopathic Medical College, New York, 1861; aged 79; died in his apartments in New York, January 15.

William R. Blossom, Caribou, Me. (license, Vermont, 1903); aged 58; a member of the Maine Medical Association; died at his home, about January 2.

Charles J. Holmgren, M.D., Oakland, Calif.; Hahnemann Medical College of the Pacific, San Francisco, 1889; aged 82; died at his home, January 18.

Samuel Houston Ridenour, M.D., Pittsburgh; University of Pittsburgh, 1890; aged 58; died at the home of his sister in Cumberland, Md., January 1.

John J. Ryan, M.D., East St. Louis, Ill.; American Medical College, St. Louis, 1878; aged 72; died in St. Mary's Hospital, East St. Louis, January 20.

W. L. Noel, Boaz, Ala. (license, LaMar County, Ala.); aged 68; a practitioner and druggist; died, November 23.

Z. N. Young, Lafayette, Tenn. (license, Tennessee, 1889); aged 75; died at his home, about January 17.

Thomas G. Welch, Mount Scott, Okla. (license, Oklahoma); aged 80; died at his home, December 21.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

FIRWEIN

Report of the Council on Pharmacy and Chemistry

Firwein is a product of The Tilden Company, New Lebanon, N. Y. It is sold under the claim that when swallowed it has a "predilection" both for the bronchial mucosa and also for the genito-urinary organs. To quote:

> "Expectorant, Sedative, Antispasmodic in the Treatment of Inflammations of the Bronchial and Genito-Urinary Mucoisæ."
>
> "Firwein being a bland, soothing balsam possesses a wide range of adaptability and increased potency because of its healing virtues and usefulness as an expectorant, sedative and antispasmodic in bronchitis, and inflammation and catarrh of nose, throat and lungs."
>
> "Firwein has a special predilection for mucosae, this being as marked in diseases of the genito-urinary system as it is in the respiratory organs. In inflammatory diseases of the genito-urinary organs, its bland, curative properties are exerted in a gratifying degree. In cystitis and uritis it is clearly indicated. . . ."

Little information is given concerning the composition of Firwein. An old circular says:

> "Firwein contains Phosphorus, Iodin and Bromin finely blended with a balsameous elixir made from the fir tree."

From a more recent circular we quote:

> "Firwein is prepared from the inside fresh green bark of the fir tree . . ."

The label on the product reads:

> "Firwein is pleasantly and effectively blended with salts of iodin and bromin, held in solution with 20 per cent. alcohol."

The therapeutic claims made for Firwein and the mystery enshrouding its composition make it obvious that the product is intended to appeal to those who are either thoughtless or ignorant. This is emphasized by the suggestion that Firwein be combined with (1) cod liver oil (under the claim that it will "promote the efficiency of the oil"), with (2) whisky for the treatment of bronchorrhea of the aged, and with (3) syrup of hypophosphites for the treatment of persistent bronchitis.

As the composition of Firwein is secret, the therapeutic claims unwarranted and its use irrational, the Council declared it inadmissible to New and Nonofficial Remedies.

FIROLYPTOL PLAIN AND FIROLYPTOL WITH KREOSOTE

Report of the Council on Pharmacy and Chemistry

Firolyptol, another product of The Tilden Company, is, we are told, composed of eucalyptol 10 drops, cottonseed oil ½ ounce and Firwein enough to make 1 ounce. As the composition of Ferwein is secret, it is evident that the composition of Firolyptol is also unknown, except to the manufacturers. "Firolyptol with Kreosote" is said to contain, in addition to whatever may be the component parts of Firolyptol, 10 minims of creosote to each ounce. According to an advertisement, Firolyptol with Kreosote is "antitubereulous, antistrumous" and "contains all the desired features of cod liver oil and is readily assimilated."

The advertisements of "Firolyptol Plain" and "Firolyptol with Kreosote" seem to have for their key-note the assertion that cottonseed oil is a particularly valuable nutriment and that when combined with constituents of Firolyptol and Firolyptol with Kreosote becomes particularly valuable to the tuberculous. To quote from an advertising circular:

> "Now that the reconstructive properties of cottonseed oil are better appreciated by the profession, the advantages that follow the administration of a palatable emulsion of this strengthening and fattening food product are being demonstrated in hundreds of cases where formerly reliance would have been placed in cod liver oil. . . . A recent writer says that pure cottonseed oil is the greatest and purest vegetable oil known to chemistry, and will do much toward revolutionizing the treatment of the GREAT WHITE PLAGUE. . . . If the treatment of tuberculosis could resolve itself into the administration of a fatty substance in a readily assimilated form, there would be no need for any part of FIROLYPTOL but the Cottonseed Oil. . . . The toxic material constantly produced in the system by the germs of tuberculosis tend to expose it more and more to the ravages of the disease, and the physiologic functions of the body suffer a constant depression. To neutralize this germ activity with a consequent production of toxins it seems most logical to employ such agents as have demonstrated their suitability for such purposes, for which reason Eucalyptol and Kreosote with Firwein are incorporated in FIROLYPTOL."

The assertion that cottonseed oil is an especially valuable form of fat is without warrant, but even if it were true the fat is available in cheap and palatable forms in numerous other cottonseed oil products. It is unnecessary to discuss the problematical value of creosote in the treatment of tuberculosis or the value of eucalyptol (now generally abandoned) or even of the secret mixture Firwein. Food and fresh air, not drugs, constitute the fundamentals of the treatment of tuberculosis and it is both irrational and detrimental to the interests of the tuberculous to administer various potent agents in fixed and unknown amounts with such simple articles of food as cottonseed oil. Neither of these products is acceptable for New and Nonofficial Remedies.

Editorial Note.—Firwein[1] has been advertised to physicians for twenty-five or thirty years and it is a sad commentary on the intelligence of our profession that a preparation sold under such obviously false and misleading, not to say silly, claims, should still be in existence. Firwein is claimed to "prevent waste of tissue" in tuberculosis. If it had this power, it would have found its place long ago among the few great agents in drug therapy. As a matter of fact, Firwein has gained virtually no recognition outside of the "literature" of the Tilden concern. The claims made for Firwein are a peculiar mixture of studied candor—when the truth is not likely to hurt its sale—and inane vaporing—when the facts would not redound to its credit. The Tilden Company declares that "Firwein stands without a peer in its class." But the company adds 10 drops of eucalyptol and some cottonseed oil to this peerless product and an improvement is born—"Firolyptol"! Then, to perfect the already perfectly perfected, 10 drops of creosote are added to "Firolyptol" and the profession is offered "Firolyptol with Kreosote"! In just what verbal pyrotechnies the Tilden Company might indulge, should it decide to add ten drops of something else to "Firolyptol with Kreosote," one shudders to contemplate.

If we are accused of exhibiting undue levity in discussing a therapeutic problem, we can only answer that it is impossible to consider seriously the Charlie Chaplins of the nostrum world. The following medical journals have, during 1916, carried advertisements either of Firwein or Firolyptol with Kreosote or both:

Illinois Medical Journal
American Journal of Surgery
Medical Review of Reviews
Pediatrics
Charlotte Medical Journal
Indianapolis Medical Journal
Medical Summary
Medical Sentinel
Louisville Monthly Journal of Medicine and Surgery
Western Medical Times
Texas Medical Journal
Pacific Medical Journal
Medical World
Buffalo Medical Journal
Medical Herald
Southern Practitioner
Medical Fortnightly
International Journal of Surgery
Medical Times

MORE MISBRANDED NOSTRUMS

Collins' Ague Remedy, Swaim's Panacea and Swayne's Panacea.—James F. Ballard, St. Louis, was made the defendant in three cases brought by the federal government against the respective products named. "Collins' Ague Remedy" which admittedly contained 33.3 per cent. alcohol was sold under the claim that it was an effective remedy for chills and fever, dysentery, most forms of malarial diseases, intermittent, remittent and swamp fevers, cholera morbus and diarrhea. These claims the government declared were false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. "Swaim's Panacea" was found to contain nearly 5 per cent. alcohol with 62.3 per cent. of solids, of which 58.5 per cent. was sugar. There was also ⅒ of 1 per cent. salicylic acid and some sarsaparilla present. The public was asked to believe that this stuff was effective as a remedy and panacea for syphilis, pulmonary diseases, eczema, influenza, anemia, consumption and a great many other things. These claims were declared to be false and fraudulent and made knowingly and wantonly. "Swayne's Panacea" seemed to be very similar in composition to "Swaim's Panacea" and was sold under claims virtually identical with those made for the latter product. The government officials naturally declared these claims false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. James F. Ballard pleaded guilty and was fined $30 and costs.—[*Notice of Judgment No. 4373.*]

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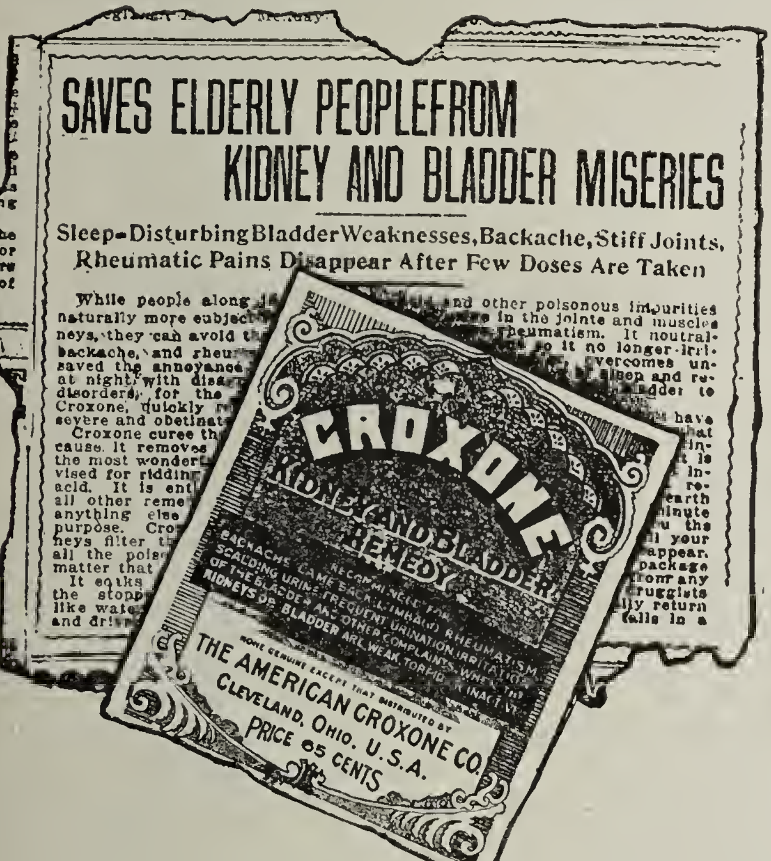
[1] Three other Tilden products have been the subject of deserved and unfavorable comment in The Journal: "Narkine" in the issue of Oct. 24, 1908, "Hydrocyanate of Iron-Tilden" in the issue of June 19, 1909, and "Febrisol," in the issue of June 29, 1912. The first two articles are reprinted in the latest (9th) edition of "The Propaganda for Reform."

Croxone.—The American Croxone Co., Cleveland, Ohio, distributed this product. The government chemists reported that each small box of the product contained 32 capsules in each of which was a white-coated pill and a red oil. The oil was essentially a small amount of oil of pine or oil of juniper dissolved in a fatty oil or mixture of oils. The pill consisted essentially of strychnin, a trace of brucin, aloin, hexamethylenamin, lithium carbonate, potassium nitrate and probably a trace of atropin. The stuff was sold as a "cure" for rheumatism and kidney disease and a preventive of dropsy and "gravel." These claims were declared false and fraudulent and applied knowingly. The company pleaded guilty and was fined $25 and costs.—[*Notice of Judgment No. 4386.*]


SAVES ELDERLY PEOPLEFROM
KIDNEY AND BLADDER MISERIES
Sleep-Disturbing Bladder Weaknesses, Backache, Stiff Joints, Rheumatic Pains Disappear After Few Doses Are Taken
CROXONE
KIDNEY AND BLADDER REMEDY
THE AMERICAN CROXONE CO.
CLEVELAND, OHIO. U.S.A.
PRICE 65 CENTS

Freeman's Balsam of Fir Wafers.—Edgar S. Fossett, who did business under the name Freeman Pharmacal Company, Portland, Maine, manufactured "Dr. Freeman's Balsam of Fir Wafers" which the government declared misbranded. Federal chemists reported that the lozenges consisted of sugar with very small amounts of oil of turpentine and eucalyptus with the possible presence of a trace of balsam of fir. They were sold under the claim that they were an effective remedy for relieving consumption and for stopping the "raising of blood in consumption" and effective also as a remedy for all affections of the throat and lungs, bronchitis, asthma, croup, whooping cough, la grippe, etc. These therapeutic claims were declared false and fraudulent and applied knowingly and wantonly. Furthermore, the fact that the name of the product would indicate that the article contained an appreciable amount of balsam of fir (which it did not) further constituted misbranding. Edgar S. Fossett entered a plea of *nolo contendere* and was fined $40.—[*Notice of Judgment No. 4391.*]

Renne's Pain Killing Oil.—This was another preparation put out by James F. Ballard of St. Louis, who in this case did business under the trade name "Dr. Herrick Family Medicine Co." The chemists of the Bureau of Chemistry declared that analysis showed it to be essentially a water-alcohol solution of sassafras oil and cayenne pepper containing 78.6 per cent. alcohol and 4 per cent. volatile oils. There were also indications that the stuff contained a little mustard oil and soap. The government charged Ballard with falsely and fraudulently claiming, in reckless and wanton disregard of the truth of the statements, that this stuff was a reliable remedy for cholera, diphtheria, rheumatism, croup and a number of other conditions. Ballard pleaded guilty and was fined $10 and costs.—[*Notice of Judgment No. 4400.*]

Schuh's Yellow Injection and Schuh's White Mixture.—The Schuh Drug Co., Cairo, Ill., put both these products on the market. The first was sold under the claim that it was "a Speedy Cure for Gonorrhea and Gleet. Cures in 3 to 5 days." The federal chemists reported that Schuh's Yellow Injection was an aqueous solution of boric acid, carbolic acid and berberin. The government charged, naturally, that the therapeutic claims made for this nostrum were wantonly and recklessly false and fraudulent. The second preparation, "Schuh's White Mixture," also was analyzed by the government chemists who reported that it was a mixture of mucilage of tragacanth, balsam of copaiba, and probably sandalwood oil, flavored with cassia. This stuff was sold as "a Safe and Certain Cure for Gonorrhea and Gleet. Cures in 3 to 5 days" and other similar claims. These, of course, were declared false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. The Schuh Drug Company pleaded guilty and was fined $10 and costs.—[*Notice of Judgment No. 4396.*]

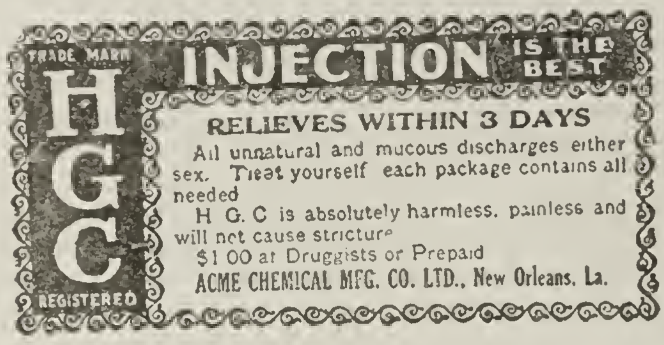
Elmore's R'eumatine Goutaline.—"Dr. D. M. Elmore's R'eumatine Goutaline" was put on the market by George Bayne, Bayonne, N. J., under the claim that it was a remedy for all rheumatic disorders and all forms of rheumatism and a remedy for all disorders of the kidneys, liver and bladder, besides being effective for curing malaria. The government chemists reported that the stuff was apparently a dilute tincture of colchicum. The claims made for it were declared false and fraudulent and applied wantonly and recklessly. George Bayne pleaded guilty and was fined $10.—[*Notice of Judgment No. 4374.*]

Armstrong's Croup Ointment.—Harold G. Carpenter and Herman J. Pierce manufactured and sold this product under the trade name, Carpenter & Pierce Co., Troy, Pa. It was claimed to be a cure for croup, catarrh, asthma, and cold in the head, throat or lungs. The government chemists reported that this ointment contained eucalyptus oils and traces of other oils, possibly cassia and thyme. The therapeutic claims were declared to be false and fraudulent. A plea of *nolo contendere* was entered by the defendants, who were fined $10 and costs.—[*Notice of Judgment No. 4375.*]

Anticephalalgine.—The defendant in this case was James I. Johnson, a corporation, Raleigh, N. C. The stuff admittedly contained 30 per cent. alcohol and 4 grains acetanilid to the ounce. The government chemists reported that it also contained sodium bromid, sodium salicylate, caffein and antipyrin. It was sold under the claim that it was a cure for all kinds of headaches, claims that the government officials declared were knowingly false and fraudulent. The defendant pleaded guilty and on payment of costs the court suspended judgment.—[*Notice of Judgment No. 4376.*]

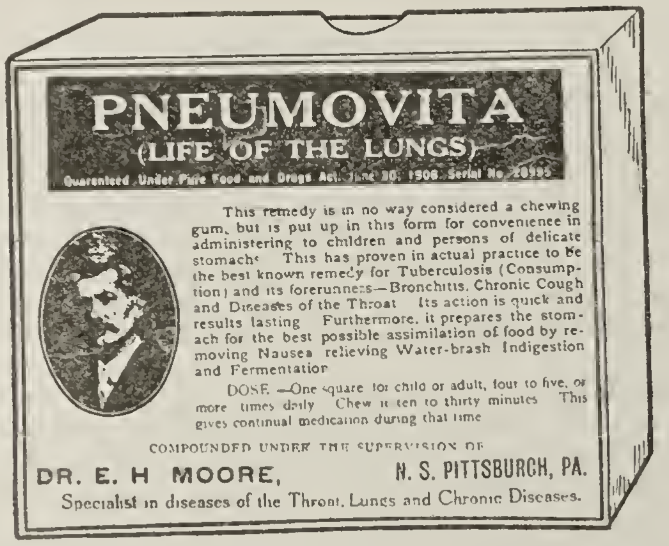
Wright's Rheumatic Remedy.—The Wright Medicine Company, Peru, Ind., made this preparation which, according to government chemists, was an emulsion composed principally of turpentine, methyl salicylate, sugar, acacia, and water, with probably some resinous or plant extractive matter. It was sold under the claims that it was an effective remedy for gallstones and a specific remedy for kidney and bladder troubles. These claims were characterized by the government as false and fraudulent and made knowingly and in reckless and wanton disregard of their truth or falsity. The company pleaded guilty and was fined $50 and costs.—[*Notice of Judgment No. 4398.*]

H G C.—This preparation was manufactured and sold by the Acme Chemical Mfg. Co., New Orleans, La. According to the government chemists, the product was a watery solution of borax and berberin sulphate. It was sold under the claim that it was a cure for gonorrhea, gleet and leucorrhea, a claim that was declared false and fraudulent. The company pleaded guilty and was fined $100 and costs.—[*Notice of Judgment No. 4397.*]


TRADE MARK
H G C
REGISTERED
INJECTION IS THE BEST
RELIEVES WITHIN 3 DAYS
All unnatural and mucous discharges either sex. Treat yourself each package contains all needed
H G. C is absolutely harmless, painless and will not cause stricture
$1 00 at Druggists or Prepaid
ACME CHEMICAL MFG. CO. LTD., New Orleans, La.

Russell's White Drops.—This "soothing syrup" was manufactured by the Russell Medicine Co., Providence, R. I. and was sold under the claim that it was an invaluable remedy for the relief and cure of diarrhea and dysentery; that it would prevent convulsions and was a remedy for cholera infantum and all diseases incident to children, especially during teething. Further, that it would give new life and vigor to the whole system. The claim also was made that it contained nothing that would injure the most delicate child. Government chemists reported that the stuff contained from 13 to 16 per cent. of alcohol as well as codein, a poisonous and harmful drug. The therapeutic claims were declared false and fraudulent and applied knowingly and wantonly. The company pleaded guilty and was fined $20.—[*Notice of Judgment No. 4388.*]

Pneumovita.—Edwin H. Moore, Pittsburgh, Pa., sold this stuff as " the best remedy known for Tuberculosis, (Consumption) and its forerunners—Bronchitis, Chronic Cough and Diseases of the Throat." The government chemists reported that the stuff was a sweetened gum, containing small amounts of charcoal and iron phosphate having a wintergreen flavor. Of course the claims made were declared false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. Edwin H. Moore entered a plea of *nolo contendere*. The court imposed a fine of 6¼ cents, with costs of $15.07.—[*Notice of Judgment No. 4394.*]


PNEUMOVITA
(LIFE OF THE LUNGS)
Guarenteed Under Pure Food and Drugs Act, June 30, 1906. Serial No. 20995

This remedy is in no way considered a chewing gum, but is put up in this form for convenience in administering to children and persons of delicate stomachs This has proven in actual practice to be the best known remedy for Tuberculosis (Consumption) and its forerunners—Bronchitis, Chronic Cough and Diseases of the Throat Its action is quick and results lasting Furthermore, it prepares the stomach for the best possible assimilation of food by removing Nausea relieving Water-brash Indigestion and Fermentation

DOSE.—One square for child or adult, four to five, or more times daily Chew it ten to thirty minutes This gives continual medication during that time

COMPOUNDED UNDER THE SUPERVISION OF
DR. E. H MOORE, N. S. PITTSBURGH, PA.
Specialist in diseases of the Throat, Lungs and Chronic Diseases.

Correspondence

Sodium Cacodylate in the Treatment of Syphilis

To the Editor:—Dr. William G. Ward's letter (The Journal, Feb. 3, 1917, p. 390), and the recent admirable article by Dr. Harold N. Cole (The Journal, Dec. 30, 1916, p. 2012) recall to mind Dr. J. B. Murphy's clinical note on the use of sodium cacodylate in the treatment of syphilis (The Journal, Sept. 24, 1910, p. 1113), and the experimental work of Capt. H. J. Nichols, U. S. Army (The Journal, Feb. 18, 1911, p. 492). The results of Nichols' work conclusively proved, at least from a laboratory standpoint, that this drug was of very little value as a spirocheticide in combating syphilis. Prior to the publication of Dr. Murphy's letter, I had employed sodium cacodylate extensively as a remedy in psoriasis, and I still continue to use it in selected cases of the disease.

Adopting Dr. Murphy's suggestion, I gave the agent an extensive trial in syphilis in all stages of the disease. The results were extremely disappointing, from both clinical and serologic points of view. More recently, during the scarcity of salvarsan, I gave the drug a second trial, employing it in large dosage in the hope that the previous failure had been due to the employment of insufficient amounts. The results were not tabulated, but, judging roughly from my experience in a score of cases, its therapeutic value as an antisyphilitic was nil. A few of the patients underwent a temporary improvement, probably owing to the tonic effect of the drug, but in every instance the serologic findings were unaffected.

R. L. Sutton, M.D., Kansas City, Mo.

Compulsory Health Insurance

To the Editor:—Your invitation to discuss health insurance is too attractive to be ignored. During the past eight months I have read many articles by American physicians on the subject, and I have been saddened by the general tone of quiescent acceptance. Those advocating insurance are entirely altruistic. This group is not composed of employers, but employers will welcome the move so far as it increases economic efficiency better than other methods. The altruistic workers are depending on the medical profession to educate the insured to want insurance and to keep its own remuneration low enough to make the plan feasible.

Dr. Lambert has had unequaled opportunity, and is probably the best informed man in the medical profession on this subject. He makes no mention of advantages pro or con, but contents himself with discussing details. This assumption that the thing must be I consider a mistake. It is the mistake which harassed the profession in England in 1912 and caused the failure of its combative efforts.

Dr. Lambert's report states that, after twenty-five years' experience, European countries have concluded that any plan for voluntary insurance is a failure. The profession agrees with insurance workers in this conclusion. These countries then decide that the remedy is compulsory insurance. Since volition is a failure, then compulsion must be successful. This reasoning is insufficient, yet five countries in a period of three years did adopt it. Sufficient time has elapsed in these instances to prove that friction is continually present and will continue to be until such time as free choice of physician and unchanged relationship between patient and physician may be allowed, instead of a commercial physician hired by a third party and called through expediency. This point is the greatest stumbling block that has been encountered, and it is so entirely because of increased and prohibitive expense. Patients want it and the profession wants it, yet it has been necessary to ride over it with no one achieving satisfaction except the carrier of insurance.

As to relative conditions, the report of the American Medical Association Health Insurance Committee shows that Norway under a voluntary plan insures 25.8 per cent.; England, before the act of 1912, insured 31 per cent., and France, voluntary, 10 or 12 per cent. In the United States it is estimated that labor unions alone insure 10 per cent., so that, when other agencies are accounted for, it seems that we are in fully as good a position as were European countries previous to the adoption of compulsory plans.

Under the compulsory plan Germany has seen physicians go on strike after ten years over the free choice contention, has seen their clientele uphold them to the defeat of strikebreakers and of the organization, has temporized, and the end is not yet. England at present deplores the fact that its medical profession has not improved the quality of its work as was planned in 1912. Just how or why a physician could or should improve as a salaried commercialist over what he was as a friend, trusted by choice with the lives and health of his clientele, is not clear, especially when he is handicapped by more pieces of work at a smaller rate of recompense. It was, however, in the plan that he should improve, and the fact that improvement has not occurred is a bitter disappointment which is now producing complaint.

None of these five countries has yet proved that compulsory insurance can be continuingly operated with satisfaction to all, or even to any, of the three parties concerned—and this under forms of government in which policies can be stable and reasonably permanent! One of the misfortunes of our form of government is that no policy which works any dissatisfaction, even though it is a good policy, can be maintained with any reasonable degree of preplanning or permanence: a quadrennial upheaval may change all arrangements which have been made, by injecting into the administration a new personnel with fresh ideas.

Agreeing that the panel plan recommended by the American Medical Association committee is the most feasible for use and the least undesirable, I doubt if good men in sufficient numbers could be found to serve as referees, to check up the work of the medical profession on points of judgment, inability for work, inadvisability of working, etc. I cannot conceive of men capable of passing those nice judgments, men whose intelligence and integrity the profession could respect, belittling themselves to the point of resigning practices to take up work of this class for the benefit of an employer who paid them a clerk's salary. Men of sufficient caliber to be capable of such work would invariably be too big to need it and too free to want it, while men willing to accept the jobs would invariably be of too small caliber to be of trustworthy judgment, because our territory differs from that of England and the European countries. In England men could accept the act and work under it or they could starve, for there was no other place to work. In the United States, for many years to come, men unwilling to empanel have the option of leaving the industrial centers to work in country communities where only a negligible proportion of the population would fall under insurance classification. Good men could feel confident of doing well in choosing to emulate Aesop's hungry wolf. On the other hand, mediocre men who had been unable to build up satisfactory practices in country territories could come to the industrial centers, empanel, and be granted a regular amount of work and three meals a day, to their own betterment and to the detriment of the insurance workings.

While these insurance plans were being evolved in Europe, little was being done in the way of preventive medicine.

Had our present-day knowledge of public health and sanitation been available and in general effective use, there is question that paternalistic governments would ever have attempted so fantastic a scheme as that of acting as financial fathers to their entire population.

The trend of opinion among American writers is that health insurance is inevitably coming and that we should adjust our affairs to it by entering now into petty bickerings and bargainings over the details of its arrangement. If it were a proved blessing I should agree with this view, even though it reduced medical men to the class of salaried workers and members of a trade union; but it is not proved. None of the European plans has shown a greater humanitarian or economic improvement than could very probably be attained by the employment of the sanitary methods and instruction with which present-day knowledge is enabling them to handle their armies, were these methods applied to civilian population, accompanied by government money and government compulsion in amounts equivalent to those which have been expended annually on the older idea.

I should like to see the Council on Health and Public Instruction of the American Medical Association and the committees of all state societies offer programs as a substitute for social insurance activities, and work in such fashion that laymen, the press and our legislative bodies understood the reasons therefor. I believe that all would have great cause to be satisfied with the increased economic output as compared with the results of the older method which has been heralded as new.

W. D. Chapman, M.D., Silvis, Ill.

Mouth Sepsis

To the Editor:—Considerable attention has been bestowed on oral sepsis as an essential etiologic factor in systemic infections, and there is reliable scientific evidence in support of the tooth-root theory of this large class of diseases. The fact that chronic septic foci in teeth and elsewhere are exceedingly difficult to recognize in the majority of cases is undoubted. It is particularly instances of periapical infection or abscess that offer the greatest difficulty in this respect. Here, even a Roentgen examination, which should always be made by an expert, may fail to render reliable aid.

Daland states that the diagnosis of mouth sepsis should be made by a dentist who is specially trained for this, in which opinion I concur. The physician, however, who encounters a case of systemic infection in which the teeth are suspected should refer the patient to a competent nose and throat specialist with a view to eliminating all foci other than those which may be present in the mouth before invoking the services of the specially trained dentist. It sometimes happens that multiple foci are discoverable, in as many different organs, as the teeth, tonsils and sinuses.

Successful treatment of secondary systemic infection demands, first and foremost, the removal of the septic focus or foci on which they depend. Before reducing the masticating surface of a particular patient, however, the evidences of an existing necessity for so doing should be as clear and convincing as possible. An attempt by a competent dentist should be made to heal the morbid lesions in and about the tooth roots, since some of these are amenable to expert management, before ordering the extraction of the teeth.

Within the past six months a number of dentists have informed me that countless teeth are being removed without justification, on the advice of physicians, usually following a Roentgen examination (by amateurs in many instances). In well authenticated cases in which one or two teeth were the seat of peripheral infection, physicians have gone so far as to give emphatic directions to the effect that all of the remaining teeth be extracted. For example, one of Philadelphia's best known specialists in extraction was requested by a physician to pull out all of a certain patient's teeth—twenty—but he courteously, though firmly, declined to do so.

It seems to me that the rapidly growing custom of sacrificing teeth, many of which are merely suspected of being septic, cannot fail to arouse the most ardent activity of dentists in opposition thereto, and must prove the ultimate chagrin of the medical profession. It would appear that an amazingly low estimate is being placed on the value of human teeth by an increasing number of physicians, who should appreciate the importance of a good masticating apparatus to the digestive function—to the maintenance of health.

I do not mean to disparage the significance of these latent chronic septic foci as a cause of secondary systemic infections or to depreciate investigations in this, comparatively speaking, new field of endeavor. The object of this letter is to utter a word of warning with a view to lessening what I believe to be an unwarrantable present-day sacrifice of the masticating surface, and to spare the medical profession the adverse criticism of the future, by a broader conception proper to the subject of oral sepsis and its management in the present.

J. M. Anders, M.D., Philadelphia.

1605 Walnut Street.

Request for Names of Hospitals Facing Public Parks

To the Editor:—I would appreciate the receipt from readers of The Journal of the names and addresses of hospitals facing public parks. I wish the information to present to our city council, which is considering an ordinance prohibiting the building of a hospital within 200 feet of a public park.

M. M. Enos, M.D., Delger Building, Oakland, Calif.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ELIMINATION OF DIPHTHERIA BACILLI IN DISCHARGING EAR

To the Editor:—I am writing to know if you may be able to suggest anything relative to the subjoined case:

P. L., boy, aged about 2½ years, contracted scarlet fever, which ran the usual course. At no time was there an unusual sore throat, and there was never any membrane of the tonsil. The small amount of throat trouble cleared up in a few days.

About the second week of the child's illness the mother, who was attending him and doing her work, developed diphtheria. Ten thousand units of antitoxin were used on the mother and 1,000 on the child as a preventive, and a trained nurse was employed. There was no reaction to the antitoxin in the child. The mother made an uninterrupted recovery. Shortly after the mother had contracted diphtheria, the child developed a discharging ear. When the time came for the lifting of the quarantine a culture was made from the discharge of the child's ear and the diphtheria bacillus was discovered. The culture from the mother's throat was negative. Repeated cultures from the child's ear have shown the germ to be present, and finally a laboratory test was made with the guinea-pig to see if the germs were virulent. The pig died in thirty-six hours and the diphtheria bacillus was found in the pig.

As stated before, the child is apparently well otherwise and is regaining his strength and gaining in flesh. What am I going to do to get rid of this germ? Everything that I have used has been of no avail, and I have not found anything in my available literature to help me.

W. B. Wallace, M.D., Detroit.

Answer.—This case emphasizes the necessity of making cultures from all discharging ears, since virulent diphtheria bacilli are found in the ears much more often than is generally supposed. The failure to get rid of the bacilli is probably due to local conditions which prevent antiseptic or germicidal agents from reaching the focus of the bacilli. Examination of the ear should determine whether the drainage is free and whether the perforation in the drum head is too small or so situated that free drainage is not secured. Any such unfavorable conditions should be corrected by the aurist. As in the nose and throat, so also in the ear, persistent carriage of diphtheria bacilli is usually dependent on some local condition which must be corrected to facilitate the elimination of the bacilli.

HYDRORRHEA GRAVIDARUM

To the Editor:—A woman, aged 32, secundipara, who had a miscarriage about six months ago, whose present temperature is normal, the pulse 68, and who has had no menstruation since Oct. 5, 1916, while going about her housework, Jan. 12, 1917, passed a quantity of fluid which she believed to be a rupture of the "bag of waters." For about two hours, she experienced sharp pains in the lower abdomen of the nature of labor pains. January 13, I made bimanual examination and found the uterus enlarged to about the size of a three months' pregnancy, but the organ was hard, like a normal uterus. The pains have ceased entirely. There has at no time been any sign of hemorrhage. Could this be hydrorrhea gravidarum? What is the proper method of procedure on the supposition of pregnancy? I have maintained that curettage would be proper. Please advise. Would you not expect to find the uterus soft and patulous if this were a pregnancy? Please do not publish signature.

F. S. D.

Answer.—The escape of fluid from the urogenital tract during pregnancy may be due to incontinence of urine, hydrorrhea decidualis or hydrorrhea amnialis. In this case it is possible that the cause is a hydrorrhea decidualis; that is, a collection of fluid is formed between the decidua vera and the egg, perhaps as a decidual cyst, which eventually is discharged through the cervical canal. The hydrorrhea amnialis, due to rupture of the membranes, probably high up in the uterus, is generally attended with slight bleeding. The firm consistency of the uterus found on examination was probably due to its contraction at the time of the examination. Whatever the cause of the discharge, the proper treatment is prophylactic treatment for abortion, that is, rest in bed and, if necessary, opiates. The chance for the continuance of gestation is better in hydrorrhea decidualis, although even if the discharge is from the liquor amnii the rent in the membrane may close and pregnancy may continue.

CERTIFIED MILK

To the Editor:—Please advise me as to the requirements necessary to establish a certified milk business. I particularly desire to know whether a local certified milk organization would have to be connected with another certified milk organization, or would have to get permission to use the trademark of "certified milk."

W. G. Bain, M.D., Springfield, Ill.

Answer.—To establish a certified milk business, a dairyman must be willing to cooperate with a medical milk commission and fulfil its specifications. The local medical milk commission need not be connected with any other certified milk organization. It would be advisable, however, to limit the term "certified milk" to milk produced in accordance with the requirements of the American Association of Medical Milk Commissions. These requirements may be obtained by consulting the annual reports of the association, and also Public Health Report 85, published May 1, 1912. The secretary of the American Association of Medical Milk Commissions is Otto P. Geier, M.D., Ortiz Building, Cincinnati.

SUBSTANCES INTERFERING WITH REACTION FOR SUGAR

To the Editor:—What substance or substances in the urine which fail to reduce Fehling's solution are fermented by yeast? I recently examined the urine of a supposed diabetic; Fehling's test was negative; acetone and diacetic acid were present in great excess, and the fermentation test showed 1.6 per cent. of sugar (if sugar it was). That the Fehling's solution had not deteriorated was shown by the fact that on the same day it reacted promptly to a specimen shown by the fermentation test to contain 1.2 per cent. of sugar.

H. B.

Answer.—For practical purposes there is no substance in the urine fermented by yeast that does not reduce Fehling's solution, provided proper technic is employed. The reducing action of glucose, or other sugars, is diminished by strong alkali. Furthermore, the urine contains some compounds which interfere with the detection of glucose with strongly alkaline solutions. In addition, urine contains certain substances which prohibit the immediate precipitation of the cuprous hydroxid or oxid. Care must be exercised that the concentration of the alkaline cupric tartrate and the sugar is relatively low.

CHVOSTEK'S SIGN

To the Editor:—In The Journal, Jan. 13, 1917, p. 157, appears an abstract on the facialis phenomenon or Chvostek's sign. Will you kindly inform me how to elicit this sign?

Edwin A. Tufts, M.D., Arkansas City, Kan.

Answer.—Chvostek's sign is a peculiar excitability of the muscles of the face so that spasms are produced if the trunks of the facial nerve are lightly percussed. This occurs particularly in tetany, occurring in this condition even if the skin is lightly stroked.

Food Requirement and Food Consumption.—The discrepancies which are so frequently to be observed between food requirement and food consumption may be explained as due in part to present lack of adjustment to recent and enormous changes in environment and human activities and in the nature of foods. It seems quite possible that adaptation of diet to the activities of the organism, and other important hygienic measures, may come about, not simply through the slowly accomplished downfall of degenerate classes and nations, which history has so often shown us—for neither the rich fruits of shrewd business capacity nor the activities of the altruistic can ultimately shelter physical degeneration—but through the further discovery of the principles of scientific management of the human organism, and through the apprehension of these by the enlightened classes and the consequent practice of them by the world's population.—Minna C. Denton, *Scientific Monthly*, December, 1916.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Connecticut: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Illinois: Chicago, Feb. 21-23. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

Maine: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Missouri: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

New York June Report

Mr. H. H. Horner, Chief, Examinations Division of the New York State Board of Medical Examiners, reports the written examination held at Albany, Buffalo, New York and Syracuse, June 27-30, 1916. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 366, of whom 302 passed, including 7 osteopaths, and 64 failed, including 6 osteopaths. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
Georgetown University	(1916)	1
George Washington University	(1911)	1
Northwestern University	(1896)	1
College of Physicians and Surgeons, Baltimore	(1913) (1914)	2
Johns Hopkins University	(1911) (1912) (1916,2)	4
University of Maryland	(1914)	1
Boston University	(1916)	2
Harvard University	(1915) (1916,7)	8
Albany Medical College	(1915) (1916,31)	32
Columbia University	(1912) (1915,6) (1916,21)	28
Cornell University	(1916)	16
Fordham University	(1915) (1916,13)	14
Long Island College Hospital	(1916)	69
New York Homeopathic Medical College and Flower Hospital	(1914) (1915,4) (1916,12)	17
New York Medical College and Hospital for Women	(1916)	6
Syracuse University	(1913) (1916,17)	18
University and Bellevue Hospital Medical College	(1914) (1915,3) (1916,23)	27
University of Buffalo	(1916)	31
Eclectic Medical College	(1916)	1
Medical College of Ohio	(1900)	1
Jefferson Med. College of Philadelphia	(1914) (1915) (1916,6)	8
Medico-Chirurgical College of Philadelphia	(1916)	1
Vanderbilt University	(1914)	1
University of Texas	(1915)	1
University of Vermont	(1915)	1
Medical College of Virginia	(1915) (1916)	2
University of Naples	(1894)	1
FAILED		
University of Alabama	(1915)	1
Rush Medical College	(1899) (1916)	2
University of Louisville	(1912)	1
College of Physicians and Surgeons, Baltimore	(1914)	1
Johns Hopkins University	(1916)	1
University of Maryland	(1916)	2
Harvard University	(1916)	1
Tufts College	(1915)	1
Albany Medical College	(1910) (1915) (1916)	3
Columbia University	(1914) (1915) (1916,2)	4
Fordham University	(1912) (1913) (1914) (1916,4)	7
Long Island College Hospital	(1916)	1
New York Homeopathic Medical College and Flower Hospital	(1913) (1914) (1915,2) (1916,6)	10
New York Medical College and Hospital for Women	(1916)	5
University and Bellevue Hospital Medical College	(1916)	2
University of Buffalo	(1916)	2
Jefferson Medical College of Philadelphia	(1902) (1915)	2
Medico-Chirurgical College of Philadelphia	(1915)	1
Woman's Medical College of Pennsylvania	(1915) (1916)	2
Medical College of Virginia	(1914) (1916)	2
Queen's University	(1915)	1
McGill University	(1900)	1
University of Brussels	(1913)	1
National University, Athens	(1887)	1
University of Catania, Italy	(1912)	1
University of Naples	(1896)	1
Medico-Chirurgical Institute, Stockholm	(1879)	1

Missouri September Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at Kansas City, Sept. 18-19, 1916. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 22, of whom 18 passed and 4 failed. Four candidates were granted reregistration licenses by examination. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University	(1915)	82
Georgia College of Eclectic Medicine and Surgery	(1914)	83
Loyola University	(1916)	78
Rush Medical College	(1916)	82
University of Illinois	(1916)	82
Tulane University of Louisiana	(1916)	84
Harvard University	(1916)	86
Ensworth Medical College	(1909)	79
Kansas City Hahnemann Med. Coll.	(1907)	77
Kansas City Medical College	(1899)	75
National University of Arts and Sciences	(1916)	75, 77
John A. Creighton Medical College	(1916)	75
New York Homeo. Med. Coll. and Flower Hosp.	(1910)	85
Western Reserve University	(1914)	86
Jefferson Medical College of Philadelphia	(1916)	91
Meharry Medical College	(1916)	80
University of Nashville	(1901)	88
FAILED		
Chicago College of Medicine and Surgery	(1914) 73; (1916)	*
National University of Arts and Sciences	(1916)	74
St. Louis College of Phys. and Surgs.	(1910)	71

* No grade given.

California October Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the oral and written examination held at Los Angeles, Oct. 2-6, 1916. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 51, of whom 37 passed, including 12 osteopaths, and 14 failed, including 8 osteopaths. Thirty-nine candidates were licensed through reciprocity. Four candidates were granted drugless practitioner's license and 3 chiropodist's license. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
California Eclectic Medical College	(1916)	78.4, 83.2
College of Medical Evangelists	(1916)	81.9, 84.2
College of Physicians and Surgeons, Los Angeles	(1915) 91.4; (1916)	81.8, 82.1, 87.9, 90.4, 94.
Hahnemann Medical College of the Pacific	(1916)	86.4
University of Colorado	(1914)	75.7
George Washington University	(1916)	82.4
Rush Medical College	(1915) 90.1; (1916)	89.9
Harvard University	(1912)	96.3
University of Michigan, Homeopathic Medical School	(1912)	84
Eclectic Medical College	(1913) 91.4; (1916)	81.3
University of Oregon	(1916)	88
Jefferson Medical College of Philadelphia	(1916)	89
University of Virginia	(1907)	93
University of Heidelberg, Germany	(1898)	84.9
National School of Medicine, Mexico	(1899)	78.3
McGill University	(1912)	93
FAILED		
California Eclectic Medical College	(1915)	73.1
Hahnemann Med. Coll. of the Pacific	(1916)	70.3
St. Louis College of Physicians and Surgeons	(1907)	53.6
John A. Creighton Medical College	(1913)	63.3
Laval University	(1911)	25.7
Kyoto Imperial University, Japan	(1910)	61.3

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of Alabama	(1911)	Arizona
College of Physicians and Surgeons, Los Angeles	(1903)	Arizona
Denver College of Physicians and Surgeons	(1909)	Colorado
Yale University	(1911)	Mass.
Georgetown University	(1912)	New York
Southern Medical College	(1891)	Texas
Chicago Homeopathic Medical College	(1888)	Missouri
Coll. of Phys. and Surgs., Chicago	(1890) Colorado; (1907)	Illinois
Northwestern University	(1901)	Illinois
Rush Medical College	(1889) Iowa; (1896) (1899) Utah; (1901) Minnesota; (1900) (1911) (1914) (1915)	Illinois
Medical College of Indiana	(1882)	Indiana
Keokuk Medical College, College of Physicians and Surgeons	(1901)	S. Dakota
College of Physicians and Surgeons, Kansas City	(1897)	Wisconsin
University of Louisville	(1910)	Michigan
Johns Hopkins University	(1910)	Washington
Harvard University	(1884)	Penna.
University of Michigan, Homeo. Med. School	(1907)	Penna.
Eclectic Medical University	(1912)	Arkansas
Marion-Sims-Beaumont Medical College	(1902)	Arizona
Columbia University	(1891)	Washington
N. Y. Homeopathic Med. College and Flower Hospital	(1913)	New York
University of Buffalo	(1912)	New York
Eclectic Medical College	(1889) Missouri; (1894)	Kentucky
Medical College of Ohio	(1882)	Wisconsin
Jefferson Medical College of Philadelphia	(1913)	Washington
University of Pennsylvania	(1873) Michigan; (1914)	Penna.
University of Pittsburgh	(1909)	Penna.
University of Ghent, Belgium	(1888)	New Jersey
McGill University	(1908)	Idaho

Book Notices

ON MODERN METHODS OF TREATING FRACTURES. By Ernest W. Hey Groves, M.S., M.D., B.Sc., Surgeon to the Bristol General Hospital. Cloth. Price, $2.75 net. Pp. 286, with 136 illustrations. New York: William Wood & Co., 1916.

In this small volume the author tries to choose that which he considers best in the modern developments of the treatment of fractures, and substantiates it wherever possible by extensive experimental work. He assails separately the principles of the "classical school," which aims at setting the bone, prolonged immobilization and fixation of the neighboring joints, leaving the soft parts to take care of themselves. In their stead he advocates the intelligent employment of the modified methods of Bardenhauer on continuous extension of Lucas-Championnière on early massage and motion, and of Lane on open operation. Causes for bad results in the various types of fractures treated by different methods are discussed. A special chapter is devoted to the various types of external extension appliances, as Buck's extension, Bardenhauer's extension methods, the Balkan splint, Hodgen's splint, and the crutch splint of Borchgrevink for fractures of the humerus. Mechanical modifications of these external methods are detailed, as the Steinmann nail extension, and double transfixion apparatus of Lambert and Groves. About 100 animal experiments are given, showing the relative values of a great many operative methods of fixation of the fragments, as plates and screws, plates and cotter pins, and intramedullary pegs of bone, living and dead, ivory, horn, metallic magnesium and steel. There is considerable comment on bone regeneration and the healing of comminuted fractures. The work is concluded with a chapter on the operative treatment of special fractures, giving the author's results.

DISEASES OF OCCUPATION AND VOCATIONAL HYGIENE. Edited by George M. Kober, M.D., LL.D., and William C. Hanson, M.D. Cloth. Price, $8 net. Pp. 918, with illustrations. Philadelphia: P. Blakiston's Son & Co., 1916.

This work deals with a multitude of subjects which should be of vital interest to a variety of people, the physician, the employer, the worker, and last but by no means least, the legislator. For the physician, especially, it contains information concerning the diseases which are caused or aggravated by the different kinds of employment. Although the various articles are from the pens of different writers, they show a commendable tendency to stick closely to known facts. The chapter on "Cancer and Occupation" is an example of this. The more important theories of the etiology of cancer are discussed in an unbiased manner.

The conclusions reached may be briefly summarized as follows: Concerning a specific infection, "Repeated attempts to isolate such an agent from mammalian tumors have invariably failed"; the question of contagion "has never been demonstrated"; concerning heredity "while the data collected up to the present time from animal experimentation are insufficient to serve as a basis for any sweeping conclusions concerning human inheritance, we are of the opinion that the results already obtained are sufficient to call for a reconsideration of the subject of heredity with reference to cancer"; concerning injury, "the principal cause would appear to lie in the peculiarity of the individual, for trauma is of so great frequency that it cannot in any sense be regarded as the specific cause of any type of tumor"; in regard to chronic inflammation as a basis for cancer, "there are agents to which all individuals are exposed to a greater or less degree that are mildly injurious. The undue or prolonged exposure of the skin to such agents evidently has a tendency to bring on a premature senility of its tissues, especially in certain individuals. Since, however, most of the tumors of this type are of comparatively slight malignancy such influences are not of first importance." "No very marked preponderance of cancer in any of the more usual occupations is shown by Newsholme's Statistics." The effect of Roentgen ray in this connection is recognized but "there are as yet no reported cases of carcinoma arising from radium burns." However, the similarity between Roentgen ray and radium should warn against the indiscriminate or careless use of this agent. It is perfectly evident from the above that the real cause of cancer is not yet known, nor can cancer be directly connected in a causal way to any particular occupation.

The work was written for laymen as well as physicians and many employers might derive much profit in the way of better and more efficient work by their employees if more attention were given to better hygienic conditions in the shop, factory, etc., but there seems to be few of them who are longheaded enough to see that far. Not the least among those who might derive much benefit from the careful study of this work are legislators. In this day of legislative mania, when quantity seems to be a greater desideratum than quality, much half baked and even unbaked legislation is being passed, particularly along the line of so-called health laws.

DISTURBANCES OF THE HEART. Discussion of the Treatment of the Heart in Its Various Disorders, with a Chapter on Blood Pressure. By Oliver T. Osborne, A.M., M.D., Professor of Therapeutics, Yale Medical School. Second Edition. Cloth. Price, 75 cents. Pp. 269. Chicago: THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1916.

Safe and sane guides to therapeusis are particularly needed in diseases of the heart and blood vessels, which occur frequently and in which much can be accomplished for the patient by rational measures. Osborne presents a concise description of the methods of treatment indicated in these diseases. In the chapters on blood pressure, proportionately more full than those dealing with other cardiac disturbances, the methods of determining pressures are discussed, together with the significance of high and low pressures, as related to the heart itself and as indexes of the presence of concomitant conditions. Chapters on pericarditis, myocardial disturbances, endocarditis and chronic valvular disease follow. Heart disease in children and in pregnancy are discussed, as are also the problems of therapy arising in cardiorenal disease. Abnormalities of rhythm and rate are considered in the light of recent studies with the electrocardiograph. The section on the indications for therapy in angina pectoris and heart block are brief but to the point. The importance of chronic infections as a cause of the pain in pseudo-angina might profitably have received more emphasis. As a concise statement of what to do and what can be accomplished in the treatment of disturbances of the heart and blood vessels, this manual can be heartily recommended to all practitioners of medicine.

MANUAL OF THE MEDICAL DEPARTMENT, UNITED STATES ARMY. Cloth. Pp. 395. War Department, Document No. 504. Washington: Government Printing Office, 1916.

This manual, prepared under the supervision of a board consisting of Lieut.-Col. Henry C. Fisher and Majors Elbert E. Persons and Reuben W. Miller, Medical Corps, presents many features which offer opportunities for efficiency not found in previous manuals. As it now appears, the manual is a complete treatise on medicomilitary administration, so arranged that even the neophyte may read and understand it. Instead of including all the information bearing on military administration which is to be found in the army regulations, general orders and service manuals, which should be in the hands of all medical officers, the manual contains an appendix which refers, by subject headings, to the more important orders containing matters of interest to medical officers. If the manual and appendix were printed on loose leaves and assembled after the method of the U. S. Navy Regulations, it would be possible to print changes in regulations on loose leaves which could be inserted. This would avoid the haphazard method, at present necessary, of clipping orders and circulars and pasting them in the manual, to the eventual detriment of the binding by reason of bulk. Many sections of the manual have been rewritten, new articles have been added, and all matter has been brought up to date. One aid to the student of the manual is the introduction of subject running heads on the right hand pages.

More Hospitals.—The greatest need of practical medicine today is more and better equipped hospitals.—V. C. Vaughan, M.D., *Science*, Dec. 8, 1916.

Social Medicine, Medical Economics and Miscellany

Fatal Case of Periodic Vomiting with Acetonemia in a Child

A case reported recently by P. Busacchi in a boy of 4 had all the features of this syndrome except that the attacks came on without any vomiting. The prostration each time was severe, with coma and fever, and the acetone odor of the breath was intense while the urine contained notable amounts. Another child had repeated attacks, but only one was known to be accompanied by vomiting. He suggests, therefore, that the syndrome had better be called hemo-acidosis of the cyclic or acyclic type, with convulsions or depression as the case may be. In a recent case a boy of 6, previously robust, was taken suddenly with severe vomiting and high fever, and he became unconscious with erythema of the face and trunk, convulsions and coma, dying within twenty-four hours. The odor of acetone was strong in the breath and urine throughout, and the Kernig sign was pronounced. Nothing was found in the vomit or stools to suggest poisoning from without. The necropsy findings excluded meningitis and other probable causes, the syndrome being thus evidently the work of hemo-acidosis of the convulsion type. The thymus and lymph glands were enlarged. Busacchi knows of only eleven cases on record with a fatal outcome, and only a few had necropsy control. His little patient had never shown signs of a nervous predisposition, and nothing was found to indicate acute or chronic indigestion or appendicitis; but a sister of 9 had presented two similar severe attacks. The mother had died at 39. She had been subject to headache and arthralgia. In connection with a possible gouty basis for the trouble, Busacchi relates that the urine in the first case mentioned above contained a large number of uric acid crystals during the days following an attack. Comby regards the syndrome as an equivalent for the manifestations of the exudative diathesis. In Busacchi's fatal case the viscera had evidently suffered recently and severely from the acidosis, the changes in the kidneys being enough to explain the fatal outcome. In his report, which appeared in the *Rivista Critica di Clinica Medica*, 1916, **17**, 473, he discusses the pathogenesis and reviews the literature on the subject. The fatty metamorphosis found in the liver is, he thinks, merely secondary, as the children always seemed well and strong outside of the attacks.

Nature of Gout

R. Bass and R. Herzberg have recently published some researches in this line, according to a summary of their work in the *Norsk Magazin for Lægevidenskaben*. They recall that the variations in the output of uric acid in gout—"uric arthritis"—may depend on the secreting power of the kidneys, so that it is necessary to determine the uric acid content of the blood in estimating the case. But this examination of the blood generally does not take place until the attack of gout is fully developed. By that time the diet has already been changed in order to arrest the attack. This change to a purin-free diet rapidly reduces the uric acid content of the blood, whether or not there has been a preceding attack of gout. In order to study the influence of an attack on the uric acid content of the blood, it would therefore be necessary to refrain from reducing the purin elements of the diet during and after the attack, or else the conditions would have to be studied in a patient having an attack on a strictly purin-free diet. The influence of drugs must also be excluded. Three patients were put on a purin-free diet during an attack, and the uric acid in 100 c.c. of blood dropped from 7.2 to 5, from 5.5 to 4, and from 4.3 to 2.7 mg. In two others who had been on a purin-free diet before the attack, the uric acid in the blood kept at exactly the same figure during the attack, and when reexamined one and three weeks later, namely, 5 and 3.2 mg. Other patients were on a purin-containing diet both during and after the attack, and these had approximately the same figures for the uricacidemia during and after the attack; in only one case was there a difference amounting to 0.4 mg. Spontaneous attacks of gout can thus develop and subside without modifying the uric acid content of the blood.

Experience has shown, however, that ingestion of large amounts of purin-producing foods can bring on an attack of gout at the same time that the uric acid content of the blood increases. In order to ascertain whether it is the uric acid which works on the joints, Bass and Herzberg injected intravenously considerable amounts of sodium urate, up to 1.8 gm. of uric acid in 100 c.c. of fluid. But this never induced symptoms in the joints, even in gouty persons, who were extremely subject to attacks, and even when the uricemia rose to 10 mg. It is probably therefore not the uric acid as such, but other intermediate purin substances which elicit the pains in the joints, such as the nucleosids or purin bases. The article of Bass and Herzberg appeared in the *Deutsches Archiv für klinische Medicin*, 1916, **119**, 482, and concludes with the deduction from the foregoing research that uricacidemia cannot be regarded as the specific feature of gout. Merely the distribution of the uric acid in the body seems to be the characteristic of gout. F. Müller calls uric acid an "arthotropic substance," but the uric acid content of the blood and of the fluid in the joints proved to be approximately the same in a large number of tests, including some on the cadaver, the joints punctured after death. None of these subjects had had attacks of gout; but in two patients who had succumbed to uremia, uric acid was found in the joint fluid in a concentration of 18.5 and 20.8 mg., while the blood content was only 10 and 8.2 mg. There thus exists in fact an abnormal attraction for uric acid in the joints in gout which does not occur in other affections. Persons with gout have evidently an exceptionally high capacity for taking up uric acid in the tissues. With intravenous injection of uric acid, the blood content keeps at the same level so long as the kidneys eleminate it properly. But in the gouty the uricacidemia is lower, nothwithstanding reduced elimination in the urine. More uric acid, therefore, must be taken up by the tissues in the gouty than in other patients.

Pregnancy Toxicoses

Our Norwegian exchange brings an abstract of an article on his subject by L. Seitz in the *Therapeutische Monatshefte*, 1916, p. 173. Seitz advises in treatment of eclampsia a combination of Stroganoff's prophylactic method and venesection to relieve the high blood pressure and get rid of some of the toxins in the blood. These measures are supplemented with subcutaneous infusion of Ringer's solution, and the patient is made to drink freely of lemonade. The childbirth must be hastened as much as possible with gentle means, avoiding all severe operative intervention. (The Stroganoff method was described in The Journal, Feb. 12, 1916, p. 530.) With pregnancy nephritis the retention of salt and water is best combated by bed rest, and this must be absolutely enforced. The kidneys are spared further by avoiding intake of salt, keeping to milk alone. As a rule under these measures the nephritis subsides entirely, so that the pregnancy can go on to term. In only a very few cases is it found necessary to interrupt it. Generally speaking, the nephritis which develops acutely with sudden and pronounced edema and albuminuria is the most dangerous. Seitz combats pregnancy dermatoses with a milk-vegetable diet, bed rest, and subcutaneous injection of Ringer's solution. If this does not cure, he tries injection of horse serum or 20 c.c. of serum from a normal pregnant woman. Rest and dieting are the main things. An essential element in the treatment of the incoercible vomiting of pregnancy is the removal of the patient from her wonted surroundings. The first one, two or three days after she reaches the clinic she is allowed nothing whatever by the mouth, but saline is given by the rectum by the drip method, eventually with addition of potassium bromid. R. Freund has also found injection of serum gives good results. Only a few cases prove intractable. These refractory cases are more of a toxic than of a nervous character, and the uterus will have to be evacuated. Dryness of the tongue, offensive breath, bad pulse, albuminuria and especially a rise in temperature call for the arrest of the pregnancy without delay.

Medicolegal

Validity of Regulations Bearing on Transportation of Milk into City

(City of Chicago vs. C. & N. W. Ry. Co. (Ill.), 113 N. E. R. 849)

The Supreme Court of Illinois reverses a judgment imposing a fine of $100 on the defendant for delivering in the city of Chicago, Aug. 21, 1914, milk at a temperature of from 67 to 76 or higher than 55 F., the milk having been brought to the city in baggage cars having no refrigerating facilities, the trip taking in the neighborhood of two hours. The city charged violation of an ordinance covering in detail practically all matters regarding the supervision of the production, handling and delivery of milk to be sold within the city—not only its treatment in the city, but on the farm from whence it is shipped, including the straining and cooling of the milk immediately after the cows are milked and the temperature at which it shall be kept from that time until it is delivered to the consumers in Chicago. The court says that counsel for the defendant admitted that a municipality has the power to regulate what kind of milk shall be sold within its limits, and that such rules and regulations may indirectly affect the production of the milk on the farms outside the city limits, and that it may thus apply regulations that will, in effect, require milk to be cooled immediately after it is taken from the cow and to be kept cool until transported to the city for delivery. This is undoubtedly the law. This court, in construing certain provisions of this ordinance with reference to the regulations for pasteurizing milk, upheld the validity of the ordinance in that respect, and, in effect, held regulations such as are before the court in this case valid, provided they are reasonable and are adapted to the objects sought to be attained. The court thinks that, under any fair construction, the ordinance was intended to apply to common carriers in the transportation of milk from the country to the city; otherwise it would be ineffective. The object sought to be obtained would be absolutely defeated if common carriers, in the transportation of milk from the country to the city, were not required to keep it cool in transit. The court does not agree with the contention that, as common carriers ordinarily must accept all freight tendered, therefore they would not be justified in refusing to receive cans of milk even though they were not within the limitations of temperature required by this ordinance. The common carrier should not be permitted to be the one agency of those handling milk between the time it is milked and the time it reaches the consumer to defeat the purposes of a reasonable health ordinance on that subject. But it was contended that the ordinance here in question, if intended to apply to common carriers, was invalid, being unreasonable in its method of regulation; that other provisions of the ordinance require that cans of milk be sealed before they are shipped, and that the seals shall remain unbroken during transportation by the carrier, and that the carrier, therefore, cannot ascertain the temperature of the milk at the time it is shipped. And the court suggests that, on the record before it, it must be held that the provision here in question of this ordinance, so far as it applies to common carriers, is unreasonable and void, though it suggests further that, after the case is sent back to the trial court, if it can be, more proof be presented to show that the ordinance is reasonable on all the questions involved. Notwithstanding divers scientific theories, on subjects of this nature the courts usually defer to the determination and decisions of the proper authorities as to the basis of police regulations, unless such basis is manifestly erroneous. The court realizes how important the question under consideration is to the health of the people of Chicago and the state at large, and it has no hesitation in reaffirming the rules heretofore laid down by it with reference to the right of the authorities of the city of Chicago to make all proper and reasonable regulations with reference to the care, transportation, sale and delivery of milk in order to protect and promote the health of the people—especially the children—of that city.

Guarding Against Typhoid Fever — May Require Blood Test of Milk Dealers

(People ex rel. Schulz vs. Hamilton et al. (N. Y.), 161 N. Y. Supp. 425)

The Supreme Court of New York, special term, Monroe County, per Justice Rodenbeck, denied an application for a writ of mandamus to the commissioner of public safety of the city of Rochester and others to compel the issuance of a license to the relator to sell milk, after he had refused to submit to a blood test to determine whether or not he had typhoid fever and was a carrier of typhoid germs. The court says that the condition of the public health of the city at the time with respect to typhoid fever was not abnormal, and still the requirement of a blood test as a condition for a license to sell milk and cream seemed to be a fair and reasonable precaution, to protect the public against any increase of typhoid. Milk is a peculiarly sensitive product, produced under conditions which, if not regulated and controlled, may carry and disseminate the germs of typhoid or other diseases and spread them in the community. It is the chief food of infants, and lies at the basis of their health and strength. It may be heated, sterilized or pasteurized; but even then contact with unclean utensils or unclean human beings may make it the carrier of disease germs. Unlike other articles of food, it cannot be washed and otherwise cleansed in the home. The impurities may be hidden from sight, and thus a sense of security engendered which may render it a still more serious menace to health. Under these conditions it would seem to impose no unreasonable hardship on a dealer in milk or cream to require him to submit to a blood test, to make sure that he has not had typhoid and is not a typhoid carrier. That typhoid fever is a contagious disease and may be transmitted by one afflicted with the disease is a matter of common knowledge, and the court will take notice of that fact without proof. The court will also take notice of the fact that an examination of a drop of blood will reveal whether or not the person from whom it has been taken has had typhoid. This may not be universally held by scientific men, or universally believed by the people; but, until science disproves the value of the test, it will be accepted by the courts as true. The imposition of this test with respect to this particular occupation, and the requirement of this and any other test in any other occupation which may affect the public health rests in the sound discretion of the state or local authorities in whom the discretion to pass on the subject has been vested. This rule does not infringe on the civil rights of the individual. Government has been instituted among men for their mutual protection, and no man has the right to make himself or his business a menace to the public health. It is important to the whole community that the supply of milk and cream should be kept clean, pure and wholesome, and should not be contaminated with impurities, or infected with disease; and it is the duty of the health authorities to see that this is accomplished by the establishment of such reasonable regulations as may be necessary to meet existing conditions or to ward off impending dangers to the public health; and in imposing a blood test as a condition to a license to sell milk and cream in the city, the commissioner of public safety and the health officer acted within the scope of their authority, and applicants for such a license should cooperate with the public authorities, and assist, rather than oppose, reasonable efforts to provide pure and wholesome milk and cream for the people of the city. The requirement of a blood test of an applicant for a license is just a step, and a small one, in the direction of the protection of the public health; but every reasonable effort made in this direction should be encouraged, so long as it does not unreasonably infringe on the rights of the individual. The court holds, too, that the health authorities of the city are not required to wait until an epidemic of typhoid has broken out before taking precautions against it, but in the exercise of a reasonable judgment may anticipate such a condition, and may and should make all reasonable efforts to perform the duty imposed on them by statute and to take all reasonable precautions to protect the public health before the emergency arises.

Society Proceedings

COMING MEETINGS

Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
Western Roentgen Society, Hotel Sherman, Chicago, Feb. 16-17.

ANNUAL CONGRESS ON MEDICAL EDUCATION, PUBLIC HEALTH AND MEDICAL LICENSURE

THIRTEENTH ANNUAL CONFERENCE OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Held in Chicago, Feb. 5, 1917

Dr. Arthur Dean Bevan, Chicago, in the Chair

Progress of the Year in Medical Education

Dr. N. P. Colwell, Chicago: The requirement of two years of college work for admission to medical colleges is reasonable, and the action taken by the House of Delegates last June in making that standard a requisite for the Class A rating was not drastic. This is indicated by the fact that at that time fifty-one medical colleges and sixteen licensing boards had already adopted that standard. At present sixty-five medical schools and nineteen state licensing boards have adopted two years of college work as the minimum standard of preliminary education.

A clause in the recommendation adopted by the House of Delegates stated that the colleges of arts and sciences in which the two years of college work were to be obtained should be "approved by the Council on Medical Education." This made it the duty of the Council to prepare a list of approved colleges. The Council has secured lists of those approved by various standardizing agencies, such as the Association of American Universities, and the North-Central and Southern Associations of Colleges and Secondary Schools, and by leading universities.

The House of Delegates also instructed the Council to cooperate with other educational organizations in an endeavor to save one or two years of the student's time during the course of his preliminary or medical education. For the present session of the medical schools from which reports have been obtained, a large majority show increases in the enrolment of students in freshmen classes. Although the total number of medical schools has been reduced by over 40 per cent. in the last twelve years, the number of colleges having improved educational standards has been increased by over 95 per cent. The numbers of medical students and medical graduates from these high standard colleges have been increased in about the same proportion.

One of the most satisfactory accomplishments of the Council has been the development of the medical students' register, which was started in 1910. In that work, from the beginning, the Council has had the cooperation of a large majority of the medical schools, which have furnished intricate and detailed reports regarding the new students enrolled each session. In addition, the colleges have sent reports from the individual students, giving their educational histories up to the time they entered medical school.

Attention was called a year ago to clauses in the medical practice acts of the Canadian provinces of Ontario and Quebec discriminating against medical schools of the United States. Correspondence with officials in Ontario has resulted favorably, and the discriminatory clause has been stricken out. With the Province of Quebec, however, the practice act still requires that before a graduate of any medical school in the United States can secure registration in that province he must follow the last year of the medical course in one of the schools of medicine of Quebec.

A year ago attention was called to the lack of safeguards in the chartering of educational institutions in the various states. Correspondence has since been carried on with superintendents of public instruction, presidents of state universities, secretaries of state medical licensing boards and officers of state medical societies, calling attention to that need and urging the securing of better legislation. As the correspondence progressed, it was ascertained that any legislation regulating the chartering of educational institutions should contain the following provisions: (*a*) restrictions in the use by any person, organization or corporation of the terms "school," "academy," "college" and "university"; (*b*) educational standards which should be met by institutions seeking the right to grant degrees before a charter is issued; (*c*) revocation of the charter of any institution which is found to lack the needed equipment or teachers; which may be found to be using fraudulent methods, or which for other reasons is not living up to the standards fixed by the state; (*d*) a state board, commission or other body which would have in charge the regulation of such institutions as have been chartered, and (*e*) ample funds for effectively carrying out the provisions of the law.

The objection to medical cults is their lack of adequate education. Any one having to do with the treatment of human diseases needs to have a sufficiently thorough training to be able to recognize the disease he is attempting to treat; otherwise his treatment is unscientific and as liable to do harm as good. A training in the fundamental sciences is needed, no matter whether drugs are employed or not, and no matter what system or method of treatment may be used.

The educational standard adopted in all leading nations as the reasonable minimum standard for practitioners of the healing art includes: (*a*) a secondary school course equivalent to that of the better high schools of this country, and in addition the completion of one or two years of work in a college of liberal arts, including courses in physics, chemistry and biology; (*b*) a thorough medical training, provided by a four year course in a well equipped medical college, including two years in the laboratories of anatomy, physiology, bacteriology, pathology, pharmacology and physiologic chemistry, and two years in clinical instruction in dispensaries and hospitals, and (*c*) the practical experience obtained in a fifth year spent as an intern in a good hospital.

The Problem of Higher Degrees in Medicine

Dr. Horace D. Arnold, Dean, Harvard Graduate School of Medicine, Boston: Opportunities for advanced study and research have long been offered by medical schools, yet the problem of higher degrees in medicine has arisen only recently. Degrees for the recognition of advanced scholarship are sanctioned by our best universities, and help to establish and maintain high standards of scholarship. Medicine is undoubtedly a proper field of learning in which to grant advanced degrees.

The existing degrees of B.A. and B.S., M.A. and M.S. and Ph.D. are comparatively satisfactory. The curriculum of a professional school is on the same relative level as the collegiate course, in that it properly leads to a baccalaureate degree, e. g., LL.B., B.D. A bachelor who completes such a curriculum should receive a second baccalaureate degree rather than a master's degree or any other higher degree. Medicine is an exception to this rule, as the regular medical course leads to the degree of Doctor of Medicine, instead of Bachelor of Medicine. This custom has become so firmly established in practice that it must be regarded as permanent, and it is not practicable to change from M.D. to M.B. The problem of higher degrees in medicine is complicated, therefore, by the fact that the doctorate degree is conferred after a course properly leading to a bachelor's degree.

In some instances the degree of Doctor of Science, Sc.D., has been utilized, but this is undesirable, since that degree is used much more commonly as an honorary and not as an earned degree. The use of the Sc.D. degree with mention of the professional field, D.S.Med., D.S.Jur., D.S.Theol., D.S.Eng., has been suggested as the best way of recognizing advanced research in the various professions.

As an advanced degree with less exacting requirements, the Master of the Science of Medicine, M.S.Med., is suggested. The Master of Science without designation of field is conferred after the attainment of B.A., B.S. or an equivalent degree, and, therefore, would not be satisfactory after the attainment of the M.D.

Professional study beyond that corresponding to a master's degree might lead to a practitioner's degree, types of which are found in the engineering profession, such as Civil Engineer and Mechanical Engineer. The call for such a degree in medicine is indicated by the recent efforts to establish suitable standards for specialists by the American College of Surgeons, the societies in ophthalmology and other societies of specialists.

DISCUSSION

Dr. Victor C. Vaughan, Ann Arbor, Mich.: The multiplication of degrees is something that should be avoided so far as possible. There are already too many degrees. The Master's degree as a graduate degree in literary colleges is a joke. While, as a rule, it is not a disgrace, it is at least no honor to have it. With these postgraduate degrees there is always a tendency to keep the student in the school where he obtained his undergraduate work. Some years ago we tried to encourage the migration of students so that a student could spend one year in one college, another year in some other university, and so on. A man who has had four years as an undergraduate in a medical school, in getting his clinical work, should go to other medical schools, so as to come in contact with different men. Examinations are a necessary evil, and I do not see how we can get rid of them. They interfere with a man's originality and with his research work. They constantly loom up before him as a specter. The National Board of Medical Examiners has set a high standard, and the passing of its examination ought to be equivalent probably to the highest medical degree obtainable in this country. The board does not want ordinary students, but does want the six or eight best students in every class after they have had a hospital year.

Harry Pratt Judson, President, University of Chicago: The multiplying of degrees will not help us much. A man should be known by what he has accomplished rather than by the degrees he has obtained. One man may be eminent in medicine and another in research work, yet both may hold the same degree; they are known by what they do rather than by the degree they hold. A simple solution of the problem would be to give the degree of Doctor of Philosophy. It does not matter whether a man is a specialist in mathematics or specialist in pathology; it is all the same so far as the degree goes.

Dr. Horace D. Arnold, Boston: The Council's chief object is to establish some means of standardizing the best medical men. I know of nothing more likely to raise the public estimate of the medical profession than to have it recognized by universities as on the same high plane as the arts and some of the sciences which would be the case if its eminent specialists were granted the degree of Doctor of Philosophy.

Dr. Arthur Dean Bevan, Chicago: It is the function of universities to determine this matter, and the Council may give them the point of view of the medical profession. The Chair desires to appoint the following special committee to investigate and report on this subject: Dr. Horace D. Arnold, Boston, chairman; Dr. N. P. Colwell, Chicago, secretary; Dr. L. B. Wilson, Rochester, Minn.; Dr. Isadore Dyer, New Orleans; Dr. John M. Dodson, Chicago; Dr. William Pepper, Philadelphia; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. J. M. T. Finney, Baltimore; Dr. Edward Jackson, Denver, and Dr. James Ewing, New York.

Economy of Time in Preliminary and Medical Education

Dr. Arthur Dean Bevan, Chicago: A study of conditions in Germany and England shows that in countries abroad a student goes from the secondary school direct to the medical department of the university, in Germany at the age of 19 and in England somewhere between 17 and 20. In this country the requirements of preliminary education have been gradually raised until the accepted American standard is two years of college work including the sciences preliminary to medical education. As a result, medical graduates, after completing their hospital intern year, are 28 years of age on the average, whereas in Germany and England the average is from 25 to 26 years.

It is not in the interests of national efficiency for us to graduate our men in medicine two years later than is done in England and Germany. Men at the younger age are more eager, more plastic, and have greater possibilities of a future than men graduating two, three or four years later. This points clearly to the desirability of reorganizing our scheme of education so as to save two or three years of the student's time.

A conclusion forced on me has been the little excuse for the four year college course that is sandwiched in between the high school and the university without definite aim or purpose. Nothing like this has developed in any other country. It has been demonstrated that two years of special technical training in sciences after leaving high school is sufficient for admission to the medical school. The investigation made shows that even with this saving of two years of time as compared with the full college course, the length of time required to complete the premedical and medical training is too great by at least two years, and that some rearrangement should be made in the primary school, in the high school or elsewhere, in order to reduce the time required.

Economy of Time in Preliminary and Medical Education

Hon. P. P. Claxton, United States Commissioner of Education, Washington, D. C.: The high average age at which students begin their medical studies in this country is due to several causes. Many students pay their way through high school and college by going to school a year or two and then working one or more years for money with which to pay their school bills. Then after graduating from college they may teach one or more years before beginning to study medicine. The older age raises considerably the average age of all professional students and graduates.

Another important cause is the shortness of the school year. The usual length of the school year in American cities is less than 175 days after holidays are counted out, and the length of the average school day is five hours. In rural schools the average school year is from ten to seventy days shorter than in cities, the average difference being nearly forty days between city and country schools. In western European countries, in Canada, Australia, New Zealand and Japan, the school year is from 220 to 250 days. The principle of short hours for efficiency is no doubt correct in a measure, but we have carried the matter to an extreme, especially as it applies to the school year.

Another cause is irregular attendance. There are still states without compulsory school attendance laws, and in none of our states or cities are the attendance laws as rigidly enforced as in most European countries. The average daily attendance in our schools is not more than 70 per cent. of the enrolment, which means that an average of thirty out of a hundred enrolled are out of school daily. Then there is the lack of definite education and professional preparation on the part of teachers. In the rural schools a large proportion of the teachers are young and inexperienced. The average term of service does not exceed probably five years. The constant changing of teachers is another cause. Children in our schools change teachers so often that all continuity of study and teaching is lost. Then there is the lack of definite organization of courses of study, but most of the time lost in American schools is probably through the long drawn out elementary courses running through eight years and continuing two or three years after the beginning of adolescence, and the consequent postponement of the time of beginning high school subjects, by the attempt to crowd all secondary work into four years, and by a false policy in college administration which fails to make the first two years of college life as effective as they might be.

European countries gain much for the children of the upper classes and for all who are looking forward to the university and professional studies in life by making their secondary schools—the gymnasium, the realschule, the lycée, English public schools, etc.—to parallel their elementary schools in time rather than to follow them.

I should strenuously oppose any scheme for the reorganization of public education in this country based on class distinctions. I should oppose also any dual system of schools.

I believe in our democratic tandem system of elementary and secondary schools, but I believe it is possible to make a much better arrangement and use than we now do of twelve years' elementary and secondary schooling.

DISCUSSION

Harry Pratt Judson, President, University of Chicago: The age at which students on the whole receive their M.D. degree is too advanced, and the causes are perfectly obvious. One is the utterly unrelated character of our American educational system. Every branch today is considered separate from everything else. Those in charge of medical education have steadily advanced the requirements for beginning medical work wisely and advisedly. Those entrusted with our colleges have and will advance their requirements for admission. In secondary schools, many subjects are taught which were not thought of a generation ago. In like manner, elementary schools have many studies which a generation ago were not heard of. Unfortunately there has been no correlative force in this country to view education as a whole or to bring it together in a systematic or coherent way. I believe the elementary school work can be covered in six, or at least in seven years, because we have tried and found that it can be done. We can save not only one year in this way, but ultimately, I believe, two years. What we need is a complete, drastic reorganization of our whole system of education involved in colleges and secondary schools preceding the professional work. It is not so much a knowledge of different things that students need, but a better training of the mind.

C. H. Judd, Professor of Education, University of Chicago: We need the cooperation and intelligent sympathy of the community. When a school man starts to work out these reorganizations he commonly finds he is definitely opposed by the community. It is difficult to make the changes suggested when it comes to their administration. In the University of Chicago we have eliminated the eighth grade in the elementary school, but it was opposed by some of the patrons of the institution. There is a general movement at the present time in the United States toward the organization of what is known as the junior high school, but this is opposed in many quarters as an innovation inimical to the development of our American educational progress.

Thirty per cent. of our colleges today are going out of business, and the expansion of secondary schools has been enormous. In the last twenty-five years we have twice doubled the total population in our secondary schools. In 1890 there were 300,000 students in secondary schools; this year there were 1,300,000 students. It necessitates a complete reorganization of the elementary and secondary schools and the subjects taught, and by means of the junior high school there will be a welding together of the schools, which is of great importance. We need sufficient backing to carry the work out and to articulate the junior college with the high school. With the proper reorganization we could develop a satisfactory American system of education.

Kendric C. Babcock, Dean, College of Liberal Arts and Sciences, University of Illinois: All who have watched higher education and secondary education as connected with it agree that much time is wasted and that we should proceed at once to save as much of that time as possible. Doctors and educators are not agreed as to how that saving should be made. One reason for students getting their M.D. degree at an advanced age is the tendency of youngsters to change their minds. After spending four years in a high school.. many do not want to pay the price of changing their minds. Many students in the premedical course have gone over to law or to some other subject, and afterward taken up medicine.

Dr. George Royal, Des Moines, Iowa: The new president in the University of Michigan has gathered statistics showing what effect university training has had on students. He found that the really successful or prominent men were those who graduated at 22 and 23, and that those who graduated at 25 or later were not, as a rule, so successful. Two years can be saved before students reach the medical college.

Dr. H. Gideon Wells, Chicago: The University of Chicago has a quarterly system which permits a student to work eleven months in the year instead of nine, which enables him to do more work, although it does not shorten the period at which he may graduate.

Dr. S. B. McCormick, Pittsburgh: It is necessary to educate the people in regard to this plan of saving one or two years' time in preliminary studies. The time is coming when many institutions which are now colleges will become junior colleges and be incorporated under the general public system of education. If we have cooperation, we shall ultimately eliminate much of the waste of time.

Mr. Augustus A. Downing, Albany, N. Y.: I consider it a crime against the child and against the community to turn a child lose from the elementary school and high school at the end of June and let them go anywhere and everywhere until the first of September. They would be better off if the school term were materially lengthened.

(To be continued)

NEW YORK ACADEMY OF MEDICINE

Meeting held Jan. 18, 1917

Dr. Edward D. Fisher in the Chair

Etiology of Typhus Fever in Mexico

Drs. P. K. Olitsky, B. S. Denzer and C. E. Husk: This report presents the results of an expedition into Mexico during the early part of 1916 for the purpose of studying typhus fever. The work was done in Matehuala, Central Mexico, a town of 10,000, in which the estimated number of cases during the winter months was 500. The mortality was 20 per cent. Clinically, the disease corresponded to the classical type. The scientific work consisted in virus and bacteriologic studies, serologic tests, work on the pathogenicity of the organism recovered from the blood, and prophylactic inoculation with a vaccine made from the *Bacillus typhi-exanthematici*. The virus studies confirmed previous observations that the blood of typhus fever patients removed during the height of the disease and injected into guinea-pigs produces a rise in temperature of from four to eleven days' duration after the incubation period of from seven to fourteen days. The Mexican virus was transmitted in this manner through three generations of animals. Blood cultures were taken in thirty-one cases and numerous controls. The technic and mediums employed were those used in the original studies in New York in 1914, except in three cases. Of the twenty-eight cultures made on 2 per cent. glucose serum agar, only eight could be followed a sufficiently long time. These eight cultures showed an organism identical with that first isolated and described by Plotz in 1914. Agglutination tests performed on the serum of typhus fever patients with the *Bacillus typhi-exanthematici* confirmed the previous findings. The organism obtained from the blood, as well as that isolated from lice, was identified by its morphologic and cultural characteristics and serologic reactions. The organism is a slender bacillus about 1 micron in length, usually gram-positive, although many strains are gram-positive. It is an obligatory anaerobe, and grows sparsely on 0.5 per cent. serum glucose agar; it ferments glucose, maltose, inulin and galactose, and fails to ferment lactose, mannite and saccharose. Agglutination, using endemic typhus serum against Mexican strains, showed positive reactions in four out of five of those tested. In like manner, complement fixation tests against typhus immune serum showed uniformly positive results, and uniformly negative results with nontyphus serum. In a word, there is a complete correspondence culturally and serologically of the Mexican organism with the bacillus of Plotz. Experiments on guinea-pigs indicated that the organism is pathogenic for this animal in the original culture, and loses its virulence on repeated cultivation.

Isolation of the Bacillus Typhi-Exanthematici from the Body Louse

Drs. P. K. Olitsky, B. S. Denzer and C. E. Husk: Up to the time of the Mexican expedition, all cultural work proved fruitless. One of the results of the expedition was the finding of the same organism in infected lice which Plotz reported as the etiologic agent of typhus fever. The work in Mexico on typhus-infected lice may be grouped into (1) the production of typhus fever by the injection of infected lice and (2) the isolation of the typhus bacillus from such lice. In two instances the injection of thirty and sixty-five lice, respectively, intraperitoneally into guinea-pigs led to the production of typhus fever. In the one case cultured the typhus bacillus was recovered from the spleen of the guinea-pig. Six series of lice taken from five different typhus patients were cultured. From all of these lice, the typhus bacillus was isolated. In all the experiments made, these lice were proved infectious. A striking observation was that these organisms are usually gram-negative in the original colonies. After one or two subcultures they become definitely gram-postive. Since 1910 many observers have reported the finding of an organism in typhus-infected lice but not in normal lice. This organism is believed to have a causal relationship to typhus fever. In Mexico we were able to grow the bacterium and to show that morphologically, culturally and serologically it is identical with the typhus bacillus.

Etiology and Epidemiology of the Typhus Fever of Eastern Europe

Drs. G. Baehr and H. Plotz: The bacteriologic studies made on sixty-four individuals with the disease demonstrated that the *Bacillus typhi-exanthematici* is regularly present in the blood of people suffering from the typhus fever of eastern Europe. In Volhynia anaerobic blood cultures were positive in nineteen out of twenty-four cases, or 79 per cent. of the cases studied. In the Balkans, where blood cultures often could not be placed in an incubator until four or five days after they were taken, the percentage was lower, 47.5. The relative bacteremia was also proportional to the severity of the disease. For example, in the Russian typhus in which the mortality was 5.5 per cent. and in the Balkan 1915-1916 typhus in which it was 11 per cent., the bacteremia was greater than in the New York series in which the mortality was negligible, 0.2 per cent.; it was much less than in the Mexican typhus (mortality about 20 per cent.) or the severe Balkan type of the disease (mortality from 18 to 60 per cent.). It was found, furthermore, that during chills enormous numbers of organisms may be present in the blood, the maximum being 1,183 colonies in 13 c.c. of blood. Morphologically, culturally and serologically, the organisms recovered from these Russian and Balkan patients were identical with those originally recovered in the New York cases. The *Bacillus typhi-exanthematici* has therefore now been recovered by the authors and others from typhus fever patients in the United States, Mexico, Serbia, Bulgaria, Austria and Russia. The maximum titer of agglutinins for *Bacillus typhi-exanthematici* in the blood of the cases studied was 1:1,600; the average was 1:200. As a result of systematic studies carried out in 100 cases of typhus fever, it was found that agglutinins usually first appear in the blood on about the tenth or eleventh day of the disease, or at about the time when the temperature begins to break. The agglutinin titer of the serum then rapidly increases as the temperature drops to normal, and reaches its maximum toward the end of the first or the beginning of the second week of convalescence. At this time 97 per cent. of the serums were positive. After this time the agglutinins diminish in amount very slowly, and usually persist in the blood for many months. The curve of the development of specific agglutinins in typhus fever is therefore a typical immunity curve. During the course of the work, specific agglutinins and complement-fixing antibodies were found in the blood of twenty normal persons, in amounts otherwise observed only in convalescents from typhus fever. None of these persons had ever shown any clinical manifestations of typhus fever. These twenty patients were either physicians, nurses or male attendants in typhus hospitals in which they were constantly handling typhus patients, or they were peasants who had been living with relatives or friends ill with the disease. As these twenty contacts were the only persons, aside from typhus convalescents, in whom such findings were made, it was reasonable to assume that during the time of their exposure to typhus fever they had actually been infected with the bacilli in quantities sufficient to induce the clinical manifestations of the disease, and had reacted with the production of specific antibodies. Such persons, who have probably become immune without having the disease, may act as carriers of infected lice and be agents of their distribution throughout a community.

Studies in Prophylactic Immunization with the Bacillus Typhi-Exanthematici

Drs. H. Plotz, P. K. Olitsky and G. Baehr: Vaccination was carried out in Serbia, Bulgaria, Russia and Mexico during the winter of 1915-1916. The vaccinations were restricted as far as possible to those persons who were most exposed to infection. In addition to the doctors, nurses and orderlies, many other hospital units were vaccinated, and in a few instances small military groups. The reactions following vaccination were very slight. Among the 5,251 vaccinated persons in Bulgaria, there occurred only three cases of typhus fever; one of the patients died. After completion of vaccination, although 300 patients were admitted in the subsequent three weeks, no further house infection occurred. In Volhynia 3,169 persons in forty-six institutions were vaccinated, and up to May, 1916, there occurred only three cases of typhus fever among those vaccinated. About 2,000 were vaccinated in Mexico, but owing to the fact that the men carrying on the work had to leave Mexico, no statistics are as yet available. Whatever reports have come from Mexico up to the present time seem to be favorable. Altogether 8,420 persons, members of 109 hospital, sanitation and other units in Serbia, Bulgaria and Volhynia were vaccinated during the epidemic of 1915-1916, and only six of this number developed the disease during the four months of the epidemic.

DISCUSSION

Dr. Gedide A. Friedman: I have observed typhus fever in Russia during three epidemics and I have also seen many sporadic cases. I was glad to hear a confirmation of the opinion I expressed six years ago about ambulatory typhus cases. I have seen such patients over and over again, sometimes with high temperature, who gave a history of having been sick five or six days. I was interested to hear of the severe chills which occurred in some of the cases seen in the Balkans. It is a peculiar fact that typhus fever manifests itself in the beginning with chills, which were not seen in other diseases, except perhaps malaria, and I have seen cases wherein the chills lasted for hours. I have occasionally observed chills in children, but very rarely; commonly typhus in children does not begin with a chill, or perhaps a slight chill might be overlooked. The mild course of the typhus tabulated in the statistics might be explained by the fact that most of the patients were Jews, and I have emphasied the fact that the course of typhus in some races, such as the Jews and Arabs, was mild and the mortality was not so high as among other races. The most severe cases occurred among the Russian peasants. As to the body louse being the transmitting agent, I could add from my own experience that this is probably true because typhus is a disease of the poorer classes. I have rarely seen it among the well to do.

Dr. Nathan A. Brill: There is not the slightest doubt in my mind that the *Bacillus typhi-exanthematici* is the only cause of typhus fever, and that the body louse is the agent of transmission of the epidemic form of the disease to man. There is some doubt in my mind whether it is the only agent concerned in the transmission of the endemic form of typhus fever. It has been conclusively shown by Nicolle, Anderson and Goldberg that the body louse is rendered inactive by temperatures above 20 C. (68 F.) that the optimum temperature for its life and activity is between 12 and 14 C. (53.6 and 57.2 F.), and that it is impossible to keep lice alive in the presence of food in test tubes exposed even to the moderate temperature of the vest pocket. The effect of heat on the body louse is utilized by the peons of Mexico, whose important article of dress is the blanket, which is used for all purposes of covering. To rid their blankets of lice they expose them to the warm rays of the sun, and on shaking them thereafter, the lice thus rendered lethargic fall off and are removed. It appears that the body louse is active in cold and inactive in warm temperatures. This fact would explain many of the epidemiologic features of *epidemic* typhus fever, a disease chiefly confined to the colder regions of the earth, and when it does occur in the warmer latitudes it is restricted in the main to the highlands where the daily temperature is low. All statistics will show, whether you search the English, the German or the Russian, in all of whose countries epidemic typhus fever has repeatedly appeared, that this form of the disease is rampant in the winter and diminished in severity and in the number of infected people as the summer approaches, when it disappears almost entirely. When, on the other hand, one studies the facts which relate to the endemic form of typhus fever as it existed in New York City, it is found that by far the greatest number of cases of endemic typhus fever occur during the summer months, when according to investigators the body louse is inactive and does not live. A study of the statistics dealing with this point shows that 60 per cent. of all endemic typhus fever cases occurred in the four summer months, between June and October, while the remaining 40 per cent. were distributed over the other eight months of the year, with by far the fewest cases in the winter, the very reverse of the situation as regards the epidemic form of the disease. This induces me to believe that either we shall have to modify our views in reference to the effects of temperature on the body louse, which seem fairly well established, or that we shall have to look for some other agent of transmission of the infection in the endemic form of typhus fever. Another argument in support of this view is furnished by the fact that house and family infection of the endemic form of this disease practically does not exist. In over 400 cases of this form of the disease observed by me, I have never seen more than one member of a family affected at even approximately the same time until last spring, when the first cases of nearly simultaneous infection of husband and wife were seen in the hospital. If the body louse transmits the endemic form of the disease, one would expect marital infections to be very common. Such infections are extremely rare and practically nil. Therefore, while I am not prepared to say that the body louse is not an agent in the transmission of endemic typhus fever, I hope to see more positive proof than has been offered that there is no other source and agent of infection in the endemic form of the disease.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

January, VII, No. 1

1 Necessity for Health Standards. D. B. Armstrong, New York.—p. 1.
2 Some Shortcomings of Sociosanitary Investigations. F. Schneider, Jr.—p. 3.
3 Application of Statistical Method to Public Health Research. L. I. Dublin, New York.—p. 14.
4 Survey of Dairy Score Cards. C. E. North, New York.—p. 25.
5 Housing Conditions as Factors in Production of Disease. J. Ford, Boston.—p. 42.
6 Model Law for Reporting Stillbirths. L. W. Thomas, Brooklyn.—p. 46.
7 Improved Technic in Bacterial Air Analysis. W. W. Browne, New York.—p. 52.

American Journal of Roentgenology, New York

January, IV, No. 1

8 *Roentgenologic Treatment of Five Hundred and Thirty Cases of Malignant and Other Tumors of Face. H. W. Dachtler, Toledo, Ohio.—p. 599.
9 *Roentgen Ray Treatment of Tuberculous Peritonitis. P. Eisen, Chicago.—p. 602.
10 *Treatment of Nevi. W. S. Newcomet, Philadelphia.—p. 605.
11 *Present Status of Roentgenotherapy in Leukemia. H. K. Pancoast, Philadelphia.—p. 611.
12 Comments on Roentgenography. A. Soiland, Los Angeles.—p. 613.
13 Knife Blade in Brain. E. Blaine, Chicago.—p. 622.
14 Bed Support. D. R. Bowen, Philadelphia.—p. 625.

8, 9, 10 and 11. Abstracted in The Journal, Nov. 4, 1916, p. 1392.

Cleveland Medical Journal

December, 1916, XV, No. 12

15 *Pyloric Stenosis in Infancy. H. G. Sloan, Cleveland.—p. 761.
16 Case of Fracture of Base of Skull and Some of Its Characteristic Symptoms. A. Peskind, Cleveland.—p. 776.
17 *Obscure Case of Empyema. A. Peskind, Cleveland.—p. 788.
18 *Fate of Iodin, Iodids and Iodates in Body. T. Sollmann, Cleveland.—p. 792.
19 Case of Ethmoiditis in Child, Complicated by Unilateral Exophthalmus. D. A. Prendergast, Cleveland.—p. 802.

15. **Pyloric Stenosis in Infancy.**—Sloan recommends the Rammstedt operation for these cases. Vomiting is seen much less than after gastro-enterostomy. In case the baby cries for fifteen minutes or over, the author advocates giving paregoric, 30 drops, to keep it quiet during the healing of the wound. There is practically no shock when the surgical procedure is carried out on the principles outlined. Food is taken as in a normal infant and the weight gain is immediate and progressive. So far, literature contains no account of the recurrence of the symptoms following the Rammstedt operation.

17. **Case of Empyema.**—The most interesting features in Peskind's case was that the child must have originally suffered from a latent pneumonia or pleuropneumonia of the upper right lung, which culminated in a small interlobar encysted empyema, perhaps in the pleuropericordial fold.

18. **Iodin, Iodids and Iodates in Body.**—The immediate object of Sollmann's investigation was to determine these questions: (1) whether the administration of elementary iodin can result in the appearance of iodid and iodate in the blood or tissues, and (2) whether elementary iodin can be liberated from iodid and iodate, combined or separately, with the reaction (hydrogen-ion concentration) that is known to exist in the body. The following results were found: Tests depending on the liberation of small quantities of iodin cannot be applied to protein-containing fluids, or to urine, since considerable iodin is immediately bound by the aromatic radicals. Under the conditions used, the amount of iodin bound by serum was about 1 : 3,000. By the use of the dialysis method it was shown that neither iodid nor iodate undergo any change in the serum. Free iodin is promptly bound, with the formation of iodid, but no iodate is formed, even in the presence of alkali, so that subsequent acidulation does not liberate iodin (unless, of course, more iodin has been added than can be disposed of by the serum). The statements hold also for other proteins, urine and phenol. Large doses of free iodin, administered by stomach, exist in the blood solely as iodid. The addition of acid to the blood does not regenerate iodin. No iodin is liberated from iodid iodate or iodid nitrite, or iodate sulphocyanid mixtures, until the acidity surpasses $Hp = 4.49$. It is therefore impossible that iodin should be liberated from iodid under any conditions existing in the body (excepting solely the gastric juice). On the other hand, the alkalinity of the body is not sufficient to bind any noticeable quantity of free iodin—even in the absence of proteins and aromatic groups. The questions that were proposed are therefore answered in the negative.

Colorado Medicine, Denver

January, XIV, No. 1

20 Spontaneous Pneumothorax in Tuberculous. C. O. Giese, Colorado Springs.—p. 4.
21 Duodenal Ulcer. J. L. Mortimer, Denver.—p. 10.
22 Medical Education and Public Health. L. Farrand, Boulder.—p. 15.
23 Some Frequent Complications Following Operations for Acute Appendicitis. F. N. Cochems, Salida.—p. 17.
24 Status of Medical Care in Modern Industries. J. M. Shapiro, Denver.—p. 22.
25 Dermoid Cyst of Ovary in Child of Five Years. G. H. Cattermole, Denver.—p. 25.

Florida Medical Association Journal, Jacksonville

January, III, No. 7

26 Practical Policy. O. Dowling, Shreveport, La.—p. 107.
27 Practicing Physician's Responsibility in Public Health Work. C. P. Knight, Stapleton, N. Y.—p. 200.
28 Medical Aspect of Navy. A. J. Toulon.—p. 202.

29 Simulated Blindness and Its Detection. M. A. Lischkoff, Pensacola.—p. 204.
30 Treatment of Syphilis of Central Nervous System. H. M. Smith, Chattahoochee.—p. 206.
31 Urinalysis. F. A. Brink, Pensacola.—p. 211.
32 Glandular Tuberculosis of Childhood. D. W. McMillan, Pensacola.—p. 212.
33 Some of Recent Ideas on Infant Paralysis. J. H. Fellows, Pensacola.—p. 214.

Journal of Experimental Medicine, Baltimore

February, XXV, No. 2

34 *Venom Hemolysis After Splenectomy; Resistance of Erythrocytes of Normal Dogs to Hemolytic Activity of Cobra Venom. J. A. Kolmer, Philadelphia.—p. 195.
35 *Effects of Serum Treated with Pararabin. E. Zunz and C. Mohilevith, Lausanne, Switzerland.—p. 211.
36 *Studies on Blood Proteins. Albumin Globulin Ratio in Experimental Intoxications and Infections. S. H. Hurwitz and G. H. Whipple, San Francisco.—p. 231.
37 *Nymph and Prosopon of Tsutsugamushi, Leptotrombidium Akamushi, N. Sp. M. Nagayo, Y. Miyagawa, T. Mitamura and A. Imamura, Tokyo, Japan.—p. 255.
38 Is Trombidium Holosericeum the Parent of Leptus Autumnalis? M. Nagayo, Y. Miyagawa, T. Mitamura and A. Imamura, Tokyo, Japan.—p. 273.
39 *Study of Pancreas Intoxication. E. W. Goodpasture. Boston.—p. 277.
40 *Cyclic Changes in Mammary Gland Under Normal and Pathologic Conditions. Changes in Nonpregnant Guinea-Pig. L. Loeb and C. Hesselberg, St. Louis.—p. 285.
41 *Id. Changes in Pregnant Guinea-Pig: Effect of Luetin Injections. L. Loeb and C. Hesselberg, St. Louis.—p. 305.
42 Comparative Study of Certain Actions of Epinephrin in Cat and Rabbit. T. S. Githens, New York.—p. 323.
43 *Significance of Epithelial Cells and Saprophytes in Sputum. M. Otani, Tokyo, Japan.—p. 333.
44 Cultivation of Trichomonas of Human Mouth (Tetratrichomonas Hominis). T. Ohira and H. Noguchi, New York.—p. 341.

34. **Venom Hemolysis After Splenectomy.**—Since the phenomenon of venom hemolysis appears to be intimately associated with the lecithin or ether soluble activators present in erythrocytes, particularly fatty acids and their soluble soaps, and the removal of the spleen has been shown to alter the content of fatty substances in the blood, the resistance of erythrocytes to venom before and after splenectomy was investigated by Kolmer. He found that the resistance of erythrocytes of dogs to the hemolytic activity of cobra venom is increased after splenectomy. This increased resistance was observed as early as four days after splenectomy and usually persisted for a period of about three weeks, when the resistance gradually decreased to normal or slightly beyond. The decrease of resistance to the hemolytic activity of venom for the erythrocytes of splenectomized dogs following the primary increase is apparently coincident with the anemia following splenectomy. An intercurrent infection, such as distemper, tends to reduce the resistance of erythrocytes to venom. An increased resistance of the erythrocytes to hypotonic salt solutions was found with all the splenectomized dogs in which these tests were made. Increased resistance to hypotonic salt solutions apparently persists for a longer period than the increased resistance to cobra venom. As the lysis of erythrocytes by venom is dependent on the presence of certain lipoidal substances within the cells, and as the spleen may exercise an influence over the lipoidal contents of corpuscles and serum, it is suggested by the author that the increased resistance of erythrocytes to the hemolytic activity of venom after splenectomy is due to alterations in the lipoid content of the erythrocytes.

35. **Effects of Serum Treated with Pararabin.**—Horse serum, kept for two hours at 38 C. in the presence of one fifth its volume of a suspension of 0.5 per cent. of pararabin in physiologic salt solution and then freed by means of centrifugalization and filtration from the pararabin, produced, when injected in appropriate doses into a normal rabbit, a considerable and prolonged fall of the blood pressure, a distinct retardation in the coagulation of the carotid blood, and, sometimes, in addition, acceleration of the respiratory rate and the expulsion of numerous scybala; that is, the various symptoms observed to occur after the intravenous injection of horse serum in sero-anaphylactized rabbits. If the horse serum is first heated for thirty minutes to 56 C. and then treated with pararabin in the manner described above, the intravenous injection of this serum into a normal rabbit exerts no more action on the arterial pressure, the coagulability of the arterial blood, the respiratory rate, and the intestinal activity, than does normal horse serum when introduced into the vein of a normal rabbit.

36. **Albumin Globulin Ratio in Experimental Intoxications and Infections.**—The intoxication which develops as the result of a simple obstruction or a closed intestinal loop is accompanied by an alteration in the normal albumin globulin ratio of the blood serum; the globulin fraction is greatly increased and at times the normal relation of the two fractions may show a complete inversion. The increase in the globulin content of the blood serum is most marked in the animals which show some of the complications met with in loop animals, rupture of the loop and peritonitis. In the latter conditions especially, the globulin increase is rapid and large. The authors believe this reaction to be of diagnostic value in acute infections attended by the sudden liberation and absorption of a toxic exudate. Infections and intoxications produced by inflammatory irritants are also accompanied by a rise in the blood globulins. This observation suggests that tissue disintegration with absorption of toxic products is responsible for the changes noted, and that bacterial invasion is important only in so far as it gives rise to toxic substances. Animals which have developed a tolerance to proteose intoxication following the periodic injection of small doses of proteose, do not show a globulin increase. These experiments do not support the view that the rise in globulins observed in these experimental conditions is an expression of a resistance or tolerance developed by the animal. From the experimental evidence it seems more probable that the alteration in the partition of the blood protein fractions is one of the results of the metabolic disturbance which has been shown to occur in these conditions.

37. **Nymph and Prosopon of Tsutsugamushi.**—Tsutsugamushi or kedani disease is an acute exanthematous infectious disease, which at present occurs only in the northern coast districts of Japan, namely, in Niigata ken, Akita ken and Yamagata ken. Recently it has also been found to exist in Formosa. The mortality of the disease varies, according to the district and year, between 20 and 50 per cent. It closely resembles Rocky Mountain spotted fever, but it possesses some distinct features. The specific cause of the disease has not yet been established with certainty. That tsutsugamushi disease is transmitted to man by a diminutive mite, is now established. Brumpt considered it to be a larva of a new trombidium, which he called *Trombidium akamushi.* The nymph and the prosopon of the tsutsugamushi, however, do not bite warm blooded animals. That the investigation of this mite has so far been neglected is chiefly due to the danger of the bite which causes the disease, and to which the investigators are exposed while working in the infected region. The authors report on the nymph and the prosopon of the tsutsugamushi.

39. **Pancreas Intoxication.**—According to Goodpasture a toxic constituent is present in the fresh pancreas of dogs before trypsinogen can have been activated. The toxic fraction is present in the betanucleoprotein, and therefore is thermostable. It is gradually destroyed by autolysis but can be obtained in concentrated form from a gland which has autolyzed twenty-four hours. The toxic material is probably protein in nature. Intravenous or intraperitoneal injection of from 0.05 to 0.1 gm. per kilogram of body weight is usually fatal and elicits in dogs symptoms comparable to those of spontaneous hemorrhagic necrosis of the pancreas. Dog pancreas differs from that of beef or pig in that guanylic acid and toxic protein combined with it are slowly broken down by autolysis. After autolysis of dog pancreas the toxic protein and guanylic acid may be separated and obtained in relatively pure form.

40. **Changes in Nonpregnant Guinea-Pig.**—The authors found that a definite cycle exists in the mammary gland of the nonpregnant guinea-pig which corresponds to the cycle in the ovary and uterus. Extirpation of the ovaries prevents not only the proliferation of the mammary gland associated with the first stage of the sexual cycle, but in all probability also

inhibits the proliferation of the mammary gland which occurs under certain conditions toward the end of the sexual cycle, or in instances of experimentally prolonged sexual cycle in which well preserved corpora lutea and deciduomas are present. In animals in which the ovaries were hypotypical, the mammary glands were in an inactive condition. The presence of hypotypical ovaries has the same influence on the mammary gland as castration. Complete extirpation of the corpora lutea seems directly or indirectly to prevent the secondary proliferation of the mammary gland, which occurs during the latter part of the sexual cycle or during an experimentally prolonged cycle, in cases in which the extirpation is not followed at once by a new ovulation. In cases in which the whole or almost the whole uterus had been extirpated, the corpora lutea were well preserved and the mammary gland was proliferating.

41. **Changes in Pregnant Guinea-Pig.**—In the pregnant guinea-pig proliferation of the mammary gland becomes regular only at a later stage of pregnancy; namely, during the period following the twenty-fourth day of pregnancy. Previous to this period proliferation was absent in the majority of cases. After the completion of pregnancy and in the beginning of secretion some mitotic proliferation may still be present, but it soon ceases. Some proliferative stimulus seems still to be active. In cases in which abortion took place in the first half of pregnancy, secretion in the gland was not established; secretion occurred in two animals aborting toward the latter part of pregnancy. In guinea-pigs castrated during an early period of pregnancy, in which pregnancy continued for some time, proliferative changes were absent in the mammary gland. Extirpation of the corpora lutea during pregnancy induces a new ovulation and with it the primary proliferation in the mammary gland; abortion does not necessarily prevent these proliferative changes. Five injections of cow's lutein given in relatively large quantities intraperitoneally do not produce proliferation of the mammary gland in the guinea-pig.

43. **Epithelial Cells and Saprophytes in Sputum.**—Microscopic examination of sputum that has been washed with isotonic salt solution, Otani says, indicates its source. Sputum from above the vocal cords contains polygonal flat epithelial cells and numerous species of nonpathogenic micro-organisms. Sputum from below the cords is clear of saprophytes, although it sometimes contains broncho-alveolar cuboidal cells. In every instance he found erythrocytes in the pulmonary sputum after severe pulmonary hemorrhage. Six cases of laryngeal affection referred to in the paper had had no subjective symptoms, but microscopic examination showed tubercle bacilli in the laryngeal sputum.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

January, IX, No. 4

45 *Salicylates. Salicylate in Blood and Joint Fluid of Individuals Receiving Full Therapeutic Doses of Drug. R. W. Scott, T. W. Thoburn and P. J. Hanzlik, Cleveland.—p. 217.
46 New Time Marker. C. C. Lieb, New York.—p. 227.
47 *Pharmacology of Stovain. M. I. Smith and R. A. Hatcher, New York.—p. 231.
48 *Elimination of Hexamethylentetramin (Urotropin) as an Index of Renal Function. K. G. Falk and K. Sugiura, New York.—p. 241.

45. **Salicylate in Blood and Joint Fluid.**—The concentration of salicylate in the blood and joint fluid of individuals suffering with rheumatic fever and receiving full therapeutic doses of sodium salicylate was estimated by the authors. The results indicate that the concentration of salicylate in both fluids does not differ markedly, being somewhat less, on the whole, for the joint fluid, as might be expected. The following average concentrations were found: 0.02 per cent. for blood and 0.018 per cent. for joint fluid. The concentration of salicylate tends to be less in the blood of rheumatic than nonrheumatic individuals. There was no demonstrable free salicylic acid in the joint fluid of rheumatic fever patients. The true reaction and the reserve alkalinity of the blood were not perceptibly altered by the administration of salicylate even in large doses.

47. **Pharmacology of Stovain.**—Experiments made by Smith and Hatcher afforded no evidence that stovain exerts any direct action on the blood vessels after the intravenous injection in cats, and it failed to change the caliber of the renal vessels of the cat or dog when perfused in concentrations of 1 : 10,000 to 1 : 2,500. It depresses the heart when toxic doses are injected intravenously, and when the rabbit's heart is perfused with a solution containing 1 part of the drug in 10,000 parts of Locke's solution. Stovain causes death by inducing immediate and simultaneous paralysis of the heart and respiration, the action on each being independent of that on the other. Stovain disappears rapidly from the blood stream after its intravenous injection. Little or none, of the drug is excreted unchanged in the urine of the cat. Stovain is slightly, but distinctly, more toxic than novocain by similar modes of administration, and complete recovery does not follow the administration of toxic doses of stovain so promptly as it does that of corresponding doses of novocain.

48. **Elimination of Hexamethylentetramin.**—The object of this paper is to show the possible use of hexamethylentetramin as a test for renal function. In none of twelve cases diagnosed clinically in general terms as "nephritis" was any hexamethylentetramin excreted. A case diagnosed as "nephritis and gout" showed results similar to those diagnosed as nephritis. Three cases of gout gave normal hexamethylentetramin excretion, slightly low dye and high nonprotein nitrogen tests, high uric acid, and in two of the three, normal test meal results. In two cases diagnosed as cirrhosis of the liver, the excretion of hexamethylentetramin was low or zero. The nonprotein nitrogen and uric acid findings were normal but the test meal results showed impairment of kidney function.

Nebraska State Medical Journal, Norfolk

January, II, No. 1

49 Uses of Saline Solutions in Surgery. C. H. Breuer, Lincoln.—p. 201.
50 Streptococcic Grippe and Its Relationship to Scarlet Fever. M. G. Wohl and A. K. Detwiler, Omaha.—p. 205.
51 Apparatus Used in Treatment of Fractures. J. P. Lord, Omaha.—p. 209.
52 Infectious Streptococcic Diarrhea of Dysenteric Type; Report of Four Fatal Cases in One Home. G. W. Covey, Lincoln.—p. 213.
53 Case of Diabetes Associated with Renal Tuberculosis. B. R. McGrath and R. C. Woodruff, Grand Island.—p. 216.

New York Medical Journal

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54 Prevention and Retardation of Cardiovascular Disease. C. L. Greene, St. Paul.—p. 145.
55 Secondary Mastoiditis. R. C. Myles and J. M. Smith, New York.—p. 148.
56 Bronchial Asthma and Its Curability. J. L. Tracy, Toledo.—p. 149.
57 Possible Clues to Nature of Genius. A. C. Jacobson, New York.—p. 152.
58 Anesthesia and Acidosis. H. A. Sanders, New York.—p. 154.
59 Case of Addison's Disease. A. E. Oliensis and J. A. Mendelson, Philadelphia.—p. 156.
60 Influenza vs. Tuberculosis. B. Frankel, New York.—p. 158.
61 Huntington's Chorea. L. Grimberg, New York.—p. 160.
62 Mercurialized Serum and Bichlorid of Mercury. P. S. Pittenger, Philadelphia.—p. 161.

South Carolina Medical Association Journal, Greenville

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63 Affections of Posterior Urethra. W. R. Barron, Columbia.—p. 400.
64 Necessity of Graphic Illustration of Sanitary Conditions in Community. M. R. Mobley, Florence.—p. 404.
65 Need of and How to Obtain Hospital in Every County in South Carolina. L. H. Jennings, Bishopville.—p. 407.
66 Hemorrhage of New-Born; Report of Case. H. L. Shaw, Fountain Inn.—p. 408.
67 Should Tonsils Be Removed? W. P. Porcher, Charleston.—p. 409.
68 The Nose. N. T. Clark, Spartanburg.—p. 412.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

November, 1916, XXIV, No. 11

69 Atonic Conditions of Stomach and Colon. F. B. Turck, New York.—p. 313.
70 Corneal Ulcers. L. C. Kuyrkendall, McAlester.—p. 330.

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71 Treatment of Certain Types of Goiter with Quinin and Urea Injections. L. F. Watson, Oklahoma City.—p. 341.

72 Operations for Acute Gonorrheal Epididymitis. J. Frischer, Kansas City, Mo.—p. 347.
73 Physician in Politics. B. L. Jenkins, Clarendon, Texas.—p. 355.

Surgery, Gynecology and Obstetrics, Chicago

February, XXIV, No. 2

74 Fascia and Fat Transplantations. D. Lewis, Chicago.—p. 127.
75 Id. F. T. Stewart, Philadelphia.—p. 141.
76 *Surgery of Peripheral Nerves. C. A. Porter, Boston.—p. 144.
77 Id. C. H. Frazier, Philadelphia.—p. 147.
78 *Resection of Thyroid. E. H. Pool, New York.—p. 150.
79 *Fatal Complications of Percy's "Cold Iron" Method in Treatment of Inoperable Carcinoma of Cervix. V. N. Leonard, New York and A. B. Dayton, Baltimore.—p. 156.
80 Technic of Transvesical Prostatectomy (Two-Stage Operation). P. M. Pilcher, Brooklyn.—p. 162.
81 Evaluation of Trauma Factor in Hernia, Malignancy and Tuberculosis. O. J. Fay, Des Moines, Iowa.—p. 177.
82 Syphilis of Bladder (Report of Case and Review of Literature). T. Baker, Pittsburgh.—p. 187.
83 *Surgery of Bronchiectasis. S. Robinson, Rochester, Minn.—p. 194.
84 Enormous Hernias; Report of Two Cases. W. R. Hewitt, St. Louis.—p. 215.
85 Exostoses of Orbit; Report of Case. F. L. Hupp, Wheeling, W. Va.—p. 221.
86 *Ectopic Pregnancy; Report of One Hundred and Six Cases. F. R. Oastler, New York.—p. 224.
87 Technic of Thyroid Operations with Local Anesthesia, Scopolamin and Morphin. F. H. Lahey, Boston.—p. 229.
88 *New Method of Continuous Drainage for Empyema. H. B. Philips, New York.—p. 236.
89 Liquid Heat Apparatus to Supplant Electric Cautery Used by Percy. J. T. Mason, Seattle, Wash.—p. 242.
90 *New Method of Applying Autogenous Intramedullary Bone Transplants and of Making Autogenous Bone Screws. E. J. Hoglund, Chicago.—p. 243.
91 End-To-End Anastomosis of Colon. P. Lockhart-Mummery, London.—p. 247.

76. **Surgery of Peripheral Nerves.**—Porter studied 187 cases of peripheral nerve lesions. In four cases of facial paralysis attempts at suture were made: one primary after a razor cut, with unknown result; one six months after a pistol wound, suture of the eleventh to the seventh nerve, no improvement. The third, complete paralysis thirteen years after a convulsion. The facial was split and a slip of the hypoglossal placed in the niche. Fifteen years afterward there is partial recovery. In the fourth case, following a mastoid operation two years before, the facial was anastomosed to half of the hypoglossal. Ten years afterward there are weak voluntary facial movements, though faradic response is good. In one case of brachial plexus lesion, operated on four months after the accident, all of the cords found hopelessly blended in a mass of scars were excised and an entirely new plexus constructed, which, Porter says, would defy a professor of anatomy. In this case flexion of the wrist first began three years after operation, improvement continued, and now, while there is flexion of the arm, wrist and fingers, and some power in the triceps, the extensors are paralyzed.

The results after musculospiral paralysis are very satisfactory. The nerve has been freed from adhesions or bony callus in eleven cases; with marked improvement in nine; failure in one; one not heard from. There have been fourteen sutures; six have been successful. In 1913, Porter transplanted 4 inches of a dog's sciatic between the ends of the nerve. There has been no improvement. The longest case was one of resuture six years after an unsuccessful union; result unknown, probably failure. One primary suture recovered in eleven months. There have been forty-eight cases of suture of the ulnar and median nerves. A few of the primary sutures have been almost perfect, as has one (3 months old) secondary suture of the ulna in the arm three years after the operation. The results of the majority were unsatisfactory, though trophic disturbances have usually been prevented. Porter has operated three times on the posterior nerve roots, for pain, never with complete success. He is certain that in addition to the division of the roots forming the brachial plexus that the fourth cervical and second dorsal should also be cut. Porter sounds a note of warning about tourniquet paralysis. A rubber tube should never be used about the midarm. Even if the arm is padded the nerve may be crushed against the bone.

78. **Resection of Thyroid.**—In large, diffuse, simple goiters, Pool says, double resection is the procedure which most closely meets all indications. It relieves pressure, minimizes danger to parathyroids and recurrent laryngeal nerve, provides a sufficiency of thyroid tissue, and ensures symmetry. Double resection may be carried out readily with little hemorrhage either by Balfour's method or by the use of a clamp as described, or by a combination of the two methods.

79. **Complications of Percy's "Cold Iron" Method.**—The authors are convinced from a short experience with Percy's method, that fatalities must have been frequent wherever this method has been used extensively. They report two fatal cases. The development of a septicemia from the infected tissue at the coagulated area was the cause of death. The Percy technic was applied most rigidly. Nevertheless, microscopic sections show active uninjured carcinoma, respectively, four, eight and sixteen days afterward. In both cases it was found within 1 centimeter of the previous site of the heating iron. The necrotic mass produced by the cautery forms a particularly favorable medium for bacterial growth. The organisms may spread to the surrounding tissues or reach the general circulation through the local thrombosed vessels. The technic is considered by the authors to be ineffectual in eradicating the carcinoma.

83. **Surgery of Bronchiectasis.**—Included in Robinson's paper is a report of five complete resections of the lower lobe of the lung, with one death. Excision of the diseased portion of one lung, Robinson says, is the only curative treatment of advanced bronchiectasis. Medications, inhalations, intratracheal injections, intratracheal irrigations, climatotherapy or vaccines are useless. Lung resections should be performed in a two or three stage operation. The several stage operation of the rib resection type has been attended, in the author's experience, with a 20 per cent. mortality. The operation of intercostal lobectomy has distinct technical advantages. When performed in one stage, an undue risk of life is incurred. The physiologic advantages of the several stage technic may yet be successfully combined with the technical advantages of the intercostal exposure.

86. **Ectopic Pregnancy.**—The conclusions reached by Oastler from observation of these cases would seem to be that all subacute ectopic pregnancies should be operated on at once, removing from the abdomen the tube affected, the fetus, placenta, membranes and blood. All acute cases should be operated on at once except cases in extremis. In these cases it would seem advisable to wait, watching the patient very carefully. If no improvement occurs in a very short time, operate. Two patients of this series bled to death. The ovarian artery had ruptured in both. One was an interstitial pregnancy. As there is no doubt, therefore, that patients can bleed to death, operation must not be delayed too long in waiting for a reaction in these extreme cases. The abdominal route was chosen in all these cases and it is undoubtedly the only safe procedure to follow. Inasmuch as there were no cases extending to the viability of the child in the series, there will be no discussion of the treatment in this condition.

88. **Continuous Drainage for Empyema.**—Philips has devised a special cannula which is practically nonobstructible, with which one can drain the pleura, through an intercostal space, into an air-tight receptacle. Special provision is made for the attachment of a suction pump and a negative pressure manometer. This makes it possible to maintain any desired negative pressure in the pleural sac while draining it.

90. **New Intramedullary Bone Transplant.**—The original feature of this operation is the method of cutting the graft at a distance of about 1 inch from the fracture, so as to leave a complete ring of bone at the fracture end. The splint is pressed down into the medullary canal and driven across the line of fracture, so that half of the splint will be in each fragment.

Vermont Medicine, Rutland

January, II, No. 1

92 Problems in Administration of State Medicine. M. Nicoll, Jr., New York.—p. 1.
93 Case of Strangulated Hernia with Unusual Symptoms. L. H. Ross, Bennington.—p. 7.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

January, XI, No. 1

1 Tuberculosis Movement Under War and After-War Conditions. T. D. Acland, J. Moore and J. Lumsden and Others.—p. 1.
2 Practical Considerations on Conduct of Work at Tuberculosis Dispensary. H. A. Ellis.—p. 13.
3 Tubercle Bacillus. A. H. Miller.—p. 18.
4 After-Care of Consumptive Working Man. P. C. Varrier-Jones.—p. 21.

British Medical Journal, London

January 13, I, No. 2924

5 *Treatment of Burns by Paraffin. A. J. Hull.—p. 37.
6 Early Diagnosis and Treatment of Syphilis. J. H. Sequeira.—p. 38.
7 Diseases of Male Urethra. F. S. Kidd.—p. 41. To be continued.
8 *Treatment of Acute Bacillary Dysentery. J. B. Fisher.—p. 43.
9 *Id. G. A. Finlayson.—p. 46.
10 Importance of Early Prophylactic Injection of Antitetanic Serum in Trench Foot. D. Bruce.—p. 48.

January 20, No. 2925

11 *Flavine and Brilliant Green, Antiseptics Used in Treatment of Infected Wounds. C. H. Browning, R. Gulbransen, E. L. Kennaway and L. H. D. Thornton.—p. 73.
12 *Id. D. Ligat.—p. 78.
13 Diseases of Male Urethra. F. S. Kidd.—p. 79. To be continued.
14 Two Cases of Removal of Foreign Bodies (Metal) from Eye. H. T. Kelsall.—p. 81.
15 Case of Actinomycosis Successfully Treated by Vaccine. C. W. Dean.—p. 82.
16 *Home-Made Bread Substitutes for Diabetic Patients. F. Nicholson.—p. 82.

5. See The Journal, Feb. 3, 1917, p. 373.

8. **Treatment of Acute Bacillary Dysentery.**—The treatment given these patients by Fisher was dietetic, medicinal and specific. Patients are only allowed albumin water, barley and lemon water for the first forty-eight hours. Coincidentally with the improvement of the general conditions the diet is gradually increased. Milk is not allowed except in the form of pudding or custard. One dram of magnesium sulphate is given three times a day for the first few days, and then, as the stools diminish in frequency and improve in appearance, the amount is gradually reduced. This applies to practically all cases. Rectal lavage with 1 : 1,000 solution of copper sulphate and mistura simaruba often benefit more chronic cases. Reliance is placed on specific treatment, namely, multivalent antidysenteric serum. Each individual case must be judged on its merits. In the more severe cases Fisher injects 80 c.c. into the flank within a few hours of admission, but generally leaves the milder ones until the following morning, and then may give 40 or 60 c.c. One large dose of serum is sufficient to cure some cases; others, though much improved, require more, and in these, after waiting forty-eight hours, Fisher gives a further 60 or 80 c.c. A few of the worst may need a third or even a fourth dose. Some of the fulminating variety have been given 140 or 160 c.c. intravenously within twenty-four hours of admission. If four doses of 80 c.c. each, spread over a period of six or seven days, have not brought about the desired result, further injections are indicated.

9. **Id.**—Results have convinced Finlayson that 100 c.c. antidysenteric serum should be given intravenously without delay, followed, if considered necessary, by a second dose within twenty-four hours. After one intravenous injection of 100 c.c., subsequent doses may be injected subcutaneously into the axilla, infraclavicular space, or flank. The amount which Finlayson usually gives is 40 c.c. in the morning or evening. In association, a mixture containing 1 dram of magnesium sulphate, 1 dram of sodium sulphate to half an ounce of water, or 1 ounce of mistura alba is administered hourly, or even more frequently, until the motions became pale and watery, containing perhaps a few blood stained shreds; the interval between the doses is then lengthened according to the conditions noted. The diet in the early stage is restricted to albumin water and barley water, with strained chicken tea and meat juices.

11. **Flavine and Brilliant Green in Treatment of Infected Wounds.**—Taking the whole of the authors' results in conjunction, the following points emerge: of all the substances examined, the compound flavine stands out as possessing the highest sum of desirable properties for therapeutic purposes; that is, great antiseptic power, along with relative nontoxicity toward phagocytosis and lack of irritating effect on epithelium. The triphenylmethane compounds, especially brilliant green and crystal violet, are extremely active in the case of cocci, but toward *B. coli* their bactericidal value is considerably lower. On the other hand, flavine is much the most potent, of all substances investigated, toward both groups of organisms. In the case of *B. coli* suspended in serum, flavine is approached only by mercuric chlorid (although the latter is about ten times weaker); but the disadvantage of the mercury salt lies in the serious effect which it has in interfering with phagocytosis. When tested on staphylococci, flavine is about twenty times more powerful than mercury perchlorid, and 800 times more powerful than phenol as a bactericide. Flavine is diaminomethylacridinium chlorid which was originally prepared by Benda at the desire of Ehrlich, and was found to have a very marked therapeutic effect in trypanosome infections. Flavine while of approximately equal antiseptic power to the other acridin compounds, is much less harmful to phagocytosis than the latter. It is also less toxic. It can be administered intravenously, and does not exert toxic action on any special organ. Solutions more concentrated than 1 : 1,000 should not be administered, however, owing to the danger of causing agglutination of the red blood corpuscles. A 1 : 1,000 solution (equivalent, on the basis of bactericidal concentration, to an 80 per cent. solution of phenol in the case of staphylococci) has been applied to the surface of wounds without causing pain or local irritation, and the skin has not been harmed by its use. In addition, there have been no local or general toxic effects, even when quantities of the solution have been kept in contact with the tissues for a considerable time, or when injected into the tissues.

The authors especially emphasize the possibilities in the direction of prevention of sepsis, which would be likely to attend the use of flavine or brilliant green in recent wounds applied during that dangerous period between the infliction of the wound and the establishment of an adequate local defensive mechanism. It has become the custom at the outpatient department of the Middlesex Hospital to treat all casualty cases by irrigating with a 1 : 1,000 solution of flavine, because the conclusion has been justified that a wound so treated will in all probability heal by first intention.

12. **Id.**—Upward of 150 cases have been treated by Ligat with flavine compounds, about 50 per cent. of these being war wounds. In the case of suppurating wounds the procedure followed has been to secure adequate drainage by free incision when necessary, and then to irrigate with a 1 : 1,000 solution of the antiseptic in normal saline; finally the wound is covered with gauze soaked in the solution, and protective applied to prevent evaporation. In case there has been a cavity it has been packed lightly with gauze soaked in the solution. A considerable diminution in the discharge of pus may be expected at the end of twenty-four hours. In wounds of moderate severity in which no foreign body is present and in which free drainage is secured, the suppurative process may be expected to come to an end after four or five days' treatment. Any difficulty in obtaining free access for the antiseptic to the infected area was overcome so far as possible by syringing the solution into the wound cavity under slight pressure, and in some cases flavine 1 : 1,000 was injected into the tissues and muscle planes by a cannula; no subsequent damage to the parts was observed. Ligat has used considerable quantities both of brilliant green and flavine over prolonged periods; in some cases injecting the latter antiseptic into the tissues. He has never observed any toxic phenomena following their use.

16. **Home-Made Bread Substitutes for Diabetic Patients.**—Nicholson uses a bread made of peanut flour and casein. It has the advantage of being very nice to the taste, and can be cut readily into slices even as thin white bread. The formula for making it is as follows: peanut flour, 8 ounces; casein, 2 ounces; a pinch of salt; white of eggs, 12 ounces. The white of egg is beaten to a snow, and then the other ingredients (previously lightly mixed) are slowly added. The bread is baked in a sound oven in a tin.

Glasgow Medical Journal

January, LXXXVII, No. 1

17 Residual Urine in Senile Bladder with Special Reference to Conduct of Case so as to Postpone or Avoid Use of Catheter. D. Newman.—p. 1.

18 Operative Treatment of Harelip and Cleft Palate. J. H. Nicoll. —p. 16.

19 Achylia Gastrica; Simple or Benign Achylia. W. MacLennan.—p. 19.

Journal of Tropical Medicine and Hygiene, London

January 1, XX, No. 1

20 Flagellate Frequenting Necks of Bottles. J. W. S. Macfie.—p. 1.

Lancet, London

January 13, I, No. 4872

21 Mechanism of Serum Reactions. H. R. Dean.—p. 45.

22 State Octopus and Medical Profession. E. Cautley.—p. 50.

23 Cases of Cerebrospinal Fever in Royal Navy, August 1, 1915, to July 31, 1916. H. D. Rolleston.—p. 54.

24 *Four Cases of Hemiplegia Caused by Embolism Following Gunshot Wounds of Carotid Arteries. L. Colledge and J. S. Dunn. —p. 57.

25 *Presence of Accessory Bacteria Food Factor in Nasal Secretion. C. Shearer.—p. 59.

26 Cause and Prevention of Trench Foot. C. N. Longridge.—p. 62.

27 Case of Sarcoma of Mediastinum Invading Lung. A. G. M. Grant.—p. 63.

28 Case of Large Omental Cyst in Child. F. C. Pybus.—p. 63.

January 20, No. 4873

29 *Laminectomy in Gunshot Injuries of Spinal Cord; Report of Cases. C. J. Symonds.—p. 93.

30 Gunshot Wounds of Abdomen During Siege of Kut. C. H. Barber. —p. 98.

31 Phenomena of Anaphylaxis. S. Wyard.—p. 105.

32 *Case of Traumatic Rupture of Jejunum; Operation; Recovery. W. S. Handley.—p. 109.

24. **Hemiplegia Caused by Embolism Following Gunshot Wounds of Carotid Arteries.**—In each of the four cases cited by Colledge and Dunn the hemiplegia and cerebral disturbance were caused by occlusion of the middle cerebral artery or its branches. In all four there was thrombus present in the carotid arteries in the neck, consequent on damage of the arterial walls, and in each there were several inches of the internal carotid artery patent between that thrombus and the portion blocking the cerebral vessel. Consequently the authors believe it justifiable to conclude that the blood continued to flow for a time, at least, in the wounded vessels, and that the occlusion of the cerebral arteries occurred by embolism. Similar emboli were found in one instance in the branches of the external carotid also. The damage to the large cervical arteries was in every case considerable. In three there was actual perforation of the wall; in the fourth the trunk was found completely severed, but this, no doubt, occurred secondarily by sloughing, after the vessel was fully thrombosed. Hemorrhage was slight in these cases; in only one of them was ligature necessary. The early appearance and completeness of the hemiplegia and the rapidly fatal issue in these cases—fifteen to seventy-two hours—resemble the effects of ligature of the common carotid.

25. **Accessory Bacteria Food Factor in Nasal Secretion.**—In dealing with numbers of cerebrospinal fever contacts Shearer noticed that the growth of the meningococcus was in some instances strongly influenced by the amount of nasal secretion transferred by the swab to the surface of the culture medium. It was found from experiment that if a trace of dilute sterile nasal secretion was added to the surface of the culture medium, it brought about a rapid growth of the meningococcus when this medium was subsequently inoculated with this germ. The growth is always many times the amount obtained on the same medium, on planting out a similar quantity of culture, in the absence of nasal secretion. Shearer suggests that the action of sterile dilute nasal secretion in accelerating the growth of the meningococcus would seem to be entirely in the nature of an accessory food body or vitamin, as alone this secretion is quite incapable of supporting or stimulating the growth of this germ. This conclusion is supported by its properties. In addition to the meningococcus and its allies, it has been shown to accelerate the growth of the pneumococcus, *B. typhosus*, *B. coli-communis*, various fecal streptococci and a number of throat bacteria.

29. **Laminectomy in Gunshot Injuries of Spinal Cord.**—Symonds advocates using the old term "trepanning the spine" instead of laminectomy. He reports cases and discusses their treatment.

32. **Traumatic Rupture of Jejunum.**—Handley's patient sustained a complete rupture of the jejunum from an accident, the wheel of an automobile passing over her abdomen 6 inches below the duodenojejunal flexure; the small intestine was found to be torn completely across. An end-to-end anastomosis was done. The incision was closed after washing out the abdomen in every part with a large quantity of saline and introducing a pelvic drainage tube just above the pubes. A considerable quantity of intestinal contents was found to be present in the pelvis. The after-treatment included starvation diet for some days. The patient made a complete and rapid recovery. Solid food was first permitted about a fortnight after the operation. Handley believes the favorable result of the case is largely to be attributed to his abstention from resection.

Annales de Médecine, Paris

November-December, 1916, III, No. 6, pp. 567-677

33 *Idiopathic Dilatation of Bladder or Other Urinary Organs. (La mégavessie et l'hydronéphrose essentielle.) L. Bard (Geneva). —p. 567.

34 *The Urologic Syndrome with Epidemic Cerebrospinal Meningitis. II. (Syndrome urologique de la méningite cérébro-spinale à méningocoque de Weichselbaum.) P. Cazamian.—p. 576.

35 Disturbances in Sweat Secretion with Lesions of Peripheral Nerves from War Wounds. (Les troubles de la sécrétion sudorale dans les lésions des nerfs périphériques, par blessures de guerre.) A. Porak.—p. 596.

36 War Psychoneuroses. II. G. Roussy and J. Lhermitte.—p. 619.

33. **Idiopathic Dilatation of Parts of Urinary Apparatus.**—Bard insists that essential and progressive dilatation of an organ is essentially the same process wherever it occurs, although the symptoms caused by the different organs involved vary so widely. The trouble is some original local subnormal condition rendering it less resistant at this point to the normal pressure which the organ creates or undergoes from the fact of its own physiology. He has published four previous studies of this idiopathic dilatation as affecting the glandular organs, the alimentary canal, and the eyeball, and he here describes three cases in which the urinary apparatus was involved. This idiopathic dilatation, wherever it occurs, is distinguished by the congenital origin, its development without apparent cause, the long tolerance, and the progressive evolution. The recognition of the true cause of the symptoms permits rational treatment, by shutting off the organ if it can be spared and, if not, by checking the further development by relieving the organ from all possible strain. He states, "The polycystic kidney is the manifestation of the trouble when it affects the glomerular-tubuli apparatus, but megabladder, megapelvis, and the more generalized form, cystohydronephrosis, are likewise tangible evidence of this anomaly." He had one patient succumb to uremia from the last mentioned cause, nearly the entire urinary apparatus showing this progressive dilatation with secondary atrophy of the kidneys. Nothing was found, even postmortem, to explain the disturbances otherwise. There was no edema till the last month. The urine then contained from 1 to 3 gm. albumin but no tube-casts. The eye fundus seemed to be normal and the heart was not hypertrophied. Micturition was inclined to be frequent and scanty. His second patient was a man of 48 who succumbed to sudden cerebral hemorrhage after a few weeks of slight albuminuria and symptoms vaguely suggesting a cerebral tumor. The bladder, ureters, pelvis and calices were found at necropsy very much dilated. What was left of the kidney tissue seemed normal, as also the urethra.

The remembrance of these cases enabled him to diagnose this condition in the third patient, a farmer of 56, who for several months had suffered from headache, nausea and visual disturbance with other signs suggesting uremia from chronic epithelial nephritis. Palpation of the abdomen revealed a very large bladder, reaching to the umbilicus, but not causing any discomfort, and there was nothing to suggest bladder or prostate trouble otherwise. Micturition had been abnormally frequent day and night since childhood, but this pollakiuria had never been regarded as pathologic. The desires were urgent but the amount of urine was small each time. Acute pericarditis soon complicated the clinical picture, and necropsy confirmed the megabladder and the epithelial nephritis, but there was no hydronephrosis, simple stasis from idiopathic dilatation having evidently sufficed to induce the latent retention with advanced uremia, just as occurs with stricture or a prostatic obstacle. Discovery of the megabladder may give the clue to the nature of the kidney trouble, but when the hydronephrosis exists alone, differentiation is difficult. (Bard's study of infantile glaucoma as a manifestation of this tendency to idiopathic dilatations was summarized in these columns, April 8, 1916, p. 1172.)

34. **The Urologic Findings in Epidemic Meningitis.**—Cazamian regards the polyuria in epidemic meningitis as the reflection from a polydipsia of central origin as the disease takes a turn for the better. He continues his study of the subject, reporting here the findings as to specific gravity, reaction, color, aspect and odor, and content in the normal constituents of the urine. The curves of their elimination run closely parallel, rising under the influence of serotherapy as convalescence approaches. Only the urates may show some variability. It is evident, he thinks, that the toxins of the disease, acting on the nerve centers, first check and then stimulate the elimination of these substances, the latter phase being responsible for the "meningitic diabetes," to which Loeper has called attention. Cazamian is now studying the elimination of abnormal constituents of the urine and will report later.

Archives des Maladies du Cœur, etc., Paris

December, 1916, IX, No. 12, pp. 521-589

37 Variations in Size of Heart with Cervical Rheumatism plus Sciatica. (Les variations du volume du cœur dans le syndrome de rhumatisme cervical et de névralgies sciatiques associées.) P. Nobécourt and E. Peyre.—p. 521.
38 *Estimation of Coagulation Time of Blood by Air Bubble on Spirit-Level Principle. (Estimation du temps de coagulation du sang "in vitro" par le procédé de la "bulle d'air.") E. Lenoble —p. 539.

38. **Test for Coagulating Time of the Blood.**—Lenoble's method of estimating the interval before blood coagulates outside of the body is based on the principle of the spirit level, as already described in these pages, Dec. 30, 1916, p. 2039. He here tabulates the findings in 100 different patients. The shortest interval was in a case of meningeal hemorrhage, fifty-five seconds; the longest in a case of purpura in a tuberculous man, six minutes and thirty seconds. Coagulation was complete in a minimum of one minute and thirty seconds (in a case of meningeal hemorrhage); the maximum, eleven minutes, was in a patient with Friedreich's disease with congenital mitral stenosis and congenital cataract. The average period for coagulation was two minutes and forty seconds, the average interval before coagulation was complete was four minutes and thirty seconds. The tube containing the blood and the bubble of air must be moved gently or the forming film is broken. The bubble of air should be about the size of a pin head. He uses for the tube Hayem's hematimeter.

Bulletin de l'Académie de Médecine, Paris

January 2, LXXVII, No. 1, pp. 1-54

39 *Requirement of Nitrogenous Foods in the Diet: The Meat Question. (Besoins de la France en azotés. Question de la viande.) E. Maurel.—p. 42.
40 *Malaria in the Wounded from the Eastern Fighting Line. (Paludisme et traumatisme chez les blessés de l'armée d'Orient.) L. Moreau.—p. 48.
41 Injury of the Ear from Explosions. (Les mutilations de l'organe auditif par les détonations. Comment peut-on les guérir?) Wicart.—p. 51.

39. **Requirements of Nitrogenous Foods.**—Maurel reaffirms that while nitrogenous foods are indispensable, yet all the different nitrogenous foods can replace each other, weight by weight. Whether they are of animal or vegetable origin is practically immaterial. The intake of nitrogenous substances should conform to the amount used up and cast off in the vital processes. An excess is as bad, if not worse than a deficit. The average normal requirement is from 1.25 to 1.5 gm. nitrogenous elements in a total of 35 calories per kilogram of the body weight. He cites statistics which show that at Paris and Toulouse, about the largest meat-eating centers in France, during the last few years before the war, the daily amount of meat consumed per capita was 170 and 149 gm., representing only 30 and 27 gm. nitrogen, that is, only about a third of the requisite nitrogen, and only a sixth and an eighth of the calories required. The balance was made up with nitrogenous bodies from vegetables and fruit sources. By drawing on these sources still more, the high cost of living can be materially reduced.

Paris Médical

January 6, VII, No. 1, pp. 1-36

42 *Intravenous Injections of Quinin in Treatment of Primary Malaria. P. Carnot and A. de Kerdrel.—p. 2.
43 *Treatment of Diphtheria Bacilli Carriers. (Le traitement des porteurs de bacilles diphthériques.) M. Labbé and G. Canat.—p. 9.
44 *Sciatica and Sciatic Paralysis Consecutive to Intragluteal Injections of Quinin. J. A. Sicard, L. Rimbaud and H. Roger.—p. 10.
45 *Treatment of Suprarenal Insufficiency. O. Josué.—p. 13.
46 Emetin and Arsenic Combined in Treatment of Amebic Dysentery. P. Ravaut and G. Krolunitsky.—p. 18.
47 Experimental Research on Treatment of Tetanus. J. Camus. —p. 24.
48 *Treatment of Superficial Infectious Processes. (Traitement des dermo-épidermites microbiennes.) H. Gougerot.—p. 28.

42. **Intravenous Injections of Quinin.**—Carnot commends the intravenous route as simple and not at all dangerous, with the customary technic, when it is a question of striking quick and striking hard. The sterilizing effect of the quinin is reenforced by this route, but even this is not effectual against the more resistant forms of the hematozoon, the crescents in particular. Only with series of partial sterilization are we able to cope with rebellious malaria, and periods of complete suspension are advisable to allow a new crop of the parasites to develop which may prove less resistant.

43. **Treatment of Diphtheria Bacilli Carriers.**—Labbé and Canat report very favorable results from insufflation of a powder made from the serum of horses previously injected with diphtheria bacilli killed by heat. This powder was insufflated into each nostril of the diphtheria carriers four times a day. One teaspoonful of the powder in the atomizer bottle serves for thirty insufflations. In parallel series of patients treated this way and with ordinary antiseptic measures no diphtheria bacilli were to be found in thirty-five after an average of twenty-four days with the powder treatment, while the intervals averaged over forty days in the other group. The powder can also be used in tablet form.

44. **Sciatic Paralysis After Intragluteal Injections of Quinin.**—Sicard and his co-workers state that in the last few weeks they have encountered ten cases of extremely painful sensory disturbances in the domain of the sciatic nerve with almost total paralysis of the leg—all the result of intragluteal injections of quinin with defective technic. Five other cases have been under observation for several months; two of them have shown no improvement under a year's treatment. The men of the latest group came from the Saloniki region and the injection had been made by nurses in seven of the cases. Eight of the total fifteen are improving. In several of the cases the reaction of complete degeneracy was pronounced in the muscles tributary to the sciatic nerve. They warn to be guided strictly by the classic directions for such injections and, in case of the slightest doubt, to make the injection in the thigh. For intragluteal injections the patient should be seated. In the sitting position the nerve lies at a point beyond the reach of the needle. They advise to insert the needle above a horizontal line crossing the extreme end of the intragluteal furrow. Any point above this line is safe.

45. **Suprarenal Insufficiency.**—Josué emphasizes that symptoms of suprarenal insufficiency should be sought for in every infectious disease. It may also form a part of the clinical picture in alimentary intoxications, chloroform and salvarsan poisoning, and in heart disease with much enlargement of the heart, the *asystolie surrénale* characterized by hypertrophy of the heart with low blood pressure, weakness, white dermographism and signs of cardiac incompetency. Whatever the accompanying circumstances, suprarenal insuf-

ficiency is always serious, liable to entail even sudden death. Suprarenal treatment may give unhoped-for relief in the severe and malignant forms. The extract of the total gland seems preferable when toxic phenomena predominate, while epinephrin is indicated more for cardiovascular disturbance. The extracts can be given by subcutaneous injection or by the mouth. He advises against the intravenous route unless extra rapid and potent action is necessary.

Suprarenal extracts seem to stimulate the suprarenals to regenerate. Hyperplasia of the suprarenal glands has been noted in rabbits after repeated intravenous injections of epinephrin, and the suprarenals were found relatively large at necropsy of a man with suprarenal asystole and cardiac insufficiency who had long been taking occasional systematic courses of suprarenal treatment. The suprarenal disturbances finally completely subsided, and at necropsy, several months later, the suprarenals weighed together 16.05 gm. Josué regards it as probable that the prolonged suprarenal treatment had actually induced regeneration of these glands. Epinephrin given by mouth has to be in a comparatively large daily dose but fractioned into small doses throughout the day, trying to keep the patient constantly under its influence. This can be long kept up without inconvenience; some of his patients have taken 3 mg. of epinephrin (adrenalin) daily for a month, six weeks or longer, without any disturbance therefrom. In acute cases he prescribes 0.5 c.c. of the 1 : 1,000 solution in a little water, from two to ten times a day. For subcutaneous injection, his dose is 0.5 c.c. of the 1 : 1,000 solution, repeating often. Doses of 1 mg. can be kept up for a month or more. These injections are generally painful. Or 1 mg. of the epinephrin can be added to 250 or 500 c.c. of physiologic salt solution. Addition of 0.01 c.c. novocain prevents pain. The slowness with which this is absorbed is an advantage.

In acute infectious disease, suprarenal treatment may ward off trouble. In typhoid, for instance, when the pulse grows rapid and weak, from 2 to 4 mg. of epinephrin, fractioned into four or eight doses, may ward off mishaps. When toxic phenomena are pronounced, as in diphtheria, he gives the total extract by the mouth and injects the epinephrin-novocain solution subcutaneously. Carnot has reported good results in pernicious malaria from subcutaneous injections of the epinephrin-novocain saline, supplemented by intravenous injection of quinin. This technic proved effectual without offering the dangers of intravenous epinephrin treatment.

48. **Microbian Dermo-Epidermitis.**—Gougerot has coined this term to denote the extensive infectious processes in the skin, especially the epidermis, which are so common among the soldiers now, and so liable to run a chronic course if eczema or trophic disturbances or other causes interfere with the early healing. He says that painting the skin with a 1 : 50 or 1 : 10 solution of silver nitrate is the best antiseptic and cauterizer, promoting healing and preventing itching, and it should be applied in all cases. Rest in bed, the foot on a higher plane than the inguinal region, the foot and toes exercised, with light massage, are important adjuvants. He gives a number of formulas for mercurial pastes, graduated for the serous, the oozing and the eczema-like cases. Pastes are better than salves, and oils or creams are better than petrolatum.

Presse Médicale, Paris

December 28, 1916, XXIV, No. 72, pp. 601-608

49 *Treatment of Tuberculous Pericarditis with Effusion by Insufflation of Air. P. E. Weil and Loiseleur.—p. 601.
50 Treatment of Chronic Pleural Empyema. (Traitement des fistules pleurales.) V. Pauchet.—p. 604.
51 Self-Feeding Irrigator for Carrel-Dakin Method of Treating Wounds. T. Tuffier.—p. 608.

49. **Insufflation of Air in Treatment of Tuberculous Pericarditis.**—Letting air into the pleura to take the place of the effusion has much simplified the treatment of pleurisy. It is possible by this means to release as much as 3 or 4 liters of effusion and replace it with air at one sitting. The air counteracts reproduction of the effusion and attenuates the tuberculous process, transforming a hemorrhagic or seropurulent into a merely serous effusion. Weil and Loiseleur have been applying this same technic in treatment of pericarditis, and have obtained such favorable results that they commend for general adoption this method of treating tuberculous pericarditis with effusion. The effect was the production of a pneumopericardium and hydropericardium, which can be watched and followed with the Roentgen rays. The latter permits paracentesis with an ease and precision hitherto unknown. They found it necessary to complete the withdrawal of the effusion before injecting the air. They used ordinary air without special filtration and found the benefit even more striking than in pleurisy. In the case of a child of 14, the procedure was repeated five times. The intervals were eight, fifteen, thirty-three and forty-eight days, demonstrating the progressive improvement. They compare the action of this pneumopericardium with that of induced pneumothorax, the principle and effect being practically the same. The patient recovers without symphysis, preexisting adhesions being generally broken up under the pressure of the air. Operative measures are superfluous, but benefit was derived from exposure of the abdomen and trunk to the direct sunlight, beginning with five-minute exposures and lengthening them to a maximum of forty minutes a day. The injection of the air in an amount equal to that of the fluid tapped. caused no pain nor dyspnea nor heart symptoms in the cases described. Only once was there a convulsive cough; the child had long been subject to this cough and the injection of air transiently aggravated the tendency on this occasion. Several roentgenograms show the exact findings.

Berliner klinische Wochenschrift

December 4, 1916, LIII, No. 49, pp. 1309-1332

52 *Successful Removal of Spinal Tumor; Two Cases. (Ueber erfolgreiche Geschwulstoperationen am Hals- und Lendenmark.) H. Oppenheim, E. Unger and E. Heymann.—p. 1309.
53 No Evidence of Infectious Origin in Fifteen Cases of Acute War Nephritis. (Aetiologie der Kriegsnephritis.) H. Beitzke and Seitz.—p. 1313.
54 *Retention of Nitrogenous Waste in Body Fluids in Nephritis. (Ueber stickstoffhaltige Retentionsstoffe im Blut und in anderen Körperflüssigkeiten bei Nephritikern.) M. Rosenberg.—p. 1314.
55 *Tests for Albuminoid Bodies in the Air. (Lufthygienische Untersuchungen. Nachweis von eiweissartigen Körpern in verbrauchter Luft.) W. Weichardt and K. Wiener.—p. 1316.
56 Control Roentgen Examination of the Heart. (Apparat für Kontrollaufnahmen des Herzens.) W. Preminger.—p. 1319.
57 Clinical Significance of Irregularity of Heart Action. (Die klinische Bedeutung der Unregelmässigkeiten der Herztätigkeit.) P. Schrumpf.—p. 1320.

December 11, No. 50, pp. 1333-1356

58 *Treatment of War Neuroses. (Neue Methoden und Gesichtspunkte zur Behandlung der Kriegsneurosen.) L. Mann.—p. 1333.
59 *Laws Regulating Growth and Nutrition in Man. (Ueber die Wachstums- und Ernährungsgesetze des Menschen.) P. Riebesell.—p. 1338.
60 Serous Periostitis Following Trauma. O. Heinemann.—p. 1339.
61 Apparently Favorable Influence on the Teeth of War Diet. (Zahnkrankheiten und Kriegsernährung.) Schaefer.—p. 1339.
62 Fracture of Exostosis on Lower Epiphysis of Femur. L. Meyer.—p. 1340.
63 Pathologic Chemistry and Metabolism in Rachitis. E. Schloss.—p. 1340.

52. **Spinal Cord Tumors.**—Oppenheim's first patient was a woman of 36 who recuperated practically completely after removal of a fibroma 10.5 cm. long, extending along the spinal cord over the entire cervical region. The findings in the cerebrospinal fluid aided in the diagnosis, but in two other cases of the same kind the fluid was normal. The case is the most striking one of which he knows to date, demonstrating the amount of compression which the cervical spinal cord can stand without irreparable injury. In the second case, a myxolipoma was removed at the upper lumbar and lower thoracic vertebrae. This patient was a girl of 16 whose complaints of abdominal pain had led to a useless appendicectomy a year before. The Roentgen and blood findings were normal, but the pains kept increasing and spread through the abdomem, lumbar region and left leg. They were regarded as imaginary for a long time, but finally the girl was treated with extension for eight weeks. It gave transient relief but then the pains grew worse, intensified by sneezing, coughing or laughing, and finally the left leg showed signs of weakness, with some paresis and atrophy of the left quadriceps, and

absent knee jerk, while slight clonus of the foot could be elicited. On this basis the tumor of the lumbar spinal cord was diagnosed and successfully removed. Reexamination several months later showed completely normal conditions except for slight weakness in lifting the left leg, slightly interfering with climbing stairs or a hill.

In conclusion he mentions some cases of chronic myelitis in which the symptoms deceptively simulated those of a tumor. Laminectomy in such cases is only exploratory and may whip up the disease. In another case a small tumor was correctly diagnosed and removed but the patient succumbed to weak heart action a few hours later. The pulse had been somewhat accelerated but not enough to warn of imminent danger. In another case an obese woman of 65 with exophthalmic goiter presented symptoms of spinal-cord tumor but the sanatorium physician mistook them for hysteria and insisted on exercise. He also burnt the patient during electrotherapy as her loss of sensation in the skin was not recognized. A consultant diagnosed osteomalacia. Oppenheim traced the symptoms to a tumor compressing the spinal cord. It was easily removed but proved to be malignant, and the patient soon succumbed to weakness of the heart. Even allowing for all such mishaps, tumors compressing the spinal cord seem to be one of the most grateful fields of medical-surgical endeavor.

54. **Retention of Nitrogenous Waste in the Various Body Fluids.**—Rosenberg tabulates the findings in regard to urea, creatinin and indican in the blood and ascitic fluid or pleural effusion in twenty-eight cases of various morbid conditions with ascites and in twenty-two with pleural effusion. When there was azotemia, the urea content of the effusion in the pleura or peritoneum was from 80 to 100 per cent. that of the serum. The creatinin content was up to 20 per cent. higher than that of the blood, while the indican content paralleled that of the blood. In a third table the findings in the blood and cerebrospinal fluid are compared. The latter contained from 56 to 96 per cent. as much urea as the blood, but only from 37 to 75 per cent. creatinin. He never found indican in the cerebrospinal fluid even with the highest indicanemia.

55. **Albuminoid Bodies in Expired Air.**—A man blew through a cotton-stoppered, crook-shaped tube into a wash-bottle containing 3 c.c. distilled water. The water was then rapidly evaporated and chemical tests applied to the residue. From this and other tests described, the presence of albuminoid bodies in the expired air was unmistakably established. The amount averaged 0.000015 mg. for each inspiration during quiet breathing, representing a total of 0.05 mg. for the twenty-four hours. The proportion during speaking averaged 0.07 mg. for the twenty-four hours. Analyses of the findings showed a content of 0.02 mg. amino-nitrogen in the air blown into the tube during twenty-four hours. Tests in telephone cabinets showed marked enrichment of the air, but they also showed that the air seems to spontaneously cleanse itself. About 2,200 liters air in a telephone cabinet were aspirated through a wash-bottle twelve hours after termination of the other tests. The findings then were practically nil, demonstrating a self-cleansing process.

58. **War Neuroses.**—Mann analyzes the various methods of treatment of war neuroses and describes some of his own successful cases. The hysteric manifestations in these war neuroses are the consequence of some powerful emotion which has induced, as he says, "a physopsychic concussion." The principle of treatment for certain cases is to induce some violent new commotion which will crowd the former one to one side. A pile of iron filings can be partially separated by shaking the paper holding them, and then they can be reassembled in a pile by shaking again. Kaufmann has been remarkably successful with his *Ueberrumpelung* method, combining startling electric measures with suggestion and exercise, the orders all in a crisp military tone, and keeping up the sitting until the man is cured, even if it takes two hours or more. Mann has succeeded with somewhat milder means; in some cases with several months of rest alone. No one method can apply to all.

59. **Laws of Growth and Nourishment.**—Riebesell qualifies Wamser's laws as great progress. He seems to have established that the growth—the increase in weight in a given period—is inversely proportional to the gross weight (*Rohgewicht*), and that growth occurs more rapidly the more remote the end of the period of development. He expresses this by formulas and Riebesell deduces from them and the individual proportions a set of figures representing the food requirements at different ages and weights.

Correspondenz-Blatt für Schweizer Aerzte, Basel

December 23, 1916, XLVI, No. 52, pp. 1729-1760

64 The Quantitative Determination of the Physiologic Variables. C. de Montet.—p. 1729. Concluded in No. 53, p. 1761.
65 Fatal Cumulative Toxic Action of Prolonged Use of Veronal.—R. Schubiger.—p. 1741.

December 30, No. 53, pp. 1761-1792

66 Extract of Blood Platelets Injected to Aid the Filling Up of Hole Left by Resection of a Fibrosarcoma of the Femur. A. Fonio.—1772.

Medizinische Klinik, Berlin

December 10, 1916, XII, No. 50, pp. 1303-1328

67 Injury of Internal Organs from Contusions. (Die Kontusionsverletzungen innerer Organe.) A. Dietrich.—p. 1303.
68 Dysentery with Lamblia. (Choleraähnliche Brechruhr mit Lamblien.) R. Müller.—p. 1307.
69 Mechanical Hyperexcitability of Muscles. (Ueber das Muskelphänomen der Soldaten im Felde und seine Stellung zum idiomuskulären Muskelwulst.) E. Mayerhofer.—p. 1308.
70 *Sausage Poisoning. (Ueber Botulismus.) Schede.—p. 1309.
71 Modification of the Hemolytic Factors in the Blood Serum of Syphilitics. (Ueber die Veränderung der hämolytischen Komponenten, bes. des Komplements im Blutserum der Syphilitiker.) V. Kafka and E. Haas.—p. 1312.
72 Interrupted Biologic Method of Purification of Drinking Water. (Der biologische Klärprozess.) W. Gemünd.—p. 1314.

70. **Sausage Poisoning.**—Schede describes an attack of botulism (*botulus* is Latin for "sausage,") in a family of five members who ate from a raw ham. The pig had been slaughtered on the farm six months before. About eighteen hours afterward the symptoms of botulism became apparent in the mother and two boys of 10 and 12, and the woman and the older boy died; the other recovered. The father who had eaten most freely of the ham was not affected by the poisoning. The only gastro-intestinal disturbances were nausea and vomiting which the older boy suppressed. Extreme prostration, dryness of the mucous membrane, difficulty in swallowing and in speaking, diplopia, ptosis, absence of the knee-jerk, paresis of the bladder sphincter, and other symptoms indicating severe involvement of the motor and secretory regions in the medulla oblongata were the more striking manifestations until the respiration center began to suffer. The two who died succumbed to arrest of respiration. Diphtheria antitoxin was given in two of the cases but without result; an antibotulism serum has been made, but it could not be procured for these cases. Pilocarpin has been recommended to combat the dryness of the mucous membranes, and Schede tried it in two cases but obtained alarming results as it induced such profuse secretion of mucus in the air passages. He gave 0.01 gm. subcutaneously but the boy nearly suffocated from the profuse secretion that followed in the air passages, which he was unable to cough up. With oxygen, heart and vessel tonics, and lowering the head, he was tided past this mishap. The tenacious constipation was combated with enemas, as drug purgatives might prove dangerous if they should be long retained owing to the vagus paralysis inducing the obstipation. Bürger advocates lavage of the stomach, even when the intoxication has been long under way. On account of the paralysis of the stomach, scraps of the poisonous food may be washed out with the lavage days afterward. Emetics are liable to do harm on account of the paralysis of the swallowing muscles and loss of reflexes. Ample nourishment should be provided; it is best given through a stomach tube. Oxygen was found a great relief by one of Schede's patients. Schneidemühl commends potassium iodid on account of its efficacy in a certain paralytic affection in cattle. Schede gave it to the boy that recovered, and he says that it is certainly worth a trial in every case of sausage poisoning. He mentions parenthetically that the *Bacillus botulinus* finds favorable conditions for its proliferation not only in ham and sausage but also in canned beans, in herrings and the like. He adds that canned goods should be cooked again before serving.

Münchener medizinische Wochenschrift, Munich

December 5, 1916, LXIII, No. 49, pp. 1717-1748

73 *Syphilis and Tabes from the Ophthalmologic Standpoint. L. Heine.—p. 1717.
74 Improved Tube for Deep Roentgen Work. (Die geerdete Röntgenröhre, eine Spezialröhre für Tiefenbestrahlung.) H. Wintz.—p. 1719.
75 *Rectal Gonorrhea in Children. G. Stümpke.—p. 1720.
76 *Treatment of Hard Edema. A. Nagy.—p. 1721.
77 The Pituitary Body as Regulator of Diuresis and of Specific Gravity of the Urine. H. Bab.—p. 1721. Continuation.
78 Marriage and Descendants of Those who were Backward or Defective Children. (Hilfsschule, Ehe und Nachkommenschaft.) B. Laquer.—p. 1723.
79 Bacillary Dysentery. (Zur Klinik der Bazillenruhr.) W. v. Starck.—p. 1733.
80 Treatment of Abscess in the Brain. (Behandlung der Hirnabszesse mit bes. Berücksichtigung des Hirnödems.) R. Klapp.—p. 1734.
81 Findings with Abdominal Wounds. (Ueber Befunde bei intra- und retroperitonealen Darmverletzungen.) R. Lenk.—p. 1735.
82 Splint Dressing for First Aid to Fractured Femur. (Schienenverband zur Versorgung der Oberschenkelschussfrakturen in der vorderen Linie.) v. Stubenrauch.—p. 1735.
83 Apparatus for Treatment of Contracture. (Zur Dauerapparatbehandlung von Nervenverletzungen.) O. Stracker.—p. 1738.
84 Plaster Casts with Hackenbruch's Portable Extension Devices. (Ueber die Behandlung der einfachen und Schussknochenbrüche mit Hackenbruchschen Distraktionsklammern.) Frick.—p. 1739.
85 Hypertonic Saline in Treatment of Atony of Vessels. (Behandlung der Gefässatonie mit hypertonischer physiologischer Salzlösung.) F. Hercher.—p. 1740.
86 Giant Magnet Part of Field Roentgen Equipment. (Ein Behelfsriesenmagnet in Verbindung mit dem Feldröntgenwagen.) Bartels.—p. 1742.
87 Bandage to Overcome Paralysis of Serratus Muscle. Neumeister.—p. 1743.
88 Improvised Medicomechanical Apparatus. J. Fuchs.—p. 1744.
89 Draining the Trenches and Shelters. (Zur Hygiene des Stellungskrieges. I. Hygiene des Unterstandes.) K. Hannemann.—p. 1745. (Einige praktische Erfahrungen bei Sanitätsunterständen.) Güth.—p. 1746.
90 Contaminated Catgut. (Kriegskatgut.) Burgkhardt.—p. 1747.

73. **Syphilis and Tabes from Ophthalmologic Standpoint.**—Heine reviews what has been written on this subject, saying that the frequency of eye troubles in syphilis can be estimated better by the statistics from general hospitals, etc., rather than from ophthalmologists' records. In the Kiel eye clinic the optic nerve was affected in two thirds of fifty syphilitics, and there were also pupil disturbances in two-thirds, while in half the cases there were disturbances in the external ocular muscles. Choked disk, optic neuritis and neuritic atrophy speak for syphilis rather than tabes. Uhthoff's report on 100 cases of cerebral syphilis stated that simple atrophy of the optic nerve was found in 10 or 15 per cent. of all cases of tabes, but was rare in syphilis.

75. **Rectal Gonorrhea in Children.**—Stümpke has had eighty-eight little girls with gonorrhea in his service at Hanover-Linden, including seven infants. Since 1913 rectal gonorrhea has been found in 55.9 per cent. of the fifty-nine examined. The rectal involvement is extremely difficult to cure; in a number of cases the findings in the rectum were still positive months after the vagina and urethra had been restored to normal. In a few cases the positive findings at first were followed by constantly negative, suggesting accidental or casual contamination. The only manifestations of gonorrheal processes in the rectum are swelling of the extremely red mucosa at the point affected. No tendency to ulceration was ever noted.

76. **Hard Edema.**—Nagy reports a case which illustrates how lymph can become extravasated and cause disturbances like those of a hematoma. Also how prompt benefit follows incision into the fascia and ligaments, supplemented by elastic compression when the painful stage is past.

Wiener klinische Wochenschrift, Vienna

November 23, 1916, XXIX, No. 47, pp. 1483-1514

91 *Causes and Treatment of Bladder Incontinence and Enuresis Nocturna in Soldiers. A. Fuchs and S. Gross.—p. 1483.
92 Prognosis of Abdominal Wounds. (Zur Prognose der Schussverletzungen der Baucheingeweide.) P. R. von Walzel.—p. 1487.
93 Hexamethylenamin in Treatment of Malaria. (Urotropin als Malariaheilmittel.) S. Plaschkes and M. Benkovic.—p. 1495.
94 Syphilitic Disease of the Aorta. L. v. Korczynski.—p. 1498. Continuation.
95 Treatment of War Fractures of Long Bones. (Zur Behandlung der Schussbrüche langer Knochen im Reservespital des Hinterlandes.) F. Burian.—p. 1511.

November 30, No. 48, pp. 1515-1546

96 *Diagnosis and Treatment of Malaria. W. Zweig and J. Matko.—p. 1516.
97 Experiences with Gas Gangrene. (Gasbrand.) H. H. Heidler.—p. 1522.
98 Modified Nail Extension. (Erfahrungen mit der Klammerextension nach Schmerz.) W. v. Sacken.—p. 1527.
99 Case of Progressive Spinal Atrophy of Muscles. P. Leitner.—p. 1529.
100 Acute Typhoid Urethritis. J. Saphier.—p. 1530.
101 *Enrichment of Urine with Bile for Bacteriologic Examination. (Ueber Gallenanreicherung von Urin.) A. Trawinski.—p. 1531.
102 Lead Poisoning from Painted Boards Used as Firewood. (Eine toxikologische Mitteilung.) L. Stefanowicz.—p. 1531.
103 Syphilitic Disease of the Aorta. L. v. Korczynski.—p. 1532. Continuation.
104 Treatment of Gastritis in Soldiers. (Ueber die im Felde vorkommenden Magenerkrankungen, ihre Behandlung und militärärztliche Begutachtung.) T. Frankl.—p. 1543.

91. **Treatment of Incontinence of Urine and Enuresis.**—Fuchs and Gross comment on the remarkable frequency of incontinence of urine among the soldiers on active duty. A history of trauma, getting chilled, or infectious disease was found in every case, and examination of the bladder showed that the body was in a state of maximal contracture. The sphincter region seemed to be normal. It was impossible to inject more than a small amount of fluid into the bladder; anything beyond this caused much pain. These and other facts observed suggested that local heat might relieve the contracture and this was confirmed by experience. Prompt relief followed and the incontinence was conquered by rinsing out the bladder with warmer and warmer fluids, reaching a temperature of from 45 to 48 C. The idea that paralysis of the bladder is always responsible for incontinence thus has to be abandoned. Under the influence of the hot irrigation the contracted musculature relaxes and the incontinence is cured. The incontinence has not returned in any of the cases during the months since this simple measure proved effectual. They suggest a trial of it in tabetic incontinence or with other spinal processes. In the ten cases of incontinence after trauma a complete cure was realized in six and great improvement in three; two were cured and four improved in the eight cases traceable to getting chilled, and four cured and two much improved in ten cases of incontinence following cholera, typhoid or other infectious disease. In five cases of pollakiuria with relative incontinence a complete cure was speedily realized in all. They injected from fifteen to twenty syringefuls at one sitting, repeating the fifteen or twenty minute sitting daily. The incontinence was of less than four weeks' standing in all, and the success was more constant in the more recent cases. Enuresis nocturna seems to be due to some congenital disturbance in the innervation, some insufficiency of the lower segments of the spinal cord, and the hot rinsing of the bladder has no effect on it.

96. **Malaria in Austrian Army.**—Zweig and Matko state that as the war has taken the troops into various malarial regions, the number of cases of malaria is constantly increasing. Quinin prophylaxis has not proved as effectual as had been hoped. In the Italian army, the drop from 50 per thousand cases of malaria in 1900 to 5 per thousand in 1910 is attributed to the systematic quinin prophylaxis. In the Austrian army it was not applied early enough and the technic may have been imperfect. When malaria is once installed, a course of quinin treatment for at least two months is necessary. Even the slightest temperature above normal is a warning that the malaria has not been conquered. Measures to bring on an attack, hoping thus to disclose the latent carriers, were always unsuccessful. The only safe way is to treat all for two months as if certain they are carriers. In nine of their recent 100 cases, after a single severe attack there were no further symptoms, although no treatment had been applied. These persons must have had natural defensive bodies which conquered the infection at the start.

101. **Bile Enrichment of Urine.**—Trawinski tabulates his findings showing that positive findings were obtained in 50 per cent. more of the tests when bile was mixed with the

urine. Of the 421 speciments of urine, pathogenic germs were found in over 22 per cent. but this proportion rose to over 33 when 15 c.c. of beef gall was added to each 3 c.c. of urine.

Pediatria, Naples

December, 1916, XXIV, No. 12, pp. 705-748

105 Formation of the Giant Cells of the Glomeruli in Tuberculosis of the Kidney. A. Filia.—p. 705.
106 *Influence of Antimony on the Fever Curve in Internal Leishmaniasis. R. K.-Marinucci.—p. 717.
107 *Serum Reactions in Cerebrospinal Meningitis. B. Romano.—p. 728.
108 Inflammation of Sublingual Gland as Sole Appreciable Local Manifestation of Mumps. (Caso di sublinguite pura da orecchioni.) E. Modigliano.—p. 733.

106. **Antimony in Internal Leishmaniasis.** — Marinucci describes two typical cases out of more extensive experience to show the effect on the fever curve of intravenous injection of antimony and potassium tartrate. The children were 2 and 4 years old and had been having irregular fever for nine and four months, with pallor, loss of weight and protuberant abdomen. This drug intravenously, and sodium acetyl p.-aminophenyl tartrate subcutaneously seem to act by their chemical action, destroying the parasites like the natural process from production of antibodies. These drugs also have a hemolyzing action but this is secondary, although it can be traced in the fever curve.

107. **Serum Reactions in Epidemic Meningitis.**—Romano gives tabulated details of his tests. The deviation of complement with serum and cerebrospinal fluid was inconstant, but occurred more frequently after the sixth day of the disease, while the Vincent and Bellot test with the cerebrospinal fluid gave positive findings earlier, sometimes the first day of the disease. In the six cases tabulated it was positive in four, and these were at the third to the seventh day of the disease.

Policlinico, Rome

January 1, XXIV, No. 1, pp. 1-40

109 The Spirocheta Pallida in Central Nervous System of Fetus at Term of Mother with Paralytic Dementia. A. Giannelli.—p. 3.
110 Lessons as to Management of the Sick and Wounded Learned as the War Has Progressed. (Insegnamenti della guerra sui servizi sanitari campali.) G. Mendes.—p. 5.

Brazil-Medico, Rio de Janeiro

December 16, 1916, XXX, No. 51, pp. 401-408

111 Contradictory Facts in Antitoxin Treatment of Diphtheria. O. Clark.—p. 401. Continuation.
112 Roentgen Treatment of Uterine Fibromyomas. J. de T. Dodsworth.—p. 404.

Siglo Medico, Madrid

December 23, 1916, LXIII, No. 3289, pp. 817-832

113 Intermittent Hysteric Tremor. (Temblor histerico intermitente de paroxismos periodicos.) E. F. Sanz.—p. 818.
114 Relations between Croup and Pneumonia in Children. (Relaciones entre el crup y la bronconeumonia en los niños.) E. Suñer y Ordonez.—p. 829. To be continued.

Russkiy Vrach, Petrograd

1916, XV, No. 43, pp. 1009-1032

115 Traumatic Aneurysms; Nature and Treatment. A. P. Krimoff. —p. 1009.
116 *Practical Suggestions in regard to Salicylic Medication. (Nieskolko prakt. zamiechanii po voprosu o primienenii salitsilovago natra i salitsilovoi k-ti.) V. L. Yanovsky.—p. 1011.
117 Principle for Continuous Traction of Semiflexed Leg. (O polusognutom polozhenii nizhnoi konechtosti pri primienenii postoyanago vityazheniya.) K. T. Vegner.—p. 1014.
118 Treatment of Fracture of the Femur According to the Russian and Foreign Literature Compared with Results in Sixty-Seven Personal Cases. (O liechenii perelomov bedrenoi kosti.) M. L. Nobel-Oleinikova.—p. 1017. Concluded.
119 Cooperation of National and Local Medical and Sanitary Forces to Promote Public Health Matters. V. I. Gondzikevich.—p. 1026. Concluded.

116. **Salicylic Medication.**—Yanovsky expatiates on the importance of giving the exactly proper dose of any drug we are using. Any excess is liable to have a toxic action and counteract the therapeutic influence, while with too small a dose we not only deprive the organism of the aid it is in our power to bestow, but the drug in small amounts may have some unanticipated action. Too many administer drugs in rather haphazard fashion, not appreciating the importance of exact individual dosage. Yanovsky discusses here salicylic medication, saying that the proper dose of sodium salicylate in all cases of articular rheumatism and in severe muscular and tendon rheumatism is from 2.5 to 4 or 5 gm. in the twenty-four hours. If this does not bring improvement in three days, he changes to pure salicylic acid treatment, giving 0.6 gm. four times a day. By these means he has treated not less than 200 patients with rheumatism, and they proved effectual in all but three or four, although many of the cases in soldiers were exceptionally serious. He reports a few typical cases of acute rebellious and recurring articular rheumatism and of persisting endocarditis to illustrate the prompt efficacy of the salicylic acid alone or after failure of other methods of salicylic medication. In the most serious cases he supplemented the four powders of 0.6 gm. salicylic acid during the day with 0.4 gm. acetylsalicylic acid.

The fear of injurious action on the heart has no foundation in fact; it is a traditional survival of the unfortunate experiences with the salicylates when they were first introduced, many years ago, and they were given in enormous doses and for all kinds of troubles. In reference to any injurious action on the kidneys, he cites some recent experiences with epidemics, especially one hospital epidemic of infectious sore throat in which there was a complicating hemorrhagic nephritis. This occurred just as regularly in those who had not been given salicylic medication as in those who had. He found that pure salicylic acid is no more liable to induce disturbances in the digestive tract than any of its preparations, while it is more effectual and more reliable. He begins with this and then, as the patient improves, he changes to sodium salicylate. For endocarditis he gives 1 or 1.5 gm. during the twenty-four hours. In conclusion he commends for local application Bourget's salve as effectual and nonirritating although it contains 25 per cent. salicylic acid. The formula is 12.5 parts salicylic acid; 8 parts turpentine and 42 parts lard. It is inexpensive and colorless, rubs in easily, and does not turn rancid.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 9, 1916, II, No. 24, pp. 2061-2132

120 *The Work of the Railroad Physician. (De positie van den spoorwegarts.) L. W. H. T. Willink.—p. 2064.
121 *Goiter in the Netherlands. (Over het voorkomen van struma.) B. D. G. Kappenburg.—p. 2079.
122 *Local Anesthesia for Children. (Plaatselijke gevoelloosmaking bij kinderen.) E. H. La Chapelle.—p. 2085.

120. **The Railroad Physician.**—Willink's article was the opening address at the recent conference of the organized medical officials of the railroads of the Netherlands. He discussed in turn the three aspects of the work of the railroad physician: as clinician and surgeon; in certifying to the fitness of applicants for positions; and as the confidential adviser of the railroad company. Improvement in contract conditions was one of the main objects of the conference, and Willink remarked that there was great room for improvement. But he rejects the principle of free choice of a physician for railroad employees, mentioning a number of reasons why it is unwise under these circumstances. Among them he notes that it would be impossible to give free passes on the railroad to all outside physicians, while ample facilities for reaching the sick employees are indispensable. Another reason is that the contract physician feels his responsibility to the company, and when he finds a block-signal man, for instance, suffering from overwork and nervousness, he not only orders him to take a vacation and rest, but he telephones the man higher up to ensure that his directions are enforced.

121. **Goiter in the Netherlands.** — Kappenburg recently reported that a goiter was manifest in 11 per cent. of 493 nurses or attendants at the public hospital of Utrecht. Recruiting officers have also called attention to the prevalence of goiter among recruits from Utrecht. Examination of other nurses elsewhere revealed a total of 95 with goiter out of 611, that is, nearly 16 per cent. A tabulation of their home towns shows anew the prevalence of goiter in those from the

Utrecht district, with Amsterdam a close second. But in two other river districts the proportion was still higher, namely, 6:4/6 and 9:25/6 nurses with and without enlarged thyroids. The figures show further a preponderance of goiter in the nurses who have served in the care of the insane. Does this tend to induce goiter, he asks, or are nurses with a predisposition to goiter attracted more to the care of the mentally diseased?

122. **Local Anesthesia for Children.**—La Chapelle reviews his experience with various operations done on children under 7 with local anesthesia alone. The list includes 9 herniotomies on children under 4. There were no mishaps or drawbacks, and no restlessness except at the first prick of the needle, and this was no more than is observed at the outset of general anesthesia. On the whole, his impression is that local anesthesia is about as applicable to children as to adults. Even with the latter it is advisable to divert the attention from the operation. The advantages of avoiding general anesthesia are likewise the same as for adults. He mentions in proof of this that one boy of 10 whose appendix was removed under local anesthesia had an infant brother, apparently healthy, who died a few hours after a small nevus on the forehead had been excised under general anesthesia.

Hospitalstidende, Copenhagen

December 13, 1916, LIX, No. 50, 1205-1228

123 *Experimental Research on Suture of a Bronchus and Drainage of the Pleura. (Experimentelle Studier over Bronchiesutur og Pleuradrainage.) F. Nielsen.—p. 1205. Commenced in No. 49, p. 1181.

December 20, No. 51, pp. 1229-1252

124 *Day Urine and Night Urine. (Dag- og Naturin.) K. Jespersen.—p. 1229.

December 27, No. 52, pp. 1253-1276

125 Two Cases of Progressive Wasting Away of Fat Tissue. (To Tilfælde af Lipodystrophia progressiva.) A. V. Neel.—p. 1253.

123. **Suture of Bronchus and Drainage of the Pleura.**—The work was done on twenty-four dogs, as is related in detail. The device with which the pleura was drained is also illustrated and its advantages over other methods for the purpose are emphasized. It can be applied and removed without an anesthetic while it permits the wearer to be up and about.

124. **Day Urine and Night Urine.**—Jespersen's study of this subject fills twenty pages and reproduces seven typical charts showing the findings over periods up to nine days. They show that less urine is secreted at night than during the day, but the specific gravity is higher at night as also the percentage of nitrogen. The relative and absolute proportion of sodium chlorid is less at night, as also the absolute nitrogen content of the urine, while the relative proportion is higher at night than in the daytime.

Hygiea, Stockholm

December 31, 1916, LXXVIII, No. 24, pp. 1809-1916

126 *Tubercle Bacilli in the Feces of Children with Tuberculosis of the Air Passages. (Bidrag till frågan om det diagnostiska värdet av påvisandet av tuberkelbaciller i fæces hos barn med tuberkulos i respirationstractus.) J. Leffler.—p. 1809.

127 Complications with Incarcerated Hernia; Three Cases. (Tre sällsynta fall av Hernia incarcerata.) G. Gussander.—p. 1831.

126. **Tubercle Bacilli in Children's Stools.**—Leffler analyzes the scanty literature on the finding of tubercle bacilli in the stools of children with a tuberculous process in the air passages. He examined 110 children at the municipal tuberculosis sanatorium and found tubercle bacilli in the stools in 16.4 per cent. The feces were examined with the Reh ether technic and also with the Engleson method, the former proving most reliable. The cases are tabulated for comparison of the clinical data, and a brief summary of each of the positive cases is given, including four infants and five children over 12 and three respectively 6, 8 and 9, all with advanced physical changes and bad general condition. Others with positive findings were three older children with similar advanced lesions but the general condition still good, and four with minor lesions and good general condition. Five of the older children with advanced lesions had tubercle bacilli in the sputum, and one had considerable expectoration but no tubercle bacilli. None of the other children expectorated. The tables show thus that the conditions in older children are much the same as in adults. Only six infants were examined; tubercle bacilli were found in the stools of all but one, confirming the diagnosis of progressive pulmonary tuberculosis. These experiences confirm the rarity of "open" tuberculosis in children, and testify against the assumption that the tubercle bacilli get into the stools by way of the blood. If this were the case, the positive findings would probably have been more numerous.

Ugeskrift for Læger, Copenhagen

December 14, 1916, LXXVIII, No. 50, pp. 2171-2212

128 *Chronic Habitual Constipation. (Bidrag til den kroniske habituelle Obstipations Klinik og Røntgenologi. III.) T. E. H. Thaysen.—p. 2171. Commenced in No. 49, p. 2113.

December 21, No. 51, pp. 2213-2336

129 Chronic Lacrimation and Its Treatment. (Det kroniske Taareflod. Med Henblik paa Dacryocystorhinostomien og Exstirpation af Glandula lacrymalis.) B. Strandbygaard.—p. 2213.

December 29, No. 52, pp. 2337-2350

130 *Influence of Thyroid Treatment on Standard Metabolism. (Thyreoidinets Indflydelse paa Standardstofskiftet.) M. Krogh.—p. 2337.

128. **Chronic Constipation.**—Thaysen devotes his third article on this subject to what he calls *Ascendensobstipation*, the feces sojourning abnormally long in the ascending colon and first part of the transverse colon. There may be excessive or deficient contractions of this part of the bowel. In thirteen of Thaysen's twenty-two cases of this ascending type of chronic constipation the stasis was restricted to the ascending colon, and the Roentgen findings showed the atonic or spastic conditions responsible for the constipation. He reproduces some of the roentgenograms. In the other cases the roentgenograms showed stasis of feces along the ascending colon and beyond. Adhesions may be responsible for stasis in the descending colon, but this seems to occur but rarely, the trouble here being of functional nature in the majority of cases, either spasmodic contraction or atony or a combination of both. Nine of his twenty-three cases were of the spastic type, and even in the others there were occasionally symptoms suggesting spasmodic contraction. He calls attention to the fact that in six of the nine spastic cases the pains were either exclusively or much stronger in the left than the right side. In only two were they restricted to the right side; in one case to the epigastrium. The tenderness likewise was most pronounced over the regions where the pains were felt most. This suggests that when there is spastic contraction in the ascending or transverse colon, there must be an accompanying spasm in the descending colon. Among the fourteen patients with constipation from atony, four had no pains in the colon region, six had pains in the right iliac fossa, two in the left and two on both sides. The roentgenograms show that the ascending colon is not dilated with this "ascending" constipation. It is liable to lead to the erroneous diagnosis of appendicitis, especially of "recurrent" appendicitis, while mucous colitis rarely entails appendicitis. Four of Thaysen's patients had a temperature somewhat above normal along with pains in the right iliac fossa confirming the assumption of appendicitis. Of Stierlin's eight patients of this type four had had appendicectomy done. The disturbances in such cases persist after removal of the appendix as this does not get rid of the cause. In short, he concludes, the discovery of *Ascendensobstipation* should contraindicate appendicectomy, even when everything seems to indicate chronic appendicitis.

130. **Influence of Thyroid Secretion on the Standard Metabolism.**—Krogh has had occasion to record the metabolic findings in numbers of persons with exophthalmic goiter and myxedema, and has been amazed at the remarkable deviations from normal in certain respects. In one case of exophthalmic goiter the standard metabolism was found 80 per cent. above normal, and in a myxedema patient 40 per cent. below normal. It is thus rendered evident that the secretion of the thyroid promotes the metabolic changes. This assumption was confirmed by experiments on five frogs, described in detail. The metabolic findings showed a pronounced increase under the action of thyroidin, although the animals were entirely under the influence of an anesthetic.

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COLON BACILLUS PYELONEPHRITIS

ITS NATURE AND POSSIBLE PREVENTION *

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It is not our ambition to present an old subject, the etiology and nature of colon pyelitis, in a spectacular manner. We merely wish to give the results of our own clinical and laboratory observations on the lesions produced and etiologic factors concerned in the production of the colon type of renal infection, mindful of the fact that some of our views may seem radical departures from the beaten path of previously existing opinions. Granting the correctness of our contentions concerning the manner of production of the disease and the nature of the lesion resulting, prevention of infection in certain types of cases becomes not only a fond hope but also a logical possibility.

We shall make no attempt to reproduce the evidence leading us to accept the following views as to the mode of origin and pathologic nature of colon bacillus infection of the kidney. These facts are given in detail in three previous communications.[1]

We believe and have produced evidence to show that renal infections are as a rule hematogenous. Colon bacilli circulate in the blood during the early hours of symptoms due to colon pyelonephritis, and can be demonstrated by blood culture. In a limited number of cases blood infection has been demonstrated to be primary, followed in order by albuminuria, bacilluria and pyuria. The portal of entry of bacillus into the blood stream is not always demonstrable; the intestine, a purulent urethra or prostate, and an inflamed bladder are the commonest sources of bacilli. We do not wish to be understood to deny the occurrence of renal infection by direct extension along the lumen of the ureter, in cases in which there is an incompetent ureterovesical valve, or to state that pure lymphatic extension is not occasionally the cause of renal infection; yet the recovery of bacilli from the blood stream in such cases leads us seriously to doubt the occurrence of renal infection by either of these methods without the intervention of the blood stream.

On reaching the kidney the bacilli are arrested in the glomeruli, through which they pass readily, without producing damage, into the tubule. Failure to produce glomerular lesions is due to low pathogenicity, with lack of pus-producing ability, of the colon bacillus for the human kidney. Once the bacilli reach the tubules, they pass to the pelvis and produce a pyelitis, multiplying both in the recesses of calices and in the mucosa of the pelvis and ureter. The portion of the kidney damaged during the process of excretion of this organism is the convoluted tubule, as evidenced in the few cases available for microscopic examination, by cloudy swelling, but clinically by marked decrease in the output of phenolsulphonephthalein. Chiefly because of this clinical evidence of renal tissue damage the term "colon pyelonephritis" is preferable to "colon pyelitis" for the acute stage of the disease.

Damage to the convoluted tubules as a result of colon infection of the kidney is of short duration. These kidneys return to normal function in many cases within a period of from ten days to two weeks, and the chance kidney seen at necropsy in cases in which there has been a recent colon infection may show no lesions and be passed by the pathologist as normal kidneys. At this stage of the disease the urine still shows bacilli and usually some pus. In sections stained for bacteria, the mucosa of the pelvis is seen to contain many bacilli growing among the epithelial cells, but none are to be found in the kidney tissue save occasional bacteria in the lymphatic channels, evidence of reascending infection from the pelvis back into the kidney tissue. In other words, an acute colon pyelonephritis in its subacute and chronic state becomes an almost pure pyelitis.

As a result of the activity of the colon bacillus in the pelvic mucosa, and repeated injury to the kidney tissue from frequent excursions of the bacilli from the pelvis, the chronic stage of the disease shows a thickened, lax, dilated pelvis lined with thickened mucosa, and infiltrated with lymphocytes and some pus cells. In the tips of the papillae there is scar tissue formation and lymphocyte infiltration with narrowing of the cortex chiefly from distention. The ureter shows the same chronic changes, and along with the bladder mucosa contributes largely to the production of pyuria. As a result of stasis either from obstruction or as the result of relaxation of the pelvis due to the infection, the end stage of a colon bacillus infection is pyonephrosis.

With the foregoing bacteriologic and pathologic findings as a basis, we have studied the evidence of immunity production in colon bacillus pyelonephritis under three headings:

(*a*) Evidence of the natural production of immunity as a result of accidental infection.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Crabtree, E. G.: Observations on the Etiology of Renal Infection, Lancet-Clinic, Jan. 29, 1916. Cabot, Hugh, and Crabtree, E. G.: A Classification of Renal Infection with Particular Reference to Treatment, Boston Med. and Surg. Jour., June 1, 1916; The Etiology of Non-Tuberculous Renal Infections, read at the Triennial Congress of Physicians and Surgeons, Washington, May, 1916, Surg., Gynec. and Obst., 1916, **23**, 495.

(*b*) Evidence of artificial production of immunity in chronic cases with pyuria vaccination.

(*c*) Evidence of the artificial production of immunity in uninfected cases with a view of preventing infection as a complication to operation.

There seems to be no entirely satisfactory test to determine the amount of protective reaction the body elaborates in response to bacterial invasion. The most satisfactory means of estimating the factor for cocci, particularly the staphylococci, is Wright's opsonic index. Unfortunately there are a group of organisms, including the colon bacillus, which are phagocyted by leukocytes to only a small degree and for which the opsonic index provides an unsatisfactory control. It is a well recognized fact that agglutinin production and the production of bactericidal bodies do not take place in the same degree, yet the production of agglutinins is attended by an increase in bactericidins, and for certain organisms like the colon group is the most satisfactory simple test. We have made use of it in these investigations, realizing its limitations, yet depending on clinical evidences to substantiate laboratory evidences of afforded protection.

EVIDENCE OF NATURAL PRODUCTION OF IMMUNITY AS A RESULT OF SPONTANEOUS ACCIDENTAL COLON INFECTION

The normal adult individual harboring colon bacilli in his intestine and subject to occasional wound infection in which this organism may be concerned is generally recognized to carry about protective antibodies expressed in terms of agglutinin titer of from 1:10 to 1:40 for the common intestinal varieties of this organism. This normal resistance to infection may be low at times. During the past two years we have observed that the cases of so-called idiopathic colon pyelonephritis which have come to our clinic in which there could be demonstrated no abnormality of the kidney or lower urinary tract occurred in patients whose normal resistance had been lowered from overwork, underfeeding, recent or chronic illness, recent pregnancy, or acute intestinal disturbances. In other words, they occurred in patients whose normal resistance had been lowered, and in two of these the patient's serum did not agglutinate his own bacillus in 1:5 dilution.

TABLE 1.—INCREASED AGGLUTINATING POWER OF SERUM

Case	Diagnosis	Pyelonephritis	Agglutinin Titer of Serum for Colon Bacillus Recovered from the Patient's Urine		After Pyelonephritis
			Entrance		
			Weak	Strong	Strong
1	Renal calculus.	Postoperative.............	1: 10	0	1: 160
2	Prostate.......	During drainage...........	1: 20	0	1: 60
3	Old pyelitis of pregnancy.	Recurrent pyelonephritis..	....	1: 40	1: 250
4	Urethral obstruction.	4 attacks of colon epididymitis in 3 months.	....	.....	1: 600

We are also convinced that prostatics seen and operated on within from three to four weeks following a pyelonephritis are better operative risks, owing in great measure to acquired immunity.

In support of this view we present evidence of increased agglutinating power of the serum in three patients recovering from pyelonephritis and a fourth from the fourth attack of colon epididymitis (Table 1). In Case 4 there were three types of bacteria present, *B. coli*, a large staphylococcus, and an unknown bacillus. The patients' serum did not agglutinate the last two organisms mentioned.

EVIDENCE OF ARTIFICIAL PRODUCTION OF IMMUNITY IN CHRONIC PYELITIS BY USE OF VACCINES

It is extremely unlikely that immunity conferred by recent infection, while largely responsible for the course of the disease, is at all lasting. In a group of nineteen cases in which there had been clinical symptoms pointing definitely to a colon infection of the kidney from two months to one year preceding this investigation, only two showed an agglutinin titer over 1:30. One of these showed a titer of 1:40 and one of 1:80. After vaccine treatment three cases showed 1:600, 1:1,000 and a third 1:1,200. One case showed no definite agglutination in any dilution.

It is recognized that vaccine treatment of these cases, while beneficial to symptoms, is, as a rule, not curative of the condition. This fact is not surprising in view of our belief, expressed above, that the lesion in the kidney is chiefly of the mucosa rather than of the renal tissue. We know of no evidence to show that bactericidal products in the blood reach the urine as such save in rare instances, and then in amounts insufficient to produce beneficial effects.

EVIDENCE OF ARTIFICIAL PRODUCTION OF IMMUNITY IN UNINFECTED CASES WITH THE AIM OF PREVENTING INFECTION AS A COMPLICATION OF OPERATION

The ideal case for study is the prostatic with uninfected urine who undergoes some form of drainage preliminary to operation either with inlying catheter, suprapubic puncture or the two-stage operation. Almost without exception these patients show some rise of temperature during the periods of drainage, often presenting symptoms of an acute pyelonephritis. Renal functional tests with phenolsulphonephthalein are apt to show an immediate drop, owing to renal decompression. In those cases in which a pyelonephritis develops, there is a still further decrease in output of the drug simultaneous with the onset of symptoms, followed in from ten days to two weeks by a return to somewhat below the former high level.

Believing that the relief of back pressure on the kidney causes only temporary and not serious disturbance, and that the largest element of danger to the patient is renal infection, we have endeavored to eliminate the latter by the administration of mixed colon vaccines during the periods of preliminary preparation. Vaccination was begun where possible a week before the patient was admitted to the hospital, and continued at the beginning of these investigations up to the time of operation, but later throughout the patient's convalescence.

The preparation of such a colon vaccine is made difficult because of the large number of strains of colon bacilli. Eighteen cultures of colon bacilli obtained from urine, from blood cultures and from cultures from the vagina in infants were employed. By agglutination tests either with serum from the patient from whom the culture was obtained, or by animal immunization, five cultures were found which produced serums which, while not agglutinating the other four, together produced some measure of agglutinin for ten of the remaining thirteen strains of bacteria. These were Culture T, obtained from urine from a patient with pyelonephritis and hemorrhagic cystitis, Culture L, obtained from urine of a patient with pyelonephritis of unknown origin, high temperature and extreme prostration. Culture B, obtained from the vagina of an infant, Culture Lm, obtained from the blood of a prostatic with pyelonephritis, and Culture W, from the blood stream in a case of recurrent pyelonephritis following pregnancy. At the beginning of our work only Cultures T, L and B were used; later the others were added. The vaccine containing these three organisms was administered in three injections of 500, 1,000 and 1,500 millions. The second vaccine containing five strains produced more marked local reaction, and administration was begun at a lower dosage of 150 millions. Inasmuch as some of the cases which were given but three injections, the last three days before operation, developed rise of temperature and pyuria with positive colon cultures *late* in convalescence, we now continue the inoculations throughout convalescence.

In all the foregoing experiments the mass agglutination test was used. Various dilutions of serum were mixed in equal parts with 24 degree bouillon cultures of the organism, and incubated one hour.

Unfortunately for the rapid progress of these experiments, prostatics with uninfected urine are not common in the wards of the Massachusetts General Hospital. We have studied eight cases, in two of which operation was refused. Table 2 shows the agglutination titer for patients' serum and cultures L and T at entrance and after vaccination.

TABLE 2.—AGGLUTINATION TITER FOR PATIENTS' SERUM AND CULTURES L AND T

Number	Diagnosis	Entrance Strong		After Vaccination Strong	
		L	T	L	T
1	Prostate......	1: 10	1: 10	......	1: 500
2	Prostate......	0	0	......	1: 220
3	Prostate......	.?...	0	......	1: 350
4	Prostate......	1: 10	1: 10	1: 20	1: 180
5	Prostate......	?	1: 10	......	1: 1,000
6	Prostate......	.....	.....	......	1: 2,200
7	Prostate......	1: 10	1: 60	......	1: 3,000
8	Prostate......	.....	1: 120	......	1: 500

Patients 1 and 4 refused operation. Patient 1 was put on one catheterization a day, and when seen two months later had hazy urine with other bacteria but no colon bacilli. He failed to return for further observation.

Patients 2, 3, 7 and 8 were vaccinated with but three injections, and inoculation was discontinued at operation. The urine remained free from colon bacilli, and there were no symptoms of renal infection until late in convalescence, when all showed colon bacilli and other varieties of bacteria. Patient 3 had definite symptoms of right pyelonephritis and later right pyonephrosis.

Patient 5 showed no rise of temperature during two weeks of preliminary drainage, and passed through suprapubic operation with a rise to 100 F. for two days, followed by normal temperature throughout convalescence. The urine showed a large bacterial flora but no colon bacilli at any time during his convalescence. Five weeks later, ten days after leaving the hospital, he developed a bilateral colon epididymitis and cloudy urine. *B. coli* was obtained in culture from the urine.

Patient 6 entered the hospital with markedly overdistended bladder and beginning uremia. He was vaccinated with increasing doses of mixed vaccine (five strains), beginning at 150 millions, at intervals of four days, until he was receiving 2,500 million at a time, at which dosage he was kept throughout the eleven weeks he remained in the hospital. He was on constant drainage with inlying catheter for eight weeks. Prostatectomy was done. While his urine showed a slight haze and a few pus cells, it never contained colon bacilli; it is now entirely clear, and culture shows no growth of any variety of organism.

We recognize that our work has not been of sufficient scope to justify conclusions as to the value of colon vaccines as a preventive to colon pyelonephritis, yet our experience leads us to believe that it is more than a possibility. While the colon bacillus is not the only organism concerned in renal and bladder infections, it is the permanent infection, and if avoided the patient is usually able to handle the other bacteria.

It is our belief that the immunity conferred by colon vaccine is of short duration, probably not exceeding three or four weeks.

The administration of vaccine in prostatics should be made to extend over the period of convalescence.

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PYELITIS IN CHILDREN *

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The present knowledge on the subject of pyelitis, or pyelocystitis, of infancy and childhood is well reviewed in an article by R. M. Smith[1] of Boston published last year. Since this, the subject has also been dealt with in the papers of Kowitz,[2] Wood[3] and Fischl.[4]

As is well known, by far the commonest type of pyelitis in children is that due to bacilli of the colon-aerogenes group. The clinical picture caused by such infection of the urinary tract is clear cut, recognized generally, and will not be discussed in this place. On two aspects, however, a review of the opinions of writers shows that there exists marked lack of unanimity: the first is in regard to the method of causation of the infection; the second embraces the question of treatment. It is in regard to these points that I wish to call attention.

MODE OF INFECTION

The three methods by which the infecting organisms may reach the renal pelvis are by direct extension upward from the lower urinary passages, by the general blood stream, and by way of the lymphatics. The first method, that of upward extension, has for long held the field as the most probable and the most common. Lately, however, this has been disputed, and several writers, Kowitz and Wood in particular, are of the opinion that the bacteria reach their location by way of lymphatic channels leading from the intestine directly to the kidney, or by the blood stream. The reasons for this change of feeling are, among others, that the ascending route has never yet been clearly proved, and cases are found not infrequently in which no involvement of the lower passages can be demonstrated. The same arguments here as to mode of ingress of the bacteria are in no way confined to children, but apply to adults as well. Kowitz goes so far as to assert that the infection is almost never an ascending one, but a direct result of previous intestinal involvement. He prints a most suggestive incidence curve showing that the majority of his cases occurred during the months from July to November: months during which intestinal diseases are most common in children.

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* From the J. B. Brady Urological Institute, Johns Hopkins Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Smith, R. M.: Literature of 1913 and 1914 of Infections of the Genito-Urinary Tract in Children, Am. Jour. Dis. Child., April, 1915, p. 338.

[2] Kowitz: Ueber bakterielle Erkrankungen der Harnorgane im Säuglingsalter, Jahrb. f. Kinderh., 1915, **82**, 309; München. med. Wchnschr., June 16, 1914, p. 1341.

[3] Wood: Acute Pyelitis: A Cause of Obscure Fever in Infancy, Arch. Pediat., 1915, **32**, 199.

[4] Fischl: Erfahrungen über Zystitis im Kindesalter, Prag. med. Wchnschr., 1915, **40**, 163.

It would seem that the theory of ascending infection has been losing ground of late, and it is probable that the frequency of this mode of ingress has been exaggerated in the past. There still remains, however, the well known fact of the large preponderance of girls afflicted over boys. Adherents of the ascending infection theory have always explained this by the closer proximity of the female bladder to the exterior, with resulting increased chances of infection of the child's vulva from the anus. On those who deny this mode of origin rests the burden of offering some other plausible explanation for this undoubtedly more frequent infection of girls. None has yet been suggested.

Thomson,[5] who has written two excellent papers on this subject, says on this point:

> The great preponderance of female patients seems . . . to force us to the conclusion that ascending infection by way of the urethra must be a common occurrence; and the excess of girls over boys probably represents the frequency with which urethral infection takes place. It seems very unlikely that the colon bacilli can find their way up the lumen of the male urethra. The greater prevalence of antecedent diarrhea in boys would probably cease to exist if we were able to subtract from the list of girls the primary cases infected per urethram.

He in no way denies the occurrence of cases in which the infection has had origin in the intestines and been carried thence by the blood or lymph.

PROGNOSIS AND DURATION OF THE DISEASE

Of the sixty cases collected by Jeffreys,[6] all but six were due to the colon bacillus. Fifty-three were in females, seven in males. Only twenty-one of the sixty were cured. Nine patients died: six of the urinary trouble, and three of some other disease. Six were unrelieved. Twenty-three were improved, that is, were without symptoms, but still showing pus in the urine. Kowitz gives the details of forty cases, of which fifteen patients died. Langstein,[7] on the other hand, considers that 90 per cent. of the patients recover. It is quite evident, therefore, that the actual mortality is rarely an insignificant one, and in certain localities may run as high as 37 per cent. (Kowitz). But besides this, the morbidity of the disease is considerable, some cases existing for three years or more, and ending either in recovery or with some definite nephropathy as a result of the chronic infection. Marsh[7] says that the prognosis of the disease is favorable, "but before pronouncing the patient cured the urine should not only show an absence of organisms and of pus cells, but should also be culturally free. . . . In spite of all treatment many cases become chronic; in these acute exacerbations alternate with long periods of quiescence, but the urine never becomes entirely free from pus cells and organisms."

TREATMENT

Smith says:

> The one form of treatment against which no dissenting voice is raised is the administration of large quantities of fluid. Further than this there is apparently no specific treatment. In many of the acute cases the patients get well untreated.

The English school of pediatricians advocates the so-called "alkaline" form of treatment, in which the urine is kept alkaline by the administration of potassium citrate. Others prefer to make the urine acid by giving sodium benzoate, while still others advise changing frequently the reaction of the urine by the alternate administration of these drugs. Some writers are warm advocates of hexamethylenamin; others advise salol. The use of vaccines has everywhere encountered disappointing results. But the majority opinion seems to favor the use of alkalies.

COMMENT

Such discrepancies in the clinical course of the disease, with their resulting differences of opinion as to its proper treatment, seem to me to be explained by what we know of the protean characteristics of the bacteria of the colon group. The colon bacillus, paracolon bacillus and *Bacillus lactis-aerogenes* form only the general divisions of a group of organisms showing many and often wide variations in their virulence and resistance to destructive agents. It is clear, therefore, that while in one case the administration of potassium citrate may set up conditions inimical to further growth of the infection, and thus bring about a cure, in another case such "alkaline" treatment may be entirely without avail, though here acid-producing drugs may succeed. In every case, therefore, we are logically driven to the careful examination of the biologic characteristics of the individual organism by which the patient is infected.

In this regard the recent work of Clark[8] is not only of great interest, but bids fair to go far in overcoming some of the uncertainties noted above. Together with his co-worker Lubs, he has made a large number of observations on bacteria of the colon-aerogenes family with regard to their power of gas production and also of acid production. The degrees of acidity or of alkalinity compatible with continued cultural life of the organism were measured by determining the hydrogen ion concentration of cultures at frequent periods of their growth. By these means there can be differentiated two groups of organisms, called, according to their ability to produce gas from fermentation of carbohydrates, "high" and "low ratio" cultures. Further investigation has shown that the gas ratios of such cultures correlate perfectly with the differences in the metabolism of different species as shown by their acid production, that is, their hydrogen ion concentration. And so, by using indicators to determine the hydrogen ion concentration as developed by Sörenson,[9] instead of the more complicated electrical method, we have a simple diagnostic test which will accurately determine to which of two groups, at least, the organism under consideration belongs.

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[5] Thomson: On Acute Pyelitis Due to Bacillus Coli as it Occurs in Infancy, Quart. Jour. Med., 1909-1910, **3**, 251; Infection of the Urinary Tract in Children by the Colon Bacillus, Lancet, London, 1913, **2**, 467.

[6] Jeffreys: Infection of the Urinary Tract in Children by Coliform Organisms, Quart. Jour. Med., 1910-1911, **4**, 267.

[7] Quoted by Smith (Footnote 1).

[8] Clark: The "Reaction" of Bacteriologic Culture Media, Jour. Infect. Dis., 1915, **17**, 109. Clark and Lubs: The Differentiation of Bacteria of the Colon-Aerogenes Family by the Use of Indicators, ibid., 1915, **17**, 160. Clark: The Final Hydrogen Ion Concentrations of Cultures of Bacillus Coli, Jour. Biol. Chem., 1915, **22**, 87.

With this knowledge at hand, it should be our endeavor to regulate the reaction of the urine, either by the administration of citrate or benzoate as the case may be, so that it will be as far as possible outside the range of hydrogen ion concentration exhibited by the infecting organism. Cultures from the urine should be grown on the special mediums used by Clark and Lubs[8] from which the range of acid production can be determined. Similar observations should then be made on the urine. Comparison of these two factors will then determine in which direction the reaction of the urine should be adjusted so as to create conditions least favorable to the organism. By this means we shall be doing our utmost on a physicochemical basis to combat the continued existence of the bacteria.

Though sufficient evidence is not yet at hand to lead to a definite decision in the matter, it is my belief that the foregoing form of treatment, based on an accurate knowledge of the biologic characteristics of the infecting organism, will be followed by an increased number of complete cures. It is probably not to be expected, however, that we shall thus be able to control every case; some will still be found in a chronically infected condition, symptomless, but none the less diseased. I would strongly advocate for such chronic cases injection into the kidney pelvis of silver nitrate solution of a strength sufficient to cause a moderately sharp reaction, say from 0.5 to 1 per cent. The marked and often surprisingly quick benefit of such treatment in cases of pyelitis in adults is familiar knowledge to all present day urologists. Heretofore such treatment has not been applied to the child bearing the same type of infection. This is due to the fact that the family physician or pediatrician has felt that such instrumentation is impossible because of the small size of the urethra. In the female, however, with the exception of very young babies, the urethra is dilatable to a size to admit a No. 16 or 18 F. instrument, and cystoscopes of this size carrying a single catheter are easily constructed and handled. It will be found easier in most cases, however, to use direct catheterization through an open cystoscope, with air distention of the bladder. A general anesthetic is necessary, but this need rarely be prolonged over fifteen or twenty minutes at the most.

Though ureteral catheterization is not especially difficult in the female child, it is quite impossible through the normal urethra of the male, and in this respect it is fortunate that the disease incidence noted above shows male children to be in marked minority. It is possible, however, to reach the ureters in the male child by a median perineal section, through which, after dilation of the bladder sphincter, a small cystoscope can be passed. Though cases in which such radical treatment as this is justifiable will naturally be very infrequent, it is quite evident, nevertheless, that such operation with its temporary inconveniences is preferable to a condition of long persisting infection leading to permanently damaged kidneys.

CONCLUSIONS

It is to be noted that pyelitis in children is more often a serious or even fatal malady than has been thought in the past. Though female children are attacked more often than male, this difference is not so great as was held by the earlier writers. The origin of the disease seems quite surely to be from the intestinal tract in a good many cases, but the theory of infection ascending from the lower urinary tract cannot yet be entirely disproved. Medical treatment has been too haphazard heretofore. It should be based on the accurate knowledge gained by estimation of the properties of the specific infecting organism. This can be obtained by determining the hydrogen ion concentration of cultures both of the organism and of the urine. Pediatricians and internists have not yet appreciated the value and possibilities of pelvic injections. Wherever possible this should be urged in those cases in which the urinary tract does not become entirely free from infection within a reasonable time.

My two main objects in calling attention to this subject are to advocate a treatment based on the use of the newer and more accurate methods of bacteriology, and to remind our colleagues the pediatricians that for those few cases which resist this treatment, the urologist can often place at his command a method of local treatment which holds high hopes of success.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CRABTREE AND CABOT, AND QUINBY

Dr. Irvin S. Koll, Chicago: Dr. Crabtree verifies the findings before this section two years ago. There is only one difference, and that is his finding the bacteria in the tissues. I have been unable to isolate from the urine after twenty-four hours any of the colon bacilli after having produced an infection in the kidney, and have also been unable to get on staining any bacteria in the pelvis after twenty-four hours in those cases where I was particularly careful not to traumatize the kidney. As Dr. Crabtree also stated, I have been unable to get any of the colon bacilli in the parenchyma. I have seen a number of cases of pyelitis in pregnant women. I prefer the title "pyelitis during pregnancy," rather than "pyelitis of pregnancy." An intelligent patient who knows something of the diseases of her childhood will, in 90 per cent. of cases, tell you that she had some kidney trouble, probably a cystopyelitis, in early childhood. What does this mean? It means that all of these years she has had bacteria in the urine without any symptomatic manifestation. Possibly a microscopic examination of the urine would fail to show any pus cells, but a bacteriologic examination of the urine will show bacteria. This leads up to the point I attempted to bring out several years ago in my study of the colon infections of the kidney, namely, that a patient with pyelitis, or pyelonephritis, as I prefer to call it, should never be pronounced cured until repeated cultures taken from the urine through the ureteral catheter fail to show bacteria. As to specific therapy, I wonder if any one has made sections of a kidney in an animal following the injection of 0.5 or 1 per cent. silver nitrate to see just exactly what it does. I have not. But you know what the effect of silver nitrate is on any mucous membrane; it is distinctly corrosive, and it forms a sort of membrane over the surface. We know that the bacteria are beneath the surface, and while there is a sharp reaction, is it a beneficial one? I wonder if we do not get a great deal of destruction? I still am using the solution of aluminum acetate with the same good results that I got three or four years ago; 0.5 to 2 per cent. aluminum acetate injected into the pelvis of the kidney until you fail to get the bacteria in the urine will give good results which will be permanent.

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[9] Sörenson: Compt. rend. trav. de Lab. Carlsberg, 1909, 8, cited by Clark and Lubs (Footnote 8).

Dr. Henry F. Helmholz, Chicago: I was very much interested in what Dr. Quinby had to say about the pyelitis of infancy, and have been interested in the subject from very nearly the same point of view that he has, namely, determining the acidity or alkalinity in which the colon bacillus will grow. The point he made of titrating or determining the hydrogen concentration of the culture medium after the organism is grown is not what we are after, but to get a medium in which the organism will not grow. In a series of about twenty cases we have grown the organism isolated in broth of varying degrees of alkalinity and acidity, and in nineteen cases the range was from 2 per cent. bacteriologic acidity to 2 per cent. bacteriologic alkalinity. Only one of these organisms grew beyond that range.

Dr. William F. Braasch, Rochester, Minn.: In regard to the prognosis of these cases of pyelitis of infancy, my observation has been that rarely is it true that a case of chronic pyelonephritis as seen in the adult gives a history of having had any infection or ordinary trouble in infancy or childhood. I realize the fact that cases of pyelitis may occur in infancy without urinary symptoms. It is not the rule, however. So there must be a distinct difference between the pyelitis of infancy and that of the adult, because the adult rarely gets well. By treatment we can improve the condition, but it is exceptional for a patient to recover entirely, at least on cultural examination.

Dr. Granville MacGowan, Los Angeles: I cannot agree entirely with Dr. Braasch. There are patients with pyelonephritis who get well if properly and persistently treated. I have used Dr. Koll's method but I do not think as favorably of it as I do of the use of silver nitrate, as recommended by Dr. Geraghty. Many get so well that cultures made from the urine do not show any colon bacilli, and I have seen many women with pyelitis during pregnancy giving an intermittent history of pyelitis or pyelonephritis from childhood.

Dr. Edwin Beer, New York: I would like to ask Dr. Crabtree on what he bases his conclusion that after inoculation with these colon vaccines he is really getting the benefit that he seems to think he is getting, because as I reflect on my own experience I do not find that I am troubled with repeated attacks of pyelonephritis, either after the first stage of the operation or after the prostatectomy, and it is just possible that in the Boston clinic they are getting different results now which may not be attributable to the preliminary vaccine treatment. I believe that if everybody will talk, we will probably find that there are more people who fail to see these postoperative pyelonephritides than Dr. Crabtree's report suggests. The greatest difficulty in this field to me has always been the diagnosis. In an acute case of pyelonephritis—or pyelitis, as the pediatrists call it—it is very difficult to decide as to the extent of the pathologic lesion. Is it a pyelitis per se, or is the kidney involved also? Is our patient suffering from pus foci in the parenchyma? In the acute cases I believe it is almost impossible to differentiate immediately. You will hear that the functional tests will show a marked diminution in excretion if the parenchyma is involved, but I am not sure that that is absolutely reliable. Later in the subacute or chronic stages the recognition of parenchyma involvement is simpler. I suppose one has followed the method I published eight years ago. I would like to add a note to that publication in which I called attention to the fact that methylene blue is stored in the minute parenchyma abscess and is later discharged bound to the pus, as these abscesses discharge into the pelvis of the kidney. During the last four or five years I have encountered the same phenomenon with indigocarmin.

Dr. E. G. Crabtree, Boston: In carefully followed functional tests with phenolsulphonephthalein we have noted that following decompression of kidneys which have been the seat of back pressure there is uniformly a fall in output which we attribute to congestion. It is of only a day to three or four days' duration. If the case does not become infected, the phenolsulphonephthalein output continues to rise until at the end of a week or ten days it has reached a safe, stable, operable level. However, the intervention of a pyelonephritis at any stage of the game suddenly drops the functional test down, in some cases with a previously 45 to 50 per cent. output to less than 5 per cent. The cases so infected show, as I have tried to indicate in my paper, a definite increase in agglutinating power of their serum for their colon bacillus. The patients we have vaccinated previous to operation have shown this same increased agglutinating power. They have, as a rule, run without postoperative temperature elevation, save for 99 to 100 degrees for the first two days, which is unusual following suprapubic prostatectomy. The urine in these cases has uniformly shown infection after operation with bacteria other than the colon bacillus. In some of our cases, in which we did not continue the use of vaccine throughout convalescence, the patient developed pyelonephritis or epididymitis late in convalescence, which leads us to believe that the protection afforded by colon vaccine is of short duration, three to four weeks at most.

Dr. William C. Quinby, Baltimore: In regard to the question asked by Dr. Koll as to whether any experimental observations have been made on the injection of silver nitrate, none have been made by me because I did not think it necessary. Silver nitrate cures the patients, and that is the main point in the matter. From a histologic point of view we know that silver nitrate does cause desquamation which has been preceded by round cell infiltration and vascular congestion which the pathologist would probably call inflammation. It is during this process of reaction that the bacteria have been shown to disappear. In regard to the remarks of Dr. Helmholz, probably I did not make myself clear. I was very much interested in his remarks because they bring up the thing that I am asking you to avoid; namely not to speak of "acidity" or "alkalinity" in percentages, or in some term that you must qualify, but to use a term by which the physician or scientist will know what you are talking about. In other words "2 per cent. alkalinity" or "2 per cent. acidity" does not mean anything definite unless the details of the method by which such was determined are first explained. If you state this degree of acidity or alkalinity in terms of hydrogen ions it is analogous to saying that a patient has a temperature of 101 degrees; no qualification is necessary, and every one knows what is meant. We ought to stop this loose writing and talking. We see many statements in the literature that a patient's urine was "very acid." That does not mean anything. Let us state it as a perfectly definite degree of concentration of hydrogen ions, something which we could not do ten years ago. I was very much interested in the point brought out by Dr. Beer about the methylene blue being retained and subsequently staining. I have not had his experience with methylene blue, but I have had experience with indigocarmin.

A NEW METHOD OF ACIDOSIS THERAPY

BLOOD TRANSFUSION FROM AN ALKALINIZED DONOR, WITH REPORT OF CASE *

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It is generally believed that the alkalinity of the blood of a normal person is fairly constant and unalterable.[1] Our purpose is to show that the alkalinity of the blood of a normal person can be greatly increased by a very simple procedure, and furthermore, to point out the feasibility of such alkalinization of the blood of a normal donor to enhance its therapeutic value in blood transfusion for the treatment of acidosis.

Briefly stated, when the alkalinity of the blood is diminished through excessive acid products formed

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[1] A. W. Sellards (Bull. Johns Hopkins Hosp., 1912, **23**, 289) has shown that the tolerance to alkali is higher in acidosis than in normal individuals as measured by the urine. No blood examination or blood studies were made.

during deranged intermediary metabolism, the condition is called acidosis. The acid substances are volatile fatty acids, diacetic acid, beta-oxybutyric acid and, in all probability, occasionally lactic acid. Under normal conditions these acids are completely oxidized into carbon dioxid and water. An acid reaction of the blood is known to be incompatible with life. Intermediary metabolism takes place only in a neutral or slightly alkaline medium. There is a great effort, consequently, on the part of the human economy to keep the reaction of the blood and tissues within the normal limits. The symptoms arising in acidosis are due entirely to the withdrawal of alkali from the blood and the tissues.

During catabolism the sulphur and phosphorus of the protein molecule are oxidized to sulphuric and phosphoric acids, respectively. These would acidify the blood at once, were it not for the sodium, potassium, calcium and magnesium taken in with the food, in the form of salts or organic acids, in fruits and vegetables; these salts of organic acids are oxidized to carbonates of the foregoing metals, plus water, and serve for the neutralization of the acids mentioned above, at the same time liberating carbon dioxid which is excreted by way of the lungs. When the fixed alkalies are insufficient to neutralize the acids produced, then the organism makes use of a beautiful mechanism for neutralizing the excess, as follows: Amino acids passing through the liver and muscles are deamidized, that is, the amino group (NH_2) is broken off and changed to ammonia; further, this ammonia, together with water and carbon dioxid, is converted into urea, and this is excreted by way of the kidney. If, however, the blood stream brings to the liver unneutralized sulphuric acid and phosphoric acid molecules, owing to the lack of fixed alkali, then the ammonia mentioned above neutralizes the acids, and is excreted as ammonia salts. Thus the more acids produced in the organism, the more ammonia salts and the less urea are found in the urine, and vice versa.[2] An excess ammonia in urine, therefore, does not mean an increased acidity of blood, but simply an excessive neutralization by ammonia. If, however, abnormally large amounts of acids are produced, as in pathologic conditions, in which the inorganic are augmented by the organic acids (diacetic, oxybutyric), then the limit of ammonia neutralization is exceeded, and beyond this the acids partly withdraw fixed alkalies from the tissues, partly excreted in urine as acids, and partly are left unneutralized and accumulate in the blood, producing what is known as acidosis. The most convenient method of detecting this condition is the method of Van Slyke;[3] this consists in determining the alkaline reserve of blood plasma, by means of the amount of carbon dioxid absorbed at alveolar tension.

Our problem thus being analyzed in a general way, the important question which confronts the physician and the patient is, What therapy can be offered for the relief of the condition of acidosis? The chief alkalies for the neutralization of the acid bodies are sodium, potassium and calcium, sodium being the most important. Sodium bicarbonate is the drug of choice. It is given by mouth, by rectum and, in severe conditions, intravenously. It is the rational method of treatment. But in some cases it does not work. The sodium bicarbonate can merely neutralize the acid bodies present, but does not prevent their continued development. When given by mouth, it is often vomited, and if there is persistent vomiting, as is often the case, it cannot be so administered advantageously. Given by rectum, it is irritating after prolonged use, and a catarrhal condition may follow, with the development of a complete mucous cast of the lower bowel, absorption thus being prevented. When given by hypodermoclysis, it is painful, and this procedure is often followed by subcutaneous hemorrhage. The intravenous method, while rapid, is not free of danger. Some of the sodium bicarbonate is converted into carbonate in solution. The presence of an excess of sodium carbonate may jell the blood, even though the administration be very slow.

BLOOD TRANSFUSION

The amount of alkali in the circulation being directly proportionate to the volume of blood plasma, it follows that any increase of the plasma should be followed by an increase of the total alkaline capacity of the blood. Hence in severe cases of acidosis in which the ordinary measures have failed, blood transfusion deserves a respectful consideration. In blood transfusion, not only the plasma volume is increased, but also, necessarily, the oxygen-carrying capacity and oxidizing ferments of the blood are augmented.

Heretofore it has been considered impossible to increase the alkalinity of the blood for the reason that the alkali is excreted as rapidly as absorbed when introduced by mouth. Nevertheless we have attempted in our experiment to prove the possibility by the administration of large and frequent doses of alkali to increase the alkalinity of the blood of the donor for the blood transfusion of patients suffering from acidosis. The object of the experiment, therefore, was to test the feasibility of the introduction of alkali through the blood of the donor in its most available form with simultaneous increase of the oxygen-carrying capacity. The latter factor, as is well known, facilitates the oxidation of the fatty acids, and thus would tend to prevent the appearance of acid substances in the blood of the patient. The demonstration of the possibility of actually performing this object on man, as we have outlined above, is the aim of this paper. We consider that we have proved that the alkalinity of the blood of a normal person can be increased.

We purpose to review briefly the experiments made on donors in a study of the absorption, retention and excretion of sodium bicarbonate.

EXPERIMENTS ON DONORS

Alkalinizing of Subjects.—This work was done on three healthy young men, with negative Wassermann tests: (1) J. B., aged 28, weight 150 pounds; (2) F. K., aged 32, weight 158 pounds, and (3) W. B., aged 27, weight 180 pounds. In Case 1, 10 gm. of sodium bicarbonate was given by mouth every two hours for eight doses. In Cases 2 and 3, 20 gm. of sodium bicarbonate were given every two hours for eight doses.

Blood Taking.—About 18 c.c. of blood were removed from the median brachial vein, at five different times, at intervals as shown in Table 1. About 5 c.c. of this were used for the hydrogen ion determination, 3 c.c. for the carbon dioxid absorbability, and 10 c.c. for the total amount of bases present in the blood.

Methods of Analysis.—H Ion Content of Whole Blood: The blood was allowed to run from the needle directly into the V-shaped gas electrode containing the hydrogen gas. 0.85 per cent. sodium chlorid solution, plus a few crystals of herudin, as proposed by Michaelis.[4] After thorough mixing by inverting cell about thirty times, the cell was connected up with standard calomel electrode, Leeds and Northrup potentiometer, very sensitive reflecting galvanometer, etc., and values read every two minutes. In every case equilibrium was obtained within ten minutes. The values obtained are recorded in Table 1.

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[2] Sherman and Gettler (Jour. Biol. Chem., 1912, **11**, 323) have shown that about one third of the added acids come to urine as salts of fixed alkali, about one third as ammonia salts, and that about one third are excreted as free acids.

[3] Van Slyke: Proc. Soc. Exper. Biol. and Med., 1915, **12**, 7.

Carbon Dioxid Absorbability of Blood Plasma.—About 3 c.c. of blood were run into a 10 c.c. Erlenmeyer flask containing a very small pinch of powdered potassium oxalate. This was then centrifuged to get a clear plasma, and used for determining how much carbon dioxid 1 c.c. of it will take up under alveolar tension according to the method of Van Slyke.[3] The more carbon dioxid a plasma takes up, the more alkaline it is. The values obtained are recorded in Table 1.

Bases Present in the Whole Blood.—About 10 c.c. of blood were allowed to run into a tared platinum dish, covered at once and weighed. This weight gives the amount of blood taken for analysis. It was placed in a drying oven over night and was then ashed, care being taken to avoid more than a dull red heat of the platinum dish in order to prevent volatilization of alkali chlorids. When the ashing was complete, it was cooled, and leached five times with 10 c.c. portions of hot water, containing 2 drops of hydrochloric acid; it was filtered quantitatively into a small beaker; this then contained all the calcium, magnesium, sodium, potassium and iron as chlorids. Next 2 c.c. of 10 per cent. ammonium chlorid were added, made slightly alkaline with ammonium hydroxid, and allowed to stand one-half hour; this precipitated out the iron, which was filtered off. The filtrate was evaporated to dryness in a platinum dish, carefully ignited to dull redness to drive off all ammonium salts, cooled, redissolved, filtered and again evaporated and ignited at low red heat. This was then cooled in a desiccator and weighed, giving the actual amount of bases present as chlorids in the amount of blood. If an increase of bases is obtained, it must be due either directly or indirectly to sodium increase.

TABLE 1.—EXPERIMENTS IN ALKALINIZATION OF BLOOD

Time of Blood Taking	H ion p_H	Alkaline Reserve, Volume per Cent.	Mg. Bases Present as Chlorids in 100 C.c. Blood
Case 1: *			
Before first dose; 9 a. m.	7.57	63	843
2 hrs. after 4th dose; 4 p. m.	7.62	67	859
2 hrs. after 5th dose; 6 p. m., or 4 hrs. after 4th dose	7.56	61	847
Next day, 24 hrs. after 1st dose, or 8 hrs. after last dose	7.57	60	848
Case 2: †			
Before first dose	7.56	54	832
20 min. after 4th dose	7.72	89	853
40 min. after 4th dose	7.68	91	910
70 min. after 4th dose	7.62	85	846
24 hrs. after first dose, or 10 hrs. after last dose	7.60	77	795
Case 3: ‡			
Before first dose, 9 a. m.	7.59	59	867
30 min. after 4th dose	7.68	77	914
50 min. after 4th dose	7.66	72	883
70 min. after 4th dose	7.65	69	874
24 hrs. after first dose, or 10 hrs. after last dose	7.62	67	851

* Dosage of sodium bicarbonate, 10 gm. every 2 hrs. for 8 doses, beginning 9 a. m.

† Dosage of sodium bicarbonate, 20 gm. every 2 hrs. for 8 doses, beginning 9 a. m. Urine: NH_3 output 24 hrs. period before alkali administration, 0.709 gm. NH_3 output during a period of 24 hrs. after 1st dose of alkali, 0.092 gm.

‡ Dosage of sodium bicarbonate, 20 gm. every 2 hrs. for 8 doses, beginning 9 a. m. Urine: NH_3 output 24 hrs. period before alkali administration, 0.709 gm. NH_3 output during a period of 24 hrs. after 1st dose dose of alkali, 0.063 gm.

COMMENT

Case 1 shows very little change of the blood alkalinity by any of the three methods of estimation. There was some slight increase of alkalinity, uniform in all three methods, but not sufficient to warrant the assertion that there was an increase of blood alkalinity by alkaline therapy. It was further seen on examination of the urine that the alkali was rapidly excreted, accompanied by a great fall in the ammonia output. We suspected that the alkali may have been present in the blood in large amounts, but that the excretion was so rapid that the increase could not have been demonstrated unless an analysis of the blood had been made soon after administration, and that therefore the increase of alkalinity failed of detection. Experiments 2 and 3 were therefore planned. In Case 2, the blood was taken for analysis much sooner after the administration of the alkali, namely, twenty minutes and forty minutes after ingestion of the alkali, instead of two hours after administration, as happened in Case 1. Furthermore, the doses given were doubled. To our great satisfaction, we discovered that forty minutes after the fourth dose was taken, an increase of the alkali reserve to 37 volume per cent. was obtained.

A third experiment, Case 3, was then planned to see whether this was the maximum alkalinity or whether this maximum lay between the twenty to forty minute interval, or between the forty to seventy minute interval. Case 3 shows that such a maximum is obtained between thirty and forty minutes after administration. Beyond forty minutes it decreases rapidly. In this case the high degree of alkalinity of Case 2 was not attained, undoubtedly owing to the fact that the subject developed a watery diarrhea after the second dose, whereas Case 2 did so only after the fifth dose. The diarrhea was that of saline purgation, and hence less sodium bicarbonate was absorbed.

Summary.—1. The reaction of the blood before, during and after alkali ingestion was carefully determined by three independent methods. All tests (H ion content, alkaline reserve by carbon dioxid determination, and bases actually present) showed that the alkalinity of the blood may be appreciably raised by our method.

2. The highest increase in alkali reserve was 37 volume per cent., obtained in Case 2, or an actual increase of alkalinity of the blood of 74 per cent.

3. This maximum blood alkalinity is obtained between twenty and forty minutes after administration of alkali, reaching the greatest height in about thirty minutes. It quickly subsides thereafter.

4. In acidosis therapy with sodium bicarbonate, the alkali should be given in small doses at regular and very short intervals, rather than in large doses once or twice daily.

REPORT OF CASE

Clinical report of this case of acidosis was furnished by Dr. A. H. Ely,[5] who kindly referred the case to one of us.

History.—Mrs. M. D., aged 24, one of five children who have attained maturity, whose grandfather and father suffered from marked diabetes, was unusually intellectual, and of a highly nervous temperament. She married, May, 1914, and became pregnant following the next menstruation. Almost immediately after conception she began to be nauseated, and vomited so frequently that the case was diagnosed as one of emesis gravidarum. She was advised by a noted obstetrician in London to have pregnancy terminated. This was refused, and after being under constant medical care for four months, she returned to America and came under Dr. Ely's observavation. The whole period of gestation was marked by excessive digestive disturbances, and while at no time were there definite nephritic symptoms, a varying amount of acetone and diacetic acid was found in the urine. No blood analyses were made.

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[4] Michaelis, L.: Die Wasserstoffionenkonzentration, 1914.

[5] Ely, A. H., and Lindeman, Edward: Am. Jour. Obst., 1916, **74**, 42.

In March, 1915, she was delivered of a normal child approximately at term, with normal labor and with a very small amount of chloroform. Great care was exercised in the artificial feeding of the child, yet symptoms of acidosis were present in the infant.

The patient began her second pregnancy, Sept. 1, 1915, five months after the birth of her child. The first month no untoward symptoms developed, and the urine was normal. At the beginning of the second month, however, acetone and diacetic acid were noted in the urine, and the patient continued to vomit. Her weight at this time was 122 pounds. During the course of her pregnancy and the following illness she lost 24 pounds. During October, 1915, attention was directed to the treatment of acidosis by means of large doses of alkalies by mouth and by colon irrigations, but without effect. As the pregnancy advanced, the vomiting became more and more excessive, and none of the usual means employed in cases of emesis gravidarum gave any beneficial results. It is to be noted that thorough examinations failed to find any abnormal condition in the pelvis, and that the urine contained no albumin or other indications of any lesion of the kidneys. The patient presented on the day of transfusion a picture of emaciation and profound toxemia, yet had practically a normal pulse and only slight fever or subnormal temperature. November 12, the thirteenth week of pregnancy, after consultation with Dr. E. B. Cragin, the uterus was emptied. The condition of the acidosis, however, was not ameliorated, in fact, it grew worse gradually until the situation assumed a rather grave aspect. The patient was placed on a fat-free diet; but persistence of vomiting made it impossible for her to obtain more than little nourishment.

TABLE 2.—URINARY FINDINGS IN THE CASE REPORTED

Date	Reaction	Specific Gravity	Albumin	Sugar	Acetone	Diacetic Acid	Indican	Urea, %	Microscopic			
10/ 5/15	Faintly acid	1.009	Absent	Absent	Absent	Absent	Trace	0.6	Many epithelial cells; few white blood cells			
10/13/15	Neutral	1.008	Absent	Absent	Absent	Absent	Absent	0.6	Few epithelial cells and white blood cells; calcium oxalate			
10/19/15	Consid. acid	1.020	Faint trace	Absent	Faint reaction	Faint reaction	Absent	0.9	Many epithelial cells and white blood cells			
10/22/15	Faintly acid	1.015	Absent	Absent	Faint reaction	Absent	Absent	1.2	Many epithelial cells and white blood cells			
10/25/15	Consid. acid	1.030	Faint trace	Absent	Marked reaction	Marked reaction	Absent	2.5	Considerable amount of phosphates and urates			
10/29/15	Faintly acid	1.026	Faint trace	Absent	Faint reaction	Faint reaction	Absent	2.2				
11/ 5/15	Alkaline	1.020	Absent	Absent	Marked reaction	Marked reaction	Absent	1.7				
11/ 8/15	Alkaline	1.020	Absent	Absent	Marked reaction	Marked reaction	Marked	1.4	Abundance of epithelial cells			
									NH₃ %	NaCl%	Micro.	Blood
11/22/15	Acid +++	1.020	+	—	+++	+++	—	1.2	0.072	....	Pus +++	—
11/23/15	Acid +	1.020	+	—	+++	+++	—	1.3	.....	....	—	+++
11/24/15*	Acid +	1.010	+	—	+++	+++	—	0.5	0.053	....	—	
11/29/15†	Acid +	1.009	+	—	+++	+++	—	0.21	0.037	....	—	
11/29/15 5 p. m.	Alkaline +	1.030	+	—	+++	+++	—	0.34	0.0094	....	—	
11/30/15 10 a. m.	Alk. +++	1.012	+	—	+++	+++	—	1.0	0.25	....	—	
12/ 2/15*	Alk. +++	1.015	—	—	—	—	—	0.9				
12/ 2/15†	Alk. +++	1.015	—	—	—	—	—	1.2				
12/ 6/15	Acid +	1.010	—	—	—	—	—	1.0				
12/10/15	Acid +	1.024	—	—	—	—	—	2.8	0.016	0.25		
Normal average								2.0	0.07			

* Before transfusion. † After transfusion.

Blood analyses were now made, and for the relief of the condition we decided to employ the syringe method of blood transfusion.[6] The blood of the donor, the husband, was chosen after appropriate tests. For sixteen hours before the transfusion, the donor was given 20 gm. of sodium bicarbonate every two hours. November 26, the transfusion was accomplished with no discomfort to the donor, and never had Dr. Ely seen such a miracle as was presented immediately in the condition of the patient. The woman, who a few minutes before had been lethargic, with gray ashen facies and waxy fingers, became interested in everything about her, the pulse changed its character completely, and with moist tongue and pink lips she asked intelligent questions.

The transfusion was done at 12:30 p. m. Four hundred c.c. of blood were removed from the patient, and 1,100 c.c. were then transfused from the husband (donor) to the patient, together with 300 c.c. of Locke's modification of Ringer's solution. The patient was fed every two hours after transfusion, and soda solution was introduced into the rectum every four hours. The patient vomited only three times in the next twenty-four hours, and after that was able to take the prescribed diet. December 2, another transfusion was done with the same donor, in the same manner as before, except that 760 c.c. were transfused and a relatively small amount of Locke's solution. No blood was removed at this time.

Blood tests made at frequent intervals have shown the blood free from acidosis and, except for a mild secondary anemia, it is normal. Convalescence has been progressive, and the patient is now able to engage in most of her usual activities.

COMMENT

In considering the figures in Table 3, the story is even more striking than the statements of the clinical course. The blood urea before transfusion ran low. A low blood urea is characteristic of a patient on a starvation diet. Before transfusion there were persistent vomiting and inability to take protein foodstuffs. After transfusion, vomiting ceased, and concomitantly there was increased tolerance and ingestion of protein foodstuffs. This was followed by an increase in blood urea. December 20, a month after transfusion, the blood urea had increased to 32 mg. per hundred c.c. volume, which is three times the amount present during the starvation period. The patient was considerably emaciated because of her starvation period. She was put on a high protein diet and began to gain weight rapidly; hence the high nitrogen figures of December 20.

The uric acid figures fall within the normal limits.

The creatinin may also be regarded within normal limits.

The blood ammonia, unfortunately, was not determined before transfusion, but we have reason to suppose that it was very high. Three days after transfusion it was practically twice as high as the upper limit of normal. On this day the urine for the first time was alkaline, although the acetone bodies were still present. The high ammonia in the presence of low protein diet must be explained in one or two ways or both:

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[6] Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, Am. Jour. Dis. Child., July, 1913, p. 28.

1. The ammonia from endogenous metabolism is drawn on to neutralize acid before it can be built up into urea by the liver.
2. The liver may be so diseased that it is unable to build up into urea the amount of ammonia that is offered to it.
3. Both factors may prevail.

December 20, though the patient was on a high nitrogenous diet, the blood ammonia was below normal, the actual quantity approximating one-half the lower normal limit.

The most important and perhaps the most interesting figures in the table are those of the carbon dioxid percentage content of the plasma.

The available alkali of the blood is in the form of sodium bicarbonate, and is present practically in its entirety in the plasma. The alkalinity of the blood was determined by the estimation of the amount of carbon dioxid (gaseous) that can be liberated from the plasma (Van Slyke).

TABLE 3.—BLOOD FINDINGS IN THE CASE REPORTED

Date	Milligrams per Hundred C.c. of Blood						
	Urea	Uric Acid	Creatinin	NH_3	NaCl, %	Sugar	Alkaline Reserve Vol. per Cent.
Before transfusionfrom alkalinized donor							
11/22	9.00	.....	.....	.....	.....	50	43
11/26	9.00	1.3	0.3	.....	0.66	77	
After transfusion							
11/29	10.4	0.82	0.3	1.50	0.46	80	82
12/20	32.0	1.4	0.8	0.2	0.587	33	76
Normal av. ..	12-16	1-3	0.1-0.4	0.4-0.9	0.6	60–110	53-83

It has been found that where the carbon dioxid content of the plasma is below 53 per cent., the patient develops a state of acidosis. Above 53 per cent. no state of acidosis prevails.

Before transfusion, in the case under discussion, the carbon dioxid plasma content was 43 per cent.; after transfusion the plasma content of carbon dioxid was 82 per cent. This marked increase cannot be regarded in the light of the simple law of averages after transfusion, because the normal average is between 53 and 77 per cent. One must conclude that something more than an averaging of the alkalinity of two mixtures had taken place: that not only had alkali been administered in the most available form, but also by transfusion the acid bodies actually formed and responsible for the disease had been diminished at their source.

CONCLUSIONS

1. The generally accepted routine of frequent urinary analyses during the whole period of pregnancy in private cases should be supplemented by analyses of the blood, since it is a more accurate test in the determination of the condition of the patient.
2. Not only should the blood of the donor and the recipient be compatible, but also, as illustrated by this case of acidosis, in which for the first time so far as known the donor has been prealkalinized, the blood of the donor should be alkalinized by large doses of sodium bicarbonate before transfusion.
3. By the method of syringe transfusion we have a comparatively simple and safe means of treatment which produces results not found with other known methods.
4. The timely use of this treatment may obviate the necessity of emptying the uterus in cases of acute and severe acidosis complicating pregnancy, and may be employed in other severe conditions of acidosis not complicated by pregnancy.
5. In alkalinizing the blood of a donor for blood transfusion in a given case, the blood should be transfused about one-half hour after administration of the last dose.

HEMATURIA

A CLINICAL STUDY [*]

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This clinical report is based on a study of 238 consecutive cases of blood in the urine. Only those cases in which the presence of blood was apparent to the naked eye are included. Cases in which the hematuria was due to gonorrheal urethritis, the passage of sounds or injury to the urethra are not included. Essential hematuria, idiopathic renal hemorrhage, etc., will not be considered, as they have been dealt with in other publications.[1]

Hematuria, with but very few exceptions, means the presence of organic disease in the urinary tract. The importance of hematuria as a symptom cannot be too strongly emphasized, and it is most unfortunate that its importance is so often disregarded and belittled by both patient and physician. Very often the hematuria is painless, and, not infrequently, symptomless, so that an accurate diagnosis from the presence of this symptom alone is not possible. Instead of making an accurate diagnosis, vague and indefinite terms are used in describing the hematuria, and various styptic drugs are administered, after which both patient and physician *wait* for the bleeding to stop. This is but another of the many forms of medical procrastination, and it must be discouraged. Rather than treat hematuria symptomatically, it is by far a much wiser procedure to establish the origin, and to determine the cause of it, in each instance, as far as possible.

The importance of making an early diagnosis in each and every case is particularly significant, if we bear in mind the large number of cases due to new growths and tuberculosis, and it is especially in these groups of cases that an early diagnosis must be made in order to obtain the best end-results. Many of the patients in this series gave a history of hematuria of several years' duration before they were subjected to a thorough and complete examination.

With the modern methods of diagnosis, the origin and cause of urinary hemorrhage can be ascertained in a very large majority of cases. It may not always be possible to make a definite diagnosis by a single, or even several, cystoscopic examinations, or by employing *one* of the various methods of diagnosis; in a certain number of cases it may be necessary to resort to all methods of diagnosis before the desired information is obtained.

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[*] Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Kretschmer, H. L.: Ztschr. f. Urol., 1907, **1**, 490; Surg., Gynec., and Obst., January, 1913, p. 34.

The value of clinical observation, extending over long periods of time, was illustrated in several cases of profuse, symptomless hematuria in which no apparent cause was demonstrated; subsequent observations proved the presence of nephritis. Profuse, painless hematuria may be the initial symptom of nephritis. In another group of cases in which at first no diagnosis, or only a tentative one, was made, further observation demonstrated the presence of renal tuberculosis. Because of the occasional difficulty in demonstrating tubercle bacilli in the sediment of urine containing a large amount of blood, we now make it a routine in all obscure cases of hematuria, and in all cases in which tuberculosis is suspected, to inject guinea-pigs. In this way we were able to make an early diagnosis of renal tuberculosis in cases that might have gone unrecognized. Because of the possibility of tuberculosis being masked by a colon bacillus infection, this has particular significance, for in several cases in which a provisional diagnosis of hemorrhage due to colon bacillus infection was made, the guinea-pigs showed tuberculosis.

For purposes of study the cases were divided into the following three groups:

1. Cases in which a positive diagnosis was made.
2. Cases in which the origin of the bleeding was determined.
3. Cases in which neither cause nor origin was determined.

CASES IN WHICH AN ACCURATE DIAGNOSIS WAS MADE

An accurate diagnosis was made in 197 cases. The various lesions found are given in the accompanying tabulations:

LESIONS OF THE KIDNEY

	No. of Cases
Renal tuberculosis	23
Nephritis	12
Renal calculus	8
Hypernephroma	8
Colon bacillus infection	8
Renal tumor	2
Polycystic disease	2
Trauma	2
Hydronephrosis	2
Renal carcinoma	2
Pyonephrosis	1
Movable kidney	1
Pregnancy	1
Doubtful stone	1
Oxaluria	1
Total	74

LESIONS OF THE BLADDER

	No. of Cases
Carcinoma	32
Papilloma	26
Calculus	14
Bladder tuberculosis	10
Diverticulas	2
Angioma	1
Polypi	1
Total	86

LESIONS OF THE PROSTATE

	No. of Cases
Carcinoma	12
Hypertrophy	13
Total	25

LESIONS OF THE URETER

	No. of Cases
Calculus	10

LESIONS OF THE FEMALE URETHRA

	No. of Cases
Prolapse	1
Tumor	1
Total	2

An analysis of this series of 197 cases showed that tumor formation was the most frequent single cause of bleeding. Tumors of the bladder were responsible for bleeding sixty times, or in about 30 per cent. There were twenty-five lesions of the prostate, of which twelve were carcinomatous and thirteen were benign hypertrophy. There was one urethral tumor (female).

Tuberculosis was second in point of frequency, there being thirty-three cases of renal and vesical tuberculosis. The cases of vesical tuberculosis include those in which nephrectomy had been performed and those in which the tuberculosis was secondary to lesions in the genital tract.

New formations of the kidney are third in point of frequency, being less frequently the cause of bleeding than tuberculosis or nephritis. Of the seventy-four renal lesions, tumor was found twelve times.

If we include, with the new growths, prostatic enlargement and carcinoma, there were ninety-nine cases in which the hematuria was due to new growths, or approximately 50 per cent. of the positive cases in this series.

Calculi of the urinary tract were the next most frequent lesion found. A total of thirty-two cases were divided as follows: kidney, eight; ureter, ten, and bladder, fourteen.

The great importance of subjecting this group of cases to a careful and thorough examination in order to obtain a cure is apparent at once. This fact is one that is not appreciated by the general practitioner, who usually sees and treats these cases first. In one case the patient had his initial hematuria twenty years before a cystoscopic examination was made, and in another case fifteen years had elapsed. Not infrequently the patients were told by their physicians that the hematuria was of no significance, and were given internal treatment, and that there was no importance to be attached to this symptom. In several of these cases hopeless carcinomas were found.

CASES IN WHICH THE ORIGIN WAS DETERMINED, BUT NOT THE CAUSE

Renal lesions, as is well known, may bleed intermittently. If the patient is examined during the free interval, it may be impossible to establish the origin of the hematuria by cystoscopic examination, unless this shows changes in or around one ureteral orifice.

In fourteen cases the origin was determined, but the cause was not definitely established. An analysis of these cases shows that there were three females and eleven males. The origin of the bleeding was determined either by ureteral catheterization or by plain cystoscopic examination, which revealed bloody urine being emitted from one ureteral orifice.

It is well to bear in mind the possibility of the existence of a bilateral lesion in some of these obscure cases. That only one side is bleeding at the time of cystoscopic examination does not exclude such a possibility. In several instances in which more than one cystoscopic examination was made, first one side and then the opposite were found to be the source of the bleeding. Three of these fourteen patients were operated on. They were operated on elsewhere, and no tissue was excised for pathologic examination. This should be a routine procedure in each case subjected to operation, in which no gross pathologic condition is found at the time of operation. The remaining patients were subjected to Roentgen-ray examination, bacteriologic examinations of the urine, etc. In three of the cases pyelography was carried out without giving any additional information. One of these patients, a woman, had a blood pressure of 225 mm., and it may be possible that the hematuria in this case was associated with the high blood pressure. In two cases the bleeding was bilateral.

Several of these cases were seen before pyelography and cultures of the urine were carried out as a routine, and it is quite possible that these may have been of value in clearing up the cause of the bleeding in at least some of the cases in this group.

Four of the cases were treated by intrapelvic injections of epinephrin. In three the bleeding ceased, and in one the epinephrin had no effect.

CASES IN WHICH THE ORIGIN WAS NOT DETERMINED

This must naturally form an interesting and important group of cases, for in them neither a diagnosis was made nor the origin of the bleeding determined, except that in most of them the bladder as a possible source was excluded by cystoscopy. There were twenty-five cases in this group.

An analysis of this group showed that five of the twenty-five patients refused instrumental examination. The remaining twenty patients presented themselves at a time during which their urine was free from blood. Cystoscopic examination failed to demonstrate changes about the ureteral orifices that might have been helpful in determining whether the bleeding came from the right or left side. In one of the patients, cystoscopy could not be carried out because of the presence of urethral strictures. In six cases complete examinations were made. Cystoscopic examination, ureteral catheterization, cultures of the urine, Roentgen-ray examination and pyelography were completely negative. One patient, although not bleeding at the time of the examination, showed pure cultures of streptococci from the kidney urine. In one case a few granular casts were found; otherwise the examination was completely negative.

I do not think one is justified in assuming that these six cases belong to the group of "essential hematuria," because no cause for the bleeding was demonstrated; but that they are the expressions of our present diagnostic limitations, and that they should be subjected to further clinical observation. The remaining cases in this group, for various reasons, were not subjected to a complete examination, and hence their etiology was not determined.

Regarding the incidence of sex: Of the thirty-two patients with carcinoma of the bladder, twenty-three were male and nine were female. Of the twenty-six patients with bladder papilloma, nineteen were male and seven were female. Thirteen cases of bladder calculus occurred in the male and one in the female. All the cases of ureteral stone were in the male, as were all of the cases of tuberculosis of the bladder. Kidney tuberculosis was found more frequently in the female. The patients having ureteral stone were all male, and all of the cases of nephritis with the exception of one were found in the male.

The youngest patient was 5 years old and the oldest 84.

CONCLUSIONS

1. A study of these 238 cases demonstrates that stone, tumor and tuberculosis are the three most frequent causes of profuse urinary hemorrhage.

2. Because of the frequent occurrence of hematuria as a symptom of tumor formation in the urinary tract, this possibility should be considered in each case of profuse painless hematuria, until such possibility is definitely excluded.

3. The doctrine of essential hematuria has worked incalculable harm, and must be discouraged. Only too often it is used as a cloak for ignorance.

4. The importance of hematuria and the necessity for determining its cause must be impressed on each patient suffering with urinary hemorrhage.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

Dr. William F. Braasch, Rochester, Minn.: As Dr. Kretschmer called our attention to the fact that hematuria means malignancy in a high percentage of cases, hematuria and malignancy should in the minds of the laity be regarded as synonymous. This fact has been brought out by others. In spite of all that has been written and said before the medical profession and the laity that they should regard it as they do a tumor of the breast, it is remarkable the large number of cases of hematuria we observe existing for a number of years without any attempt being made to ascertain their source. It shows that some of us are not doing our duty. Whether or not the malignancy is in the bladder or in the kidney is of secondary importance; the fact that it can be there is the all important thing. Of course, as Dr. Kretschmer pointed out, hematuria may be due to a great variety of causes, but we should always exclude that first. Dr. Kretschmer called attention to the fact that the term "essential hematuria" should not be used. While that is a very poor term, there unquestionably is a nonmalignant condition, which causes renal hematuria, of which we have not yet discovered the etiology. In my opinion many of them are due to chronic insidious infections confined around the papillae. I have seen a number of cases. The term "essential hematuria" must be retained for the want of a better term.

Dr. Martin Krotoszyner, San Francisco: I wish to report an interesting observation, illustrating the point that was brought out in Dr. Kretschmer's paper. A man of 81, with intermittent attacks of painless and copious hematuria, was observed at the hospital during a period of six months. The attacks occurred at intervals of about ten to twenty days, lasting not longer than forty-eight hours, and were traced to a focus in the left kidney. Palpation was negative. There was no marked difference in renal function on the affected side. A tentative diagnosis of malignancy of the left kidney was made. The patient refused operation. At the necropsy a small uric acid calculus was found, floating in the moderately enlarged renal pelvis of the left kidney. Hematuria, in all probability, had been due to erosion of a blood vessel by the rough calculus.

Dr. C. M. Harpster, Toledo, Ohio: I have encountered two cases of anomalous vessels going to the pelvis of the kidney. In both of these the bleeding was so violent that I did a nephrectomy. In one of them I found the anomalous vessel was divided into three branches coming to the upper pole. In the second case there was a single anomalous vessel going to the lower pole. I do not know how to explain the intense hemorrhage which took place here unless it was some interference with or obstruction of the ureter itself. In the first case I encountered the bleeding was so violent when the kidney was removed that I made a blind plunge and secured vessels. If Dr. Kretschmer can tell me why these kidneys bled so I will appreciate it.

Dr. R. L. Payne, Jr., Norfolk, Va.: The ratio incidence of hemorrhage with reference to malignancy and other causes was very instructive. It is the unsolved problem of symptomless unilateral hematuria, however, that should interest us more than the stereotyped varieties that we are all recognizing. I have been interested in this symptomless hematuria for about four and a half years, and have done a lot of experimental work. We have had eleven cases in the human, and we believe that we can show that there was some form of active nephritis. In the first eight cases nephrotomies were done, and sections were made from the cortex only. These sections all showed some form of chronic inflammatory reaction which we were able to call, in one form or another, an interstitial or a glomerular nephritis. Fifteen months ago we did our first nephrectomy in one of these cases. In this kidney we found a condition which probably led us to understand for the first time how these kidneys bleed. In other words, we were able to show the definite location of chronic inflammatory changes to be in the midzone and in the pyramids and the straight veins of the pelvis and that here was the actual source of the hemorrhage. In other words, we were able to demonstrate in this kidney the actual ruptured vessels on the very surface of a papilla. Since that time we have had two other human cases, one of our own and one that was removed by another surgeon and sent to us for study, which showed identically the same conditions. Many of these cases have been reported as a nephritis, or a lot of these cases from which a small section was removed from the cortex and nothing found would probably fall in this category, and that explains why so few of these cases were cleared up from a causative viewpoint. In our cases a definite obstruction of the veins was presênt. In the cortex there is absolutely no change, or very little, if any. In the midzone there has occurred a definite obstruction of the veins as follows: In some areas when the sections were taken from the cortex completely down through the papilla we were able to show a primary recent focus of infection, as evidenced by polymorphonuclear leukocytes, fibrin and red blood cells. In the same section adjoining this we are able to show where some of these acute focal infections have healed, with the deposition of fibrous tissue. Adjoining and in these sections of chronic inflammatory deposits there are large and hugely dilated venules, the straight veins coming up from the papillae, and we believe that it is this obstruction in the midzone and pyramids that is causing the hemorrhage in these cases. Farther down toward the papillae from the midzone we have been able to show in these cases a considerable increase in the dilatation of the venules, and actually to demonstrate the ruptured capillaries on the surface of the papillae. It is very simple to produce an experimental nephritis in the dog, but it is difficult to produce a hematuria more or less analogous to the one we are talking about. We have attempted to secure this condition in a large number of dogs, and in six dogs we have produced hematuria; and the pathologic findings coincide with the lesions found in the human kidney, namely, no change in the cortex, an overgrowth of chronic inflammatory tissue in the midzone, with an obstruction to the return venous flow from the pyramid and resulting rupture of the veins with hemorrhage.

Dr. I. Simons, Nashville, Tenn.: In regard to hematuria from one single kidney, I encountered one case which, while it is not unique, seems to be of some interest. The patient was about five months pregnant. She had had what was apparently a pyelitis on the right side. She had pain, chills, fever and sweats. On the day that I saw her she began to bleed very profusely. On cystoscopy, to my extreme surprise, I found the hemorrhage coming from the left side. Catheterization of the right ureter showed some pus and colon bacillus in pure culture. The blood was seen spurting out of the left ureter three or four times, and at that point I passed the catheter up the left ureter. No urine appeared at all. I intended to wash the right kidney, but on account of the fact that there was no secretion on the left side, I desisted. The patient immediately began to improve, without washing the pelvis at all, but was put on vaccine and promptly recovered, so that she was able to leave the hospital within a month and a half. I believe it is possible to get an acute sympathetic congestion of one kidney due to a lesion in the other kidney, although it is possible that there may have been an inflammatory condition of a transient nature in the bleeding kidney.

Dr. H. L. Kretschmer, Chicago: The object of my paper was not to dwell on essential hematuria so much as to bring out the point Dr. Braasch mentioned, namely, that a campaign of education should be started to call the attention not only of physicians but also of the laity to the importance of hematuria as a symptom. The term "essential hematuria" is simply an expression of our diagnostic limitations. I do not believe we are justified in saying that there is no cause present to account for the hemorrhage because we cannot find one. Dr. Payne said that his patient had pain on the right side and bleeding on the left side. In my paper I called attention to the fact that some of the patients had bilateral lesions, and that only one side was bleeding at the time of examination. I believe it is possible that his patient had a bilateral infection, but at the time he cystoscoped her, only one kidney was bleeding. I do not know why Dr. Harpster's patient was bleeding.

ROUTINE SPINAL ANALGESIA

WITH REPORT OF 6,229 CASES

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AND
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In 1909 when work on the Panama Canal was being vigorously pushed, Hospital Santo Tomas, the government hospital of the Republic of Panama, found its admissions increasing rapidly without a corresponding increase in equipment and assistance. For this reason more than others, the surgical staff began the use of spinal anesthesia. Since that time it has been used as a routine procedure, except when contraindicated, for all surgical operations below the umbilicus. It has been used frequently for operations on the upper abdomen and rarely for higher regions of the body. The administration of the anesthetic has not been restricted to any one or to any set of operators, but has been used by new interns. In all, twenty-seven different physicians have contributed to this series of cases. This, of course, is not conducive to the best results, but the opportunity to review results under these conditions is interesting and instructive.

The majority of our patients are West Indian negroes and native Panamanians of the poorer classes, of low mentality, and are by no means neurotic in tendency. They submit to operation with a minimum of mental distress. These factors are of great importance in this method. We have found spinal analgesia much less satisfactory on white American and European patients than on those spoken of above. They seem to require a smaller dose to bring on toxic manifestations, they are much more apprehensive, and unfavorable postoperative effects are more frequent and more severe. To children under 5 years of age we usually give a general anesthetic, although we have used spinal analgesia on children as young as 1 year. Patients in a state of shock from hemorrhage or other cause, and patients with a very low blood pressure from any cause have not been chosen for spinal anesthesia.

In addition we have chosen not to use spinal analgesia on any patients who were prejudiced against the method, in extremely nervous patients, in patients having marked spinal deformity or diseases involving the spinal cord or peripheral nerves, or in patients having a superficial infection near the site for puncture.

In the beginning, many different drugs were tried, both separately and in combination, and with the addition of strychnin and epinephrin. We have obtained the most consistently good results with the following preparation, so that we now use it exclusively:

	Ampule	
	0.5 c.c.	1 c.c.
Stovain	0.05 gm.	0.1 gm.
Sodium chlorid	0.05 gm.	0.1 gm.
Distilled water	0.5 c.c.	1 c.c.

DOSAGE AND TECHNIC

Formerly in long operations we gave an average dose of 0.085 gm., with a maximum of 0.1 gm. in very robust persons. In the last two years we have cut down the dose to an average of 0.07 gm., with a maximum of 0.085 gm. It seems unwise to exceed this, on account of the high percentage of patients who vomit and show other toxic symptoms if a larger dose is given. The duration of anesthesia will usually bear a direct relation to the dose; hence we vary the dose according to the amount of time required for the operation. For operations requiring one-half hour or less, 5 cg. are given. For longer operations the dose is increased proportionately.

For operations below the symphysis pubis, the spaces between the third and fourth or fourth and fifth lumbar vertebrae are chosen. The solution will in most cases gravitate to the sacral curve, and analgesia will be confined to parts below the umbilicus. When it is especially important that there shall be no diffusion upward, the injection is given between the third and fourth in the sitting position, the patient being allowed to remain in that position for about three minutes. Ordinarily the injection is done with the patient lying on his left side. For anything above the pubis, the spaces between the second and third or first and second are chosen. We have found that our solution injected into the first or second space will usually gravitate to the middle of the dorsal curve with the patient in the recumbent position, and that the average limit of analgesia is a little above the tip of the ensiform cartilage. If the head of the table is slightly lowered, immediately after the injection, the anesthesia will be more profound, and more lasting in the upper abdomen. Practically all the operations on the upper abdomen and chest have been done successfully with this technic. When we have anticipated the necessity for a long operation in the upper abdomen, we have injected the area of the cord directly supplying the operative field, as suggested by Babcock.

RESULTS

Failures.—We are unable to give a statement of the percentage of failures for the entire series because the records are not complete in this respect. Following all cases for a period of three months in the present year we note the following:

In 226 consecutive cases injected by one having had a large experience in the method, there was one complete and one partial failure, about 0.8 per cent. In 479 cases injected by six different physicians there were sixteen complete failures, nine partial failures and four repeated injections, about 6.25 per cent. failures. A complete failure is considered one in which pain sense and motor control are not lost, making it impossible to operate. In partial failure there is some loss of pain sense and motor control, but not sufficient for painless operation. The injection is repeated when there has been a complete failure, if it will not cause too much inconvenience. It is not dangerous to repeat the injection; but if the operative field has been prepared in the mean time, one hesitates to disturb everything and turn the patient on his side for a second injection. In this case we usually give a general anesthetic. Practically all failures are the result of errors in technic and improperly prepared or deteriorated solutions.

Favorable and Unfavorable Features During Operations.—The most gratifying features at the time of the operation are the complete muscular relaxation and the contracted condition of the intestine. It is possible to perform extensive pelvic operations through a very small incision. The intestine can be separated from the operative field with a minimum of handling. This probably accounts for the fact that we see much less postoperative distention after spinal analgesia than after ether narcosis. The complete relaxation of the sphincter ani is a distinct advantage in operations on the rectum and anus. There is no operative shock in extra-abdominal or pelvic operations.

In operations below the pubis in which the usual dose is 0.05 gm., a little over 1 per cent. of the patients vomit. In abdominal operations below the umbilicus in which the Trendelenburg position is not used, 4 per cent. vomit. In the same class of cases in which the Trendelenburg position is used, a little over 9 per cent. vomit. The vomiting is preceded by nausea, restlessness, sweating, pallor, faintness and air hunger. One or more of these symptoms may be present without vomiting. We have repeatedly verified the fact that these symptoms begin to appear in from twelve to twenty-five minutes after the injection. This corresponds to the time when the drop in blood pressure has reached its lowest point. Ordinarily all these symptoms pass off in a few minutes without treatment. They are more quickly dissipated by strychnin, caffein or respired ether, and in severe cases by the intravenous injection of physiologic sodium chlorid solution containing from 5 to 10 minims of epinephrin solution. These symptoms are probably due to too rapid diffusion of the drug to the medullary centers.

On three occasions it has been necessary to stop the operation temporarily on account of respiratory failure. Artificial respiration was begun and continued in each case until the patient was able to breathe. In one of the cases it was necessary to continue the artificial respiration fifty minutes. (In this case we were trying Jonnesco's method. The patient was operated on for tuberculosis of the cervical glands.) All three patients recovered, and the operation was completed in each case without a general anesthetic.

With our system of dosage for operations in the pelvis the average duration of anesthesia is fifty minutes. The limits of duration are from twenty minutes to one hour and forty minutes. Too short duration of anesthesia has been a distinct disadvantage in some cases, necessitating a supplementary general anesthetic.

We have noticed at times a loss of pain sense without loss of motor control. In this case absence of relaxation might be an objectionable feature.

It has been necessary on a few occasions to render the patient unconscious with a general anesthetic on account of extreme nervousness, even when the injection had been otherwise a success.

After-Effects.—Vomiting is a very uncommon after-effect. It has been noted at times in conjunction with symptoms of meningismus, occurring usually about the third day. If postoperative vomiting occurs, it can usually be traced to some definite cause other than that of the anesthetic.

Mild headache and backache occurred in about 20 per cent. of the cases. They yield readily to the usual headache remedies. The severer type of headache associated with vertigo, severe backache, stiff neck, etc., is much less frequent. In our wards it occurs in about 1 per cent. of cases. It is due to slight hemorrhage into the subarachnoid space from faulty puncture. We believe that the condition is an aseptic inflammation of the meninges, due to the presence of a foreign body (blood) in the cerebrospinal fluid. The most effective treatment is repeated spinal puncture, from 10 to 25 c.c. of cerebrospinal fluid being drawn off each time. Symptoms usually last from five to eight days, but may continue in a milder degree from two to three weeks. Vertigo is usually the last symptom to disappear. Headaches from deteriorated solutions are much milder than this type, and usually occur in groups.

Temporary loss of vesical control is fairly frequent, following operations on the rectum and perineum. We have never observed a permanent loss of anal or vesical sphincteric control. In the last 3,000 cases there have been two cases in which vesical control was absent for more than two weeks. Similar cases are not infrequent following general anesthetics.

OPERATIONS PERFORMED UNDER SPINAL ANALGESIA IN SANTO TOMAS HOSPITAL, 1909-1916 *

	No.
Chest:	
Wire for fracture	3
Liver abscess	12
Empyema	3
Wounds	2
Abdomen:	
Gastro-enterostomy	2
Tumors	17
Wounds of stomach	4
Fistulas	7
Exploratory	9
Splenectomy	4
Splenopexy	2
Intestine:	
Suture	6
Resection	12
Short circuit	3
Obstruction	14
Meckel's diverticulum	2
Intussusception	3
Fecal fistula	8
Ulcer	1
Tuberculous peritonitis	9
Peritonitis, other forms	12
Appendectomy	451
Prolapse rectum	8
Stricture rectum	37
Hemorrhoids	264
Fistula in ano	97
Cholecystotomy	3
Kidneys:	
Nephropexy	8
Nephrectomy	3
Ureters plastic	1
Gynecology:	
Hysterectomy	341
Myomectomy	10
Tubes and ovaries	513
Suspension of uterus	126
Perineorrhaphy	48
Curettage of uterus	384
Operations on cervix	28
Rectovaginal fistula	5
Vesicovaginal fistula	4
Hernia:	
Inguinal	687
Femoral	17
Ventral	30
Umbilical	6
Epigastric	2
Genito-Urinary:	
Inguinal adenitis	330
Circumcision	377
Internal urethrotomy	180
External urethrotomy	135
Hydrocele	201
Prostate (infrequent)	7
Amputation of penis	15
Varicocele	18
Testicle	21
Plastic on urethra	9
Extremities:	
Amputation	98
Fractures:	
Wire	18
Plate	13
Graft	7
Nail	2
Cast	90
Infections	482
Ulcers	362
Varicose veins	9
Wounds	66
Tumors	58
Osteomyelitis	42
Arthroplasty	4
Popliteal aneurysm	2
Aspiration of joints	20
Club feet	5
Cystoscopies, examination of fractures, vaginal examination, repeated injections, emergency wounds, etc.	529
Total	6,229

* In many cases more than one operation was done. Each number represents a separate patient.

In three cases we have noticed symptoms pointing to direct injury of one or more branches of the cauda equina. The patients have complained of pain, followed by parasthesias and anesthesia over a limited area of the buttocks or legs. All have been unilateral. All three were improving at the time when they left the hospital. There was no disability.

It is impossible for us to have an efficient follow up system in this country, so that some of the late aftereffects might escape our observation. But this hospital is the only charity hospital in the Republic of Panama, and it is safe to assume that if a patient developed anything of a serious nature he would almost certainly return to us.

We have observed no case in which there was a permanent paralysis of any kind. We have never seen gangrene of any structure resulting from spinal analgesia.

There have been no cases of meningitis developing after the puncture. No case has been observed in which the puncture seems to have caused a point of lowered resistance, for the development of tuberculous or other forms of meningitis or any other spinal lesion.

In view of the reported frequency of ocular palsy, namely, 1 : 400, we are at a loss to understand why we have not observed this condition in a single case. It is possible that in the earlier part of the series some cases may have escaped our attention; but in the past four years when the cases have been more carefully observed, we have not encountered a single case. As it is said to occur from seven to thirteen days after injection, some cases may have developed after the patients had been discharged from the hospital.

One patient developed a marked degree of mental derangement which lasted fifteen days, after which she recovered completely. She had undergone a panhysterectomy.

Deaths.—There have been four deaths in which spinal analgesia has been a factor. In only one did it seem to be the sole cause of death:

A young woman was given 0.075 gm. of stovain in the second lumbar space for an operation for retroversion. In the midst of the operation she gradually went into marked collapse, and the radial pulse could not be felt. There was no respiratory paralysis. Ten minims of epinephrin solution in 0.5 liter of normal saline were given slowly intravenously. The symptoms of collapse quickly disappeared, and the radial pulse became strong and full. The operation was completed, and the patient was sent to the ward in fair condition. Twenty minutes later she was found in collapse again. The same treatment was given with prompt improvement. After the immediate effects of the epinephrin had worn off the pulse became very slow and very weak. Stimulants were given, with slight improvement. In the afternoon, four and one-half hours after the operation, the patient again went into collapse. Epinephrin was given but with very slight beneficial effect. The pulse became weaker and slower until death, about twenty minutes after the last injection of epinephrin.

We feel that this death was due to too rapid diffusion of the stovain to the higher centers, on account of placing the patient too quickly in the Trendelenburg position. We have observed two other cases in a similar condition of collapse. Both patients, however, recovered.

A second death occurred in a strong, healthy man who was about to be circumcised. After the spinal needle had entered the subarachnoid space there was a scant flow of fluid. The patient was (unfortunately) instructed to cough, and fluid spurted from the needle. The patient went into collapse immediately and was also unable to breathe. Artificial respiration was started and stimulants were given, but with no effect. The patient died almost immediately. Stovain had not yet been injected. It was suggested that hernia of the medulla into the foramen magnum from relief of pressure during coughing might have caused medullary paralysis. This could not be confirmed at necropsy.

This, of course, is a death from spinal puncture; but as spinal puncture is a part of the procedure in spinal analgesia, its mortality should be considered with that of the latter.

The third death occurred in a woman who was undergoing an operation for the removal of a large ovarian cyst. The patient remained in good condition until the cyst was accidentally ruptured during the dissection. The cyst emptied itself almost immediately and, at the same time, the woman went into a state of shock and died in a few minutes, on the operating table. We believe that the only part which the anesthetic could have played in the cause of this death was to lower the blood pressure slightly and thus render the patient more vulnerable to shock.

A fourth case, a pregnant woman, was given stovain, preparatory to a cesarean section for eclampsia. Having a very high blood pressure, she was considered a favorable subject for spinal analgesia. Shortly after the injection and before the operation had been begun, she went into a violent eclamptic convulsion. It is possible that the convulsion caused rapid diffusion of the stovain to the higher centers with resulting respiratory failure and collapse. Two of the physicians present were of the opinion that the convulsion itself was a fatal one and that the stovain was not the cause of death. The woman became very cyanotic and apparently died from asphyxia.

In a general way we are able to confirm Babcock's conclusions with reference to a comparative consideration of spinal analgesia and ether narcosis. Each has its advantageous and disadvantageous features. While the immediate operative mortality of spinal analgesia is perhaps higher than that of ether, the additional mortality from postoperative complications following ether narcosis would probably about equalize them. There is no condition following spinal analgesia comparable to ether pneumonia in its mortality.

Certain points brought out in this paper indicate that the best results cannot be obtained unless one especially qualified administers the anesthetic. While the unfavorable features have not been excessive in this series, we feel sure that they could have been reduced considerably in the hands of one or several experienced men. Ether is undoubtedly better adapted to routine use.

THE FIELD OF SPINAL ANALGESIA

Spinal analgesia has a fairly wide field in which it is the anesthetic of choice, in many respects, namely, for hernia, except those varieties occurring above the umbilicus; all genito-urinary operations except those involving the kidney and upper ureters, and for operations on the rectum, anus, perineum, vagina, cervix and lower extremities.

Pelvic operations and other intra-abdominal operations below the umbilicus can be done very satisfactorily with spinal anesthesia. The Trendelenburg position, which is used in the majority of these operations, offers some difficulties to safe anesthetization and is responsible for some objectionable features, such as a high percentage of vomiting, respiratory failure and collapse.

Spinal anesthesia does not seem to be sufficiently satisfactory for operations on the upper abdomen and thorax to warrant its general use here. When there are contraindications to general anesthesia, or when spinal anesthesia seems to be specially indicated for reasons based on physiologic action, it may be chosen.

Our experience on higher regions of the body is limited to two cases, both of which almost terminated disastrously.

CONCLUSIONS

It has been our purpose in this paper merely to present in a general way this series of cases without attempting to enter into a discussion of the many important features of spinal anesthesia. Our attitude in regard to the method can be summed up briefly:

It has a restricted field in which it is as safe and as efficient as any general anesthetic, and in addition offers certain advantageous features. It has a wider field in which it can be used satisfactorily and safely when general anesthetics are contraindicated. There are definite contraindications to its use, and disregard of these will certainly lead to unsatisfactory and even disastrous results. Special skill is required for the successful use of spinal anesthesia, particularly in its selective field when it is chosen as the least dangerous anesthetic in desperate cases.

Santo Tomas Hospital.

THE PRESENT STATUS OF ABDOMINAL CESAREAN SECTION

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The published statistics of the results of the abdominal cesarean section would seem to prove that it is an operation of such comparative safety that there can be little or no question that it should be classed as one of the greatest advances of modern obstetrics. Apparently it offers a safe and easy method for the delivery of an uninjured, healthy child, with a minimum of suffering and risk to the mother in cases which would possibly end disastrously if pelvic delivery were attempted. Although during its period of development the indications for which cesarean section was performed were practically limited to disproportion between the fetal head and the maternal pelvis, the excellent results which followed its employment in properly selected cases have led to a marked broadening of the indications. The time has now been reached when some operators seem to resort to it for slighter indications than those for which they would perform a low forceps operation, exercising little or no care in the selection of proper cases, with the result that although the published statistics still show it to be a safe surgical procedure under proper conditions, the unpublished results are appallingly bad.

A chance remark made to me by the wife of a competent surgeon practicing in one of the smaller cities near Boston first called my attention to this fact. I had operated on her for the repair of the results of a brutal forceps delivery through a contracted pelvis, and had advised abdominal delivery in future labors. Her reply was to the effect that in their community cesarean section had proved universally fatal to the mother, a statement which led me to investigate the unpublished statistics of cesarean section whenever the opportunity offered, with the result that I am convinced that except in the practice of trained obstetric surgeons, cesarean section can in no sense be considered as a life saving operation, except for the child. I believe that if we could only collect the statistics from the suburban hospitals, or even from the private hospitals of our larger cities, we should be compelled to admit that there is a surprisingly high maternal mortality attendant on this operation, the true indication for which is the saving of fetal life at the expense of little or no increased risk to the mother.

In four cities of from 25,000 to 40,000 inhabitants within 40 miles of Boston, I collected the following data:

In A, no patient on whom cesarean section has been performed is known to have recovered.

In B, the mortality, as personally stated by one of the local surgeons, is from 60 to 75 per cent.

In C, cesarean section is supposed to be a universally fatal operation when performed by the local surgeons.

In D, cesarean section is an operation of from 10 to 20 per cent. mortality in average cases; but since it has been adopted as the routine method of delivery in eclampsia the mortality has greatly increased, it being over 50 per cent. in these cases.

In well equipped private hospitals in Boston, seven patients are known to have been lost recently after operation by supposedly well trained surgeons.

I cannot vouch for the accuracy of these figures, but they demonstrate clearly what is going on in the smaller cities near Boston, and there seems to be no reason to believe that the results are much better in other parts of the country.

R. W. Holmes[1] says that "one who has a mortality of 5 per cent. or more in his cesarean sections should revise his indications — should use discrimination in his selection of cases." This statement, while undoubtedly true, does not go far enough. I believe that every surgeon who loses a case of cesarean section should consider most carefully the causes which have entered into his patient's death, especially with relation to his choice of cesarean section as the operation of election, and also with regard to his operative technic, in order to discover, if possible, the source of trouble so as to prevent similar results in future work. The majority of operators apparently choose cesarean section as a panacea for all obstetric difficulties when some other method of delivery should have been selected, and then blame the patient or some one else for the bad result, forgetting that the responsibility is theirs and that there are certain well known factors which render the operation safe or extremely dangerous, according as they are strictly adhered to or neglected. The primary cause of most bad results is either a failure to recognize the contraindications to the operation or an improper surgical technic, and the responsibility rests with the surgeon.

Inquiry as to the general conditions which have led to these bad results leads me to believe that the principal underlying cause is a lack of knowledge on the part of the average practitioner as to what constitute the contraindications to an abdominal delivery, which suggests that there is a fundamental error in the teaching of obstetrics. The medical student is taught the indications for the operation; he sees the operation performed under proper conditions with brilliant results, and he is impressed with the ease of the operation, as compared with a difficult pelvic delivery, and the satisfactory after-results for both patients. He is not sufficiently taught in regard to the bad results which follow the operation, if performed in improperly selected cases, and his subsequent reading does not educate him on this point, since few except the successful operations get into the literature, and the possible dangers of the operation are either ignored or slighted.

The standard which is set for obstetric care in general practice is so low that, outside of the practice of specialists or general practitioners who have taken special obstetric training, the study of the patient during pregnancy, particularly with regard to the method of delivery best suited to her individual needs, is practically neglected, and the average patient comes to labor without having received any prenatal study. The result is that the great majority of women are allowed to enter on labor without ever having been carefully examined, and, therefore, cesarean section is seldom undertaken until the failure of labor and often of operation has demonstrated that the delivery of a living child through the pelvis is impossible, except by pubiotomy, which is an unknown operation in general practice. Cesarean section is then performed as an operation of last resort for the sake of the child, and the patient, often already infected, dies, or recovers after a prolonged illness.

Experience has shown that certain principles should govern the choice of operation and that every departure from them renders a patient a doubtful or a bad risk for cesarean section. There is not the slightest doubt that if the poor risks are delivered by some other method, even though the sacrifice of the child may be necessary, many maternal lives will be saved which are now sacrificed unnecessarily, at the expense of a relatively small increase in the infant mortality.

Cesarean section performed by a competent surgeon on a healthy, uninfected patient under proper conditions is an operation which should be attended by little, if any, higher mortality than is to be expected in ordinary clean abdominal surgery on patients who are considered good surgical risks. If, however, any one of these conditions is disregarded, the prognosis will be at once materially altered for the worse, and it behooves the operating surgeon to consider carefully in each individual case whether the patient is a proper risk for an abdominal delivery or whether some contraindication to the operation is present. If the latter proves to be the case, he must determine whether delivery may not be effected in some other way with less risk to the mother, and if such proves to be the case it is his duty to refuse operation, even though this may involve a deliberate sacrifice of the child. The only exception to this rule should be that if the cesarean section is demanded by both husband and wife for the sake of the child, after the risks of the operation have been fully explained to them, the surgeon may in exceptional cases, when no more than a reasonable doubt exists as to the outcome, take a somewhat increased risk for the mother for the sake of a child which is in good condition. The factors which should be taken into consideration in making a decision are:

The condition of the patient, both as regards the possibility of uterine infection and as regards complicating diseases, which increase the danger of the operation.

The circumstances under which the patient is placed, both as regards the possibility of an aseptic operation and proper after-care.

The skill of the medical attendants to deal with the special problems which the case presents.

The problem will often prove to be a complicated one and its solution extremely difficult, but it must always be remembered that operation in improperly selected cases means the probable death of the mother from peritoneal infection, the patient having little chance for her life, and that, therefore, vaginal delivery is always to be advised when possible in doubtful cases rather than to subject the patient to the grave risk which abdominal delivery entails in the presence of uterine infection.

The most essential factor for success in cesarean section is that cases for operation should be selected with the greatest care and that operation should be refused to all patients in whom uterine infection can be demonstrated or is even seriously suspected, provided delivery can be accomplished by some other means. If, however, abdominal delivery seems to be the only possible solution of the problem, the uterus should be delivered and the peritoneal cavity carefully protected before the uterus is opened, and after the delivery of the child and placenta a complete hysterectomy should be performed, it being a violation of all surgical principles to return an infected uterus to the abdomen to act as a source of peritoneal infection. The greatest care should be taken during the operation to protect the peritoneal cavity from contamination by the infected uterine contents. If infection is only probable but not positive, it may be justifiable, for the sake of the child, to perform an extraperitoneal operation and to leave the uterus; but such a course will be attended by some mortality, and the part of wisdom in doubtful cases is to refuse abdominal delivery when any other method is possible.

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[1] Holmes, R. W.: Obstetrics, a Lost Art: A Criticism of the Promiscuous Indications for Cesarean Section, Surg., Gynec. and Obst., 1915, **21**, **636**.

To judge from the general results, the conditions which predispose to infection of the uterus, and, therefore, to infection of the peritoneal cavity, if a cesarean section is performed after a test of labor, do not seem to be generally appreciated, and herein lies the explanation of the unnecessary sacrifice of maternal life. Vaginal examination is by far the most common cause of uterine infection; and repeated examination, no matter how careful the aseptic technic may be, should place the patient at least in the suspected class, even if there is no clinical evidence of infection, and render cesarean section an operation to be performed only for absolute indications, and even then with serious misgivings.

Attempts at delivery by the vagina still more increase the risk of a subsequent abdominal delivery, and the obstetrician must realize that a patient on whom a vaginal operation has been attempted unsuccessfully is an extremely bad risk for a cesarean section. If, therefore, he attempts a high forceps operation and fails, cesarean section is contraindicated, and the patient should be delivered by craniotomy or pubiotomy and not by section, no matter how careful he believes his asepsis to have been. Undoubtedly a majority of these patients will recover, if delivered abdominally after a tentative application of forceps, but it is the minority which dies that is important, and I believe that abdominal delivery should be refused to all the patients in this class for the sake of this minority. This is particularly true if the attempt at extraction has been anything more than tentative, unless the value of the child to its parents is such that the mother is willing to take a very serious risk for its sake; and even then I do not believe that the surgeon should allow operation to be forced on him against his better judgment.

Even though there has been no vaginal interference whatever, there is no doubt that the prognosis of cesarean section is materially altered for the worse by the mere fact that the patient has been in active labor for a number of hours, the danger being greater the longer and more severe the labor. A few hours of moderate labor do little, if any, harm; but the exhausted patient is a poor surgical risk, and the results on patients who have been subjected to a true test of labor are distinctly worse, from the standpoints both of morbidity and mortality, than if the operation is performed before labor begins or early in labor. For this reason I believe it is unwise to subject a patient to a true test of labor with the intention of performing cesarean section in case of failure, even though no vaginal examinations are made. A few hours of moderate labor will do little harm; but a true test of labor, that is, allowing the patient to go into the second stage to test the molding of the head, is, I believe, unwise, if a cesarean section is contemplated in case of failure. My own custom is to examine all doubtful cases under anesthesia a few days before the probable date of labor, and if I find it impossible to engage the head in the pelvis, and especially if the head overrides the symphysis, to perform cesarean section at the time of election. I recognize that a certain proportion of these patients will mold the head into or through the pelvis if allowed to go into labor, but I prefer to do a few unnecessary operations at the time of election rather than to be forced to perform an occasional late operation on an exhausted patient with the alternative of a pubiotomy or a destructive operation on a living child.

Patients in whom the membranes have been ruptured for a considerable time are especially prone to infection, even if not examined at all. I believe that when early rupture of the membranes occurs in patients in whom some other possible indication for cesarean section exists, the operation should be performed without unnecessary delay; and if it is thought advisable to give a test of labor, that all thought of cesarean section should be definitely abandoned, and the patient's friends informed of this decision so that they may have the opportunity to elect a cesarean, which is probably unnecessary, if they so desire, rather than to take serious risks for the child. I do not, however, consider early rupture of the membranes in itself an indication for cesarean section, no matter what the presentation or position of the child.

Patients suffering from acute infections of any sort, whether local or general, should be classed as poor risks for abdominal delivery, and operation should be refused if any other method of delivery is possible. Chronic diseases complicating pregnancy, such as chronic nephritis, diabetes and heart lesions, render the prognosis of cesarean section more serious than if the operation is performed on a healthy patient. Although in many cases the operation may be advisable, either in spite of the complicating condition or, as sometimes happens, because of it, as offering less risk than a difficult pelvic delivery, the results cannot be expected to compare favorably with those which are performed on patients in good health, and this fact must be taken into consideration in the choice of treatment.

Preeclamptic toxemia and eclampsia are at the present time cited as indications for abdominal delivery. The best results published to date, however, show a distinctly higher mortality than when delivery is effected by other means, and I believe that although in individual cases the operation may be advisable, it is so in spite of and not because of the complicating toxemia. Unquestionably cesarean section offers the easiest means of delivery for the surgeon and often the least shock to the patient, but I do not believe that a thoroughly toxic patient who is suffering from a partial suppression of urine can ever be considered a good risk for abdominal surgery. In a certain number of cases in which some other reason for the operation exists, cesarean section may be advised, but certainly not as a routine procedure in the treatment of these conditions.

It seems hardly necessary to refer to the importance of proper surroundings for an aseptic operation and the possibility of providing proper after-care for these patients. A tenement house is not a proper place for abdominal surgery when better quarters can be provided, and a well equipped hospital will give the best results. Unless proper surroundings can be provided and proper after-care insured, the performance of cesarean section should, under these conditions, be restricted to patients who present absolute indications for abdominal delivery.

Furthermore, cesarean section will prove an exceedingly fatal operation if performed as an obstetric operation by the poorly trained operator. It is an easy operation, it is true; but as in every other major surgical procedure, the better the operator the better the results, and vice versa. In the hands of a properly trained surgeon who has had no obstetric training, abdominal delivery will often prove safer in emergency than a pelvic operation with which he is unfamiliar; but that does not warrant his performing operations unnecessarily when competent advice can be obtained, a condition which frequently arises at the present time.

If these contraindications are scrupulously regarded, I believe fully that abdominal delivery is as safe as a major surgical operation can be, subject only to the ordinary surgical risks, as embolus, ether pneumonia, etc., and should be attended by a mortality of less than 1 per cent. The principal factors which render it safe, however, are the determination of its necessity by careful study of the patient during pregnancy, and the proper preparation of the patient for operation, so that the operation may be performed at a set date, preferably before labor begins, or very early in labor, under proper conditions. Emergency surgery is always relatively unsatisfactory in its results, and cesarean section offers no exception to this rule.

The indications which warrant the performance of cesarean section may be divided into two general groups: those in which for one reason or another an attempt at delivery through the pelvis is practically sure to be attended with disaster for mother or child, or both, and that in which, although delivery by the vagina may be possible, abdominal delivery offers definite advantages to one or both patients. The practical distinction between the two classes of indications depends on the results obtained by the abdominal route. If we accept the published statistics as correct, the indications may be very broad in competent hands; but if the unofficial figures which I have quoted at all represent the facts in general practice, the more the operation is limited to patients in whom it is the only possible method of delivery, the better.

In my opinion, cesarean section is a safe surgical procedure as long as proper care is exercised in the selection of cases for operation, and I believe that most bad results are due either to lack of appreciation of the contraindications to operation or to faulty technic on the part of the operator. I feel, therefore, that in the hands of a competent surgeon the operation may be properly performed for comparatively broad indications. It must be remembered, however, that the consensus of opinion among qualified obstetricians is that if a patient is once delivered by cesarean section it is unwise to subject the uterus to the strain of future labors, and future pregnancies are to be terminated in the same way. Therefore, in young women who may have several children, cesarean section is a questionable procedure when performed for indications which are only temporary in character, such as eclampsia and placenta praevia, when any other method of delivery holds out a reasonable hope of success.

The principal indication for cesarean section is, and always will be, serious disproportion between the fetal head and the pelvis. The determination of the degree of disproportion and the estimation of the liability of the individual to serious dystocia will call for the wisest judgment after thorough examination under anesthesia. If the disproportion is marked, a primary cesarean at the time of election should be advised without hesitation, in spite of the fact that in some cases the test of labor will result in a not unduly difficult pelvic delivery; but the risk to the life of the child and of serious laceration of the mother is too great in these cases to be a proper one. If the disproportion is only moderate and the patient is a young primipara, I believe that she should be subjected to the test of labor in the majority of cases; but if the patient's nervous or physical equipment is such that it is not thought wise to subject her to the strain of the prolonged second stage, which would probably be necessary to mold the head into the pelvis, cesarean section is the operation of choice.

Women whose previous labors have proved unduly difficult and who have lost one or more children from complications incidental to difficult operative deliveries, even though no definite pelvic contraction can be made out, should be classed as proper subjects for cesarean section, and in this class also should be included women who have suffered serious pelvic damage in their previous labors, which has later been repaired, unless some other factor renders them poor abdominal risks. This especially holds true when the patient has suffered a third degree perineal laceration or a vesicovaginal fistula.

A previous cesarean section should always, in my opinion, be followed by cesarean section in subsequent labors. Published cases show that the risk of rupture of the uterine scar, if exposed to the strain of labor, is a definite one, and that the mortality from this cause is higher than the mortality from the repeated cesarean section. Therefore, the repetition of the cesarean section is called for, since it is not possible to predict in a given case whether the scar will rupture or not, irrespective of the method of suture employed or the operative skill of the surgeon in the case. The performance of a primary cesarean section in patients who have no permanent indication, as, for instance, in eclampsia, placenta praevia and the like, should be undertaken only when it seems to be a life saving operation for the child or a health saving operation for the mother, and the family should be informed in regard to the future of the patient when the operation is advised. The fact that in the great majority of cases the scar will not rupture is not, in my opinion, any argument for deliberately choosing the greater of two risks for the patient for the sake of avoiding the lesser.

Dystocia, resulting from previous operations, may render a cesarean section necessary in subsequent labors. Ventral fixation, or an improperly chosen method of suspension, which has resulted in fixation, and amputation of the cervix are especially liable to cause trouble in subsequent labors, and patients who have been subjected to such operations should be carefully studied in order to determine what method of delivery is indicated with due regard to the safety of both patients.

In primiparas who have marked valvular lesions of the heart, especially mitral stenosis, cesarean section will, in many cases, prove the safest method of delivery, particularly in women who have had signs of failing compensation during pregnancy. Probably in the majority of these cases, delivery by the vagina can be accomplished without undue risk to life, if the second stage of labor is terminated promptly by forceps; but I believe that the strain of even an average first stage detracts seriously from the reserve power of the diseased heart, and that a cesarean section before labor begins offers the safest method of delivery for these patients, especially when the future health of the patient is taken into consideration.

Women of over 40 in their first pregnancy may very properly be looked on as proper cases for abdominal delivery. The fact that the patient may never have another child, combined with the somewhat increased danger of unsatisfactory labor, which may result in severe pelvic laceration following an operative delivery through rigid soft parts, offers, in my opinion, a proper indication for cesarean section in selected cases. If in addition to rigid soft parts and the relative importance of the child there exists even a slight pelvic contraction, the indication, in my opinion, becomes absolute.

Premature separation of the normally situated placenta with symptoms of severe hemorrhage not infrequently offers a proper indication for abdominal delivery, since in some cases it may be necessary to remove the uterus in order to prevent death from postpartum hemorrhage, as has been recently reported in two instances by J. W. Williams.[2] If the patient can be operated on, under proper conditions, in a well equipped hospital, the indication is a sound one; but if operation is done as an emergency under poor conditions, the mortality will probably be little improved by adopting abdominal delivery as a routine in general practice.

The general indications for the operation are, some obstruction to delivery or the presence of some condition which renders the abdominal route the safer one for mother or child, or both. In the literature of the present day many other indications are advocated: eclampsia, placenta praevia, contraction ring, breech or face presentations in primiparas, general poor equipment for labor, etc. Any one of these indications may furnish a proper indication in the given case when taken into consideration with other complicating factors, but none of them is a sufficient indication for a routine abdominal delivery to be advocated. If operation is undertaken for one of these reasons, the patient or her friends should be carefully informed of the circumstances which render the operation wise, of the dangers of the operation in case of a faulty technic, which is always possible, and of the necessity of future cesarean sections in case the patient becomes pregnant again. In other words, the operation at the best is one to be chosen for good and sufficient reasons, and not one to be undertaken lightly.

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[2] Williams, J. Whitridge: Surg., Gynec. and Obst., November, 1915.

Alcohol Chief Cause of Crime.—Liquor was responsible during 1916 for the greatest crime wave in the history of Harrisburg, Pa., according to the report of Superintendent of Detectives William L. Windsor. The arrests totalled 3,857, nearly 1,000 more than in 1915. Nearly every one of the men and women arrested was either drunk or to some degree under the influence of alcohol.

HUMAN ANTHRAX

REPORT OF AN OUTBREAK AMONG TANNERY WORKERS *

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Twenty-five cases of human anthrax, reported to the state department of health in four months, constitute the severest outbreak of this disease ever recorded in Massachusetts. A clinical and epidemiologic study of these cases has revealed some interesting facts as to the sources and modes of infection, methods of prevention and treatment of this disease.

Epidemiology.—While twenty-three of the twenty-five reported cases were in persons handling hides, the most interesting group consists of twenty cases which were infected from a common source. An analysis of the early reports showed that the infection seemed to be confined to the workers in three tanneries located in adjoining towns. Further study revealed the fact that every one of the persons infected had been handling dried "China" hides.

To find a common source of hide supply for three rival tanneries seemed hopeless. The key to the situation was discovered in the characteristic trade mark stamped on the hides. While all three of the tanneries received hides through Boston and New York brokers, the brokers in turn purchased them through a common agent in New York City. By means of this characteristic trade mark, the particular lot of hides involved was traced through the Boston and New York brokers to a single cargo of hides which entered the United States at the port of New York from Hankau, China. In the portion of China in which these hides originated, anthrax is known to be endemic. From this cargo of hides each one of the tanneries involved received a shipment. Further, the shipping receipts for the hides showed that they arrived before the first case of anthrax occurred.

The next step was to demonstrate the exposure of the infected men to these hides. A comparison of the time when the hides were in the process of being tanned with the working time of the infected men furnished the test. Every one of the men handled the hides bearing the characteristic trade mark. This completed the picture. Hides coming from the infected territory, shipped to the tanneries involved, handled by men who came down with anthrax, with no cases in other tanneries, is sufficient evidence on which to convict this shipment of hides of being the cause of this particular outbreak.

Clinical Histories.—The interesting clinical features of this group of cases may be conveniently condensed into the accompanying table.

Prevention.—The study of anthrax infection, in general, shows that the great majority of the cases in this country are due to infected material imported from abroad, and further, that the infection among tannery workers occurs practically only in the early stages of the tanning process. Therefore, this infection can be controlled, first, by the exclusion of infected material from this country; secondly, by the disinfection of the material after it arrives in this country, and, thirdly, by the safeguarding of the workers who handle the material.

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* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the authors' reprints. A copy of the latter will be sent by the authors on request.

A careful study of the methods of hide gathering, together with the economic necessity of importing hides, indicates that it would be both futile and unjustified to stop the importation of dried hides.

Second, the United States Treasury regulations under which hides are imported, demanding a certificate as coming from uninfected territory or showing disinfection by immersion in a 1:1,000 solution of mercuric chlorid for thirty minutes, has failed to prevent the importation of anthrax infected hides. The federal authorities at present do not possess a knowledge of the distribution of anthrax infection in foreign countries. The experiments of the United States Department of Agriculture for the disinfection of hides has not resulted in an efficient and practicable disinfectant.

OUTLINE OF CLINICAL HISTORIES

No. and Date (1916)	Occupation	Location of Lesions	Treatment	Result
1. Mar. 2	Tannery worker (beam house)	Left side of neck	Excision	Death
2. Mar. 9	Tannery worker (beam house)	Forehead	Antiseptic compresses	Recovery
3. Mar. 13	Tannery worker (beam house)	Forehead	Cauterized; moist mercuric chlorid dressing	Recovery
4. Mar. 14	Dock laborer	Left side of neck	Mercuric chlorid dressing	Death
5. Mar. 14	Tannery worker (beam house)	Right side of neck and right thigh	Excision under ether	Recovery
6. Mar. 16	Tannery worker (beam house)	Left side of neck	Antiseptic compresses; mercuric chlorid dressing	Recovery
7. Mar. 18	Tannery worker (beam house)	Right forearm	Compress —70 per cent. alcohol	Recovery
8. Mar. 21	Tannery worker (beam house)	Left cheek	Boric dressing	Recovery
9. Mar. 21	Tannery worker (hide splitter)	Left side of neck	Mercuric chlorid dressing	Recovery
10. Mar. 21	Tannery worker (die stamper)	Left side of neck	Mercuric chlorid dressing	Recovery
11. Mar. 27	Hide weigher	Left side of neck	Excision; mercuric chlorid dressing	Recovery
12. Apr. 10	Teamster	Left side of neck	Antiseptic mercuric chlorid dressing	Recovery
13. Apr. 11	Tannery worker (beam house)	Right side of neck	Mercuric chlorid dressing	Recovery
14. May 1	Tannery worker (beam house)	Left side of check	Mercuric chlorid dressing	Recovery
15. May 1	Tanner	Left cheek	Mercuric chlorid dressing	Recovery
16. May 2	Tannery worker (beam house)	Left ear	Mercuric chlorid dressing	Recovery
17. June 3	Tannery worker (flesher)	Right side of neck	Mercuric chlorid dressing	Death
18. June 4	Tannery worker (beam house)	Left side of neck	Mercuric chlorid dressing; Serum, 45 c.c. and 20 c.c.	Recovery
19. June 16	Tannery worker (beam house)	Right arm	Refused treatment	Recovery as far as known
20. June 27	Tannery worker (beam house)	Right groin	Dry, sterile dressing	Recovery

The safeguarding of the workers who handle hides in the early processes of tanning is being very indifferently carried out. Tanneries have for many years been accepted as places where cleanliness was impossible. Little or no attention has been paid to the cleansing and disinfection of the vats and utensils used by the workmen. Consequently, many of these places are highly infected with anthrax spores.

In view of these facts, it will not be possible to control anthrax until at least the latter two methods are more thoroughly carried out.

Treatment.—While it is not within our province to study intimately the treatment of anthrax, our impressions are perhaps worth recording.

In the group of cases under consideration the wide diversity of treatment is striking. In this limited group of cases excision has seemed to be less satisfactory than the expectant treatment, together with forced feeding in an attempt to overcome the infection by fortifying the resistance of the patient.

The serum treatment for anthrax is perhaps the most promising. During the course of this outbreak, through the kindness of the United States Bureau of Animal Industry, we were enabled to make arrangements for securing the serum treatment for this disease. While the limited number of cases to which it has been applied is not sufficient to draw conclusions from, it is surely worth a careful trial.

CONCLUSIONS

1. Anthrax infection is an important occupational disease.
2. The federal authorities should gather information as to the distribution of anthrax infection among cattle in all hide-producing countries.
3. Renewed efforts should be made to discover an efficient method of disinfection which does not injure the hide and is not prohibitive in price.
4. Tannery workers should be safeguarded against this infection.
5. The serum treatment should be thoroughly tried.

Milk and Typhoid Dissemination.—Milk may become infected with typhoid bacilli through essentially the same channels as other foods and beverages, and is probably not more exposed to such infection than are various other foods; certainly it is less exposed than many vegetables in common use, and much less exposed than surface waters. Milk differs from other vehicles of typhoid infection, however, in that it affords an excellent medium for the multiplication of typhoid bacilli; whereas in most other common vehicles of transmission, typhoid bacilli tend under usual conditions to decrease very rapidly.—W. H. Frost, M.D., *Public Health Report*, Dec. 1, 1916.

INTRASPINAL TREATMENT OF NEUROSYPHILIS WITH STANDARDIZED SALVARSANIZED SERUM *

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The value of intraspinal therapy as an adjunct to the treatment of neurosyphilis has been established. Sufficient work has been done during the past four years to determine thoroughly its efficiency as a means of relieving symptoms and staying processes. It has stimulated renewed interest in the problem of neurosyphilis, and has added to our diagnostic appreciation of the condition by encouraging lumbar puncture as a routine measure in all suspected cases.

It is my purpose to discuss my experiences in the management of seventy-two cases of neurosyphilis during the past two years. These cases came under my observation in a practice limited to the problems of internal medicine.

The technic used is that devised by Ogilvie, which is a modification of the Swift-Ellis method. Fresh blood serum is taken from the patient on the day of the injection, from 0.25 to 0.75 mg. of salvarsan, arsenobenzol or diarsenol is added, and it is placed in a water-bath at 37 C. (98.6 F.) for forty-five minutes and then 56 C. (132.8 F.) for thirty minutes. The usual quantity of blood serum so treated is 10 c.c.; it is injected into the spinal canal by replacing an equal quantity of cerebrospinal fluid. All patients are required to go to the hospital for from twelve to twenty-four hours and remain quietly in bed. The lumbar puncture is done in the usual manner by inserting the needle in the median line between the spinous processes of the third and fourth lumbar vertebrae. The discomfort is generally no greater than that experienced in taking blood from a vein; hence no local anesthetic is needed. Rest in bed is essential, but restriction of diet is not necessary. At least 50 per cent. of the patients do not experience any discomfort, and are able to resume their work the following day. Head pains, such as follow lumbar puncture, in which fluid is not replaced, do not occur. A certain percentage of patients develop pain, characteristic of the disease, from two to four hours after treatment, which passes off in ten or twelve hours. Approximately 25 per cent. of the patients are given codein to get rest. With experience one feels no greater risk in giving intraspinal treatment than intravenous. In none of the seventy-two cases was there evidence of untoward signs following treatments.

The number of treatments given was 252. Of the seventy-two patients, twelve were given only one injection and hence are not considered in determining results. The average number of treatments given a single patient was four. The maximum number was twelve. The results of treatment are given in the accompanying table.

The seventy-two cases consisted of the following clinical classification: cerebrospinal syphilis, 6; cerebral, 15; spinal, 6; tabes, 26; paresis, 6; congenital syphilis, 1; syphilitic endarteritis, 2; spinal myelitis, 2; 1 case of psychosis of questionable classification with positive Wassermann on blood serum and negative lumbar puncture findings; cases in which the clinical picture was only suggestive and treatment was provocative, and hence unclassified, 8.

Of the patients made clinically well, two had been treated intensively previously and were not relieved completely, but were given complete relief by intraspinal treatment, and remain so after a period of one year from last treatment. Seven of the clinically well patients were treated simultaneously, intravenous being alternated with intraspinal treatment. Two patients had been given intensive treatment intravenously previous to intraspinal treatment without relief, and were then given alternating intravenous with intraspinal treatment and completely relieved.

As the analysis shows, only a small percentage of the patients treated had had intensive treatment previously without relief and were completely relieved by intraspinal treatment. It is obvious that we can know positively the value of intraspinal treatment only when it is used independently of other treatment, but subsequently to it. In most cases, intraspinal treatment alone is not indicated for the reason that one is limiting therapy to only a part of the body when the organism as a whole is suffering from the infection.

Experience leads one to believe that intraspinal treatment cannot replace general treatment, but must be used as an adjunct and in conjunction with general management in most cases of neurosyphilis. It must be regarded only as an extra weapon of defense against the activity of an infection which is difficult to combat and until recently has been regarded as hopeless, so far as the affecting of a clinical cure is concerned.

RESULTS OF TREATMENT

Results	Number	Per Cent.
Lymphocyte count made normal	24	40
Wassermann made negative on cerebrospinal fluid with 0.5 c.c.	7	11⅔
Globulin content of fluid made negative	12	20
Negative lumbar puncture made positive by treatment and hence provocative	8	13⅓
Made normal in all lumbar puncture findings	6	10
Improved, but not made normal in one or more findings	22	36⅔
Unimproved on lumbar puncture findings	8	13⅓
Alternate intravenous or simultaneous treatment with either salvarsan or mercury	27	45
No intravenous treatment with intraspinal treatment, but intensive intravenous and mercurial treatment previously	3	5
Both previous intravenous treatment and alternate in conjunction with intraspinal	23	38⅓
Only intraspinal treatment	7	11⅔
Completely relieved of all annoying symptoms and apparently made well	12	20
Improved in one or more symptoms, but not completely relieved	40	66⅔
Improved and afterward relapsed	2	0⅓
No improvement (two advanced paretics, now dead)	6	10

I do not believe that intraspinal therapy is indicated in early neurosyphilitic involvements unless general treatment has failed. Since it is proved that nervous involvement occurs in apparently 100 per cent. of syphilitic infections, and our past experiences teach us that only a comparatively small percentage later on in life develop active neuro-involvement, we must conclude that either spontaneous cures or general management have been quite effective in controlling the infection. So long as the involvement is meningeal in character, in view of the richness of the vascular supply we have a right to believe that general treatment is sufficient. This, however, should be proved on lumbar puncture.

No patient with early syphilis should be dismissed as tentatively cured on a blood reacting negatively to the Wassermann test. On the other hand, a positive lumbar puncture is indication for intraspinal treatment even though there are no definite clinical signs of such involvement, such as nervous irritability or head pains.

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* Read before the Mississippi Valley Medical Association at Indianapolis, Oct. 11, 1916.

It is striking how much relief a single intraspinal treatment will give in early neurosyphilis when general treatment has failed. High cell counts and a positive Wassermann reaction on the fluid are quickly brought to normal, and head pains are almost instantaneously relieved. The tabetic if intensively treated becomes less ataxic, loses his lancinating pains, experiences a disappearance of crisis, and is improved in his mental and physical state. In fact, the sense of relief is so great in certain cases that these patients solicit further treatment. Deep reflex disturbances in the spinal case are often completely relieved. Vertigo and head pains in the cerebral case are controlled.

The clinical improvement does not necessarily parallel the laboratory improvement. As is shown, only a few cases have been made completely negative on lumbar puncture findings, and it is not always in the negative case that the patient is completely relieved of annoying symptoms. The most striking improvement was in cases of tabes which showed negative lumbar punctures some time after treatment.

It is extremely difficult to make a fluid negative, and it is a question just how much value a lumbar puncture has as an index to intensive therapy after symptoms are relieved. Biologic findings alone cannot be used independently of clinical findings as an index to therapy. It is not uncommon to find a blood which cannot be made negative to the Wassermann test after most intensive treatment, and this is more often true of the cerebrospinal fluid. Patients with neuroretinitis are improved under intraspinal management and remain so. One patient with ophthalmoplegia, who previously had been treated in another clinic with mercury without relief, showed a marked improvement after a single intraspinal injection. A patient with congenital syphilis improved materially after two treatments. Paresis has not given satisfactory results; a few patients have given encouragement only to relapse and rapidly grow worse. It is not reasonable to believe that after changes in the deeper structures of brain tissue have taken place, any specific therapy, however administered, is of value.

We have come to realize more than ever before the importance of intensive treatment of syphilitic infections, that our former point of view needs revision, that syphilis, like tuberculosis, is everywhere, that the infection is often present where there is no history of immorality, no history of an initial lesion or manifestations of any character, and that a positive Wassermann or positive lumbar puncture may be our only means of diagnosis. And, too, we must realize that a negative Wassermann on a blood stream does not necessarily rule out syphilis, which is especially true in neurosyphilitic involvement; but, on the other hand, a neurosyphilitic involvement very seldom gives negative lumbar puncture findings.

Not all cases of neurosyphilis are amenable to treatment, it matters not how intensive it may be; but a surprisingly large percentage of patients are made better symptomatically and biologically if treatment is rationally and intensively employed.

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Terminal Disinfection.—Terminal disinfection creates an impression of "something doing," but with advancing scientific knowledge, it is falling more and more into disuse, save for tuberculosis, and is being replaced by concurrent disinfection (that is, of all discharges while the patient is in an infective state).—Alice Hamilton, *Survey*, Jan. 20, 1917.

POSTOPERATIVE COMPLICATIONS FOLLOWING PROSTATECTOMY *

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While success in prostatectomy cases is dependent mainly on careful preoperative selection and preoperative preparation, many patients who would otherwise recover will die if postoperative care is neglected. Moreover, much can be done after operation to add to the patient's comfort and hasten his convalescence.

In the past few years at the Mayo Clinic, the various operative modifications of suprapubic prostatectomy and subsequent drainage, as well as many variations of postoperative treatment, have been tried out, and either continued or discarded according to their efficacy. After many changes in methods our present and satisfactory technic is briefly as follows:

1. A relatively large incision over a comparatively empty bladder, extraperitoneal, if possible.
2. Rupturing the prostatic capsule by inserting a finger into the urethra, sweeping the gland free from its capsule and delivering it into the bladder, at the same time tearing it from the mucosa of the prostatic urethra. If the capsule bleeds freely, bleeding tags are controlled by continuous catgut sutures or rarely by a long gauze pack brought out through the wound. The wound is closed with the usual catgut and interrupted silkworm sutures with a 32 French, soft, pure rubber double eyed catheter in the upper angle and a small split or half rubber tube in the space of Retzius and out through the lower angle of the wound. The bladder tube is tied with the loose ends of the upper silkworm suture after the skin knot has been tied, so that when the suture is cut to remove the tube, the skin stitch is not disturbed. The tube in the space of Retzius is not sutured, but has a large safety pin in its free end to prevent motion. Ether anesthesia by drop method is used. The operation usually takes from ten to fifteen minutes, its brevity avoiding any ether complications.

When taken from the operating room, the patient is put into a warm bed with hot bottles around him, and rectal saline is started. The bladder is irrigated only sufficiently to keep the tube draining, clots being washed out with a 2-ounce syringe; the size of the syringe avoids overdistention of the bladder. As far as possible, opiates are withheld, though a single dose of morphin and atropin is usually given the first night. Water by mouth is encouraged as soon as the patient awakens from the anesthetic, and light diet is started the morning after the operation, with a generous tray after the fifth day if desired. It is our usual practice to get the patient up on the third day, and earlier if indicated. Cardiac or other complications necessitate a longer stay in bed. One ounce of Epsom salt is given on the third morning. Dressings are changed as necessary. Tubes are undisturbed until the fifth or sixth day, by which time there is a more or less permanent canal formed around the rubber drain which prevents somewhat the spread of urine and infection to the rest of the wound. It is to be remembered, however, that following the drainage of a distended bladder, the bladder in contracting often causes a tube which was in the proper position at the time of operation to prod into its base later. A continuation of spasms of the bladder after the urine is comparatively free from clots indicates the withdrawal of the tube for an inch. This usually gives immediate relief.

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* From the Mayo Clinic.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* This paper and the ones by Drs. Gardner and Squier which follow are parts of a symposium on prostatectomy. The first two papers, by Drs. MacGowan, and Young and Frontz, appeared last week.

On the fifth day the tube in the space of Retzius is replaced by a narrow wick of gauze with a safety pin attached. The bladder tube is replaced on the sixth day by a smaller male catheter which is held in place by a piece of enameled fishline. The ends of the fishline are fastened to the skin with adhesive on opposite sides of the incision, so that contact with the wound is avoided, and the changing of dressings is facilitated. Enameled silk fishline has the advantage of other suture material in that it does not stretch and is nonabsorbent. The gauze in the space of Retzius is changed daily and shortened with each change till it is finally pushed out. The bladder drain is replaced by successively smaller catheters as the wound closes. Eventually the catheter is clamped off for twenty-four hours and removed. A small, soft catheter may be placed in the urethra about the third week if necessary, either partially or continuously, according to how the patient voids and whether or not he has used a catheter before the operation. With better postoperative technic, the necessity for the use of permanent catheters in the urethra is avoided. The silkworm sutures are removed not earlier than the fourteenth day.

Most wounds in the bladder will close of their own accord if kept free from collections, and reasonably clean. A previous suprapubic sinus in the midline should be excised at the second operation. The preparatory stab drain should be made an inch to one side of the midline. It will usually close by the time the midline drain of the subsequent operation is ready to be removed. Every effort should be made to stop any urinary drainage from the lower angle of the wound where the drain has been placed in the space of Retzius, and to get this part completely healed before removing the tube from the upper angle. It has been our experience that in almost every instance of a slow closing wound the leakage has been from the lower angle. Keeping the skin wound open at the points of drainage and using a sharp curet or caustic about the end of the second week, in addition to keeping the bladder empty by frequent voiding or catheterization, will usually secure an early closure. Cystoscopy should always be performed in cases in which a sinus persists; obstructing tags should be removed, and the possibility of a lost sponge should be kept in mind. Occasionally a plastic closure will be necessary. When it is not advisable to use a catheter in the urethra, a modified colostomy pad and bottle is often useful until the suprapubic wound closes. The use of zinc oxid and other ointments should be avoided on the wound, as they become infected and cannot then be completely removed.

Patients are encouraged to drink water, milk and buttermilk in abundance. If the appetite is poor, a little beer may be given. As soon as the stomach is settled, 15 grains each of hexamethylenamin and acid sodium phosphate in solution is given every three hours. Hot packs, subcutaneous, intravenous or rectal salines are used freely when indicated.

COMPLICATIONS

In considering postoperative complications, I have confined myself to the more common types, and have not taken into account the numerous terminal infections and complications of fatal cases which bear no relation to the usual postoperative treatment. The patients who have been considered in this review have had the most careful preoperative examination and preoperative preparation, so that many of the usual complications have been reduced or eliminated.

Postoperative complications may be divided into two groups, namely, infectious and noninfectious. In the first group may be included wound infection, pyelonephritis, epididymitis, phlebitis, cystitis, etc. In the second group are hemorrhage, cardiac disease, acute renal suppression, embolus, apoplexy, etc. Many of the second group, however, may be due indirectly, at least, to infection.

The prevention of infectious complications must be initiated through preparation before prostatectomy, that is to say, by thorough drainage of the bladder and the establishment of immunity against the usual urinary pathogenic organisms. This can be accomplished by improving the general health and increasing the elimination, thus increasing the resistance to infection. When there is marked cystitis, the bladder should be cleared up before prostatectomy. If stones are present, they should be removed.

Wound Infection.—In speaking of wound infection, I refer not to the mild infection which follows any open wound, but to the foul, sloughing infection which may play a major rôle in the causation of such complications as epididymitis, cystitis, pyelonephritis, phlebitis, etc. Care should be taken that at the time of operation the bladder is as clean and as nearly empty as possible, in order that contamination of the wound may be avoided. Sutures should be tied relatively loosely, and the edges of the skin should be carefully approximated without inversion or eversion. Continuous skin sutures of horsehair, catgut, etc., have usually been followed by more infection than interrupted silkworm sutures. Leaving all drains undisturbed until the fifth day unquestionably walls off the drainage and reduces the infection. With the first evidence of redness, swelling or pain in the wound, usually about the third or fourth day, a continuous hot potassium permanganate dressing is applied. The rapidity with which the odor and other evidences of infection disappear after such treatment is astonishing.

Pyelonephritis.—This, probably the most frequent complication, often exists before operation in its various degrees either as the result of vesical retention or antedating any disturbances of the bladder. Serious destruction in one or both kidneys can often be overlooked in the presence of a very large prostate and a purulent bladder, and discovered only at postmortem. When it has not been advisable to perform cystoscopy on the patient, or where the ureters were not located by the cystoscope, a cysto-ureteropyelogram should be made, the bladder having been filled with an opaque medium and the patient placed in the Trendelenburg position for ten minutes and a roentgenogram taken in that position. This sometimes gives a definite idea as to the amount of destruction in one or both kidneys. If the technic is properly carried out, an absence of the medium in the ureter usually means a normally contracted vesico-ureteral valve and an absence of any marked degree of infection. In the presence of infection, the valve is relaxed and the ureter atonic, allowing the free flow of the bladder medium to the ureter and the pelvis of the kidney. All degrees of dilatation are exhibited, from that of slight distention to that of an extremely dilated, sacculated ureter and pyonephrotic kidney.

Acute pyelonephritis may occur at any time from the day of the operation to several weeks thereafter. The symptoms are usually characteristic — several days of increasing fever and malaise, possibly with pain in the back, followed on consecutive days by severe chills, hyperexia and sweats and then a gradual subsidence of all symptoms. Attacks usually last from three days to a week and tend to recur. Prophylactic treatment consists of (1) avoiding septic collections in the wound and bladder, (2) forcing fluids, and (3) administering 15 grains each of hexamethylenamin and acid sodium phosphate in solution every four hours from the third day after operation. During an attack the patient should be kept quiet, though not necessarily in bed. Liquid diet, saline laxatives, and acetylsalicylic acid (aspirin) if necessary to control the pain, should be given. The symptoms are often alarmingly severe, but in acute attacks the prognosis is often excellent.

Epididymitis.—This occurs relatively often, either primarily or secondarily to a previous infection. It is usually unilateral, though an involvement of the other side may shortly follow the first. The infection is often due to the use of a permanent urethral catheter, and may not appear until several days after the catheter has been removed. As a rule, fever and malaise precede the swelling by a day or two. Slight tenderness can be elicited from the beginning. Keeping the testes well supported is the best prophylaxis. During an attack, support with moderate pressure, an ice bag and rest, if started early, will be all that is necessary. In most cases the pain begins to subside about the fourth day and the swelling several days later, though some thickening usually persists permanently. Most of the cases in which the patient does not begin to improve by the fourth day will go on to suppuration. In such cases drainage should be instituted as soon as any collection can be detected. Topical applications in the acute stage seem to do harm rather than good. Although vasectomy may reduce the occurrence, it does not preclude it. Heat in our experience has caused more pain and increased the suppuration.

Phlebitis.—This is rather infrequent, and the usual treatment of rest, elevation, bandaging and heat are all that is necessary. When this condition occurs after prostatectomy, it is significant of lowered resistance to infection and is generally followed by other infectious complications. Usually it is not necessary to keep these patients in bed after the first few days. Embolus has never been observed in our cases.

Cystitis.—Cystitis that is serious enough to be termed a complication should be relieved by preoperative treatment, and its recurrence after operation guarded against by thorough drainage and irrigations of boric acid solution or weak permanganate.

Of the complications not directly attributable to infection, immediate or delayed hemorrhage is the most frequent.

Immediate Postoperative Hemorrhage.—This can usually be reduced to a minimum by careful hemostasis in the abdominal wound. When the patient leaves the operating table the surgeon should be sure that there is no gross bleeding from the prostatic capsule. Sewing up the capsule, rubbing the inner surface until it contracts, packing a sponge wrung from boiling water tightly into the capsule for a minute, and lastly applying a gauze pack or Hagner bag will reduce the immediate bleeding to the point of safety. As little irrigation as is consistent with maintaining the tube free from clots seems to lessen the period of bleeding and to reduce the spasm of the bladder. The urine is usually free from gross blood by the second or third day.

Secondary or Delayed Hemorrhage.—This usually comes on from the fourth to the seventh day, and is due to the sloughing of prostatic tags. It occurs most often in patients who are otherwise feeling very well. There may be no pain or other premonitory symptom, and the first indication of trouble is a spasm of the bladder and expulsion both by urethra and by tube of clots and bright blood, the amount often apparently increased by an admixture of urine. This is most alarming to the patient. A hypodermic of morphin, an ice bag, pressure to the perineum and removal of all tubes, as well as absolute rest, is all that is usually necessary in the way of treatment. In the past six years we have had but one serious hemorrhage from the bladder following prostatectomy. In this case, the treatment just described, as well as hot irrigations with astringent solutions, and the administration of horse serum, etc., served only to retard the bleeding somewhat, and the patient became pulseless and unconscious. Transfusion was then resorted to, and gave immediate and permanent results, followed by an uneventful convalescence. While the usual secondary hemorrhage is the slow gradual bleeding of a small vessel, I believe that a sudden, profuse and dangerous hemorrhage might result from the sloughing through of a large vessel in the prostatic capsule. In such cases the bladder should be opened immediately and the bladder and capsule tightly packed with gauze without delay, and without attempting to find the vessel.

The danger from hemorrhage lies, however, not in death from loss of blood, but in the resulting susceptibility to infection in an anemic person of advanced age.

Cardiac Disease.—Heart complications, though frequently found in prostatic patients previous to operation, rarely have to be considered as postoperative complications except as a terminal condition, for cardiac decompensation or borderline cases can usually be detected before operation by means of a careful physical examination, supplemented, if necessary, by Roentgen and electrocardiographic examinations. If compensation is good before operation there is little to fear after operation from a chronic heart condition which rest and digitalis will not relieve.

Renal Insufficiency.—Uremia, thanks to preoperative treatment, is less frequent now than formerly. Two types must be recognized: (1) the acute congestion with suppression of urine, (2) the interstitial type, in which, though large amounts of urine may be voided, its specific gravity is very low and the elimination of toxic products almost negligible. The treatment of both types depends on early recognition and early effort to increase elimination by means of sweats, saline laxatives, liquid diet, rectal, subcutaneous or intravenous salines, and caffein, spartein or digitalis. Lack of appetite, restlessness, irritability, drowsiness, etc., may indicate renal insufficiency, and when such symptoms appear, the treatment should be pushed in order to get results. Twenty-four hours later, when vomiting, hiccup, coma or delirium have developed, there is little to be accomplished. In these cases a careful, well trained nurse saves many lives by recognizing the trouble and instituting proper treatment early. It has been our experience that complications and the consequent mortality may be reduced by efficient and intelligent nursing. Formerly patients on whom prostatectomies had been done were always attended by women nurses both for special and general care. As a rule these nurses had had little previous training, they despised this class of cases, they took no interest in the results, and only an embolus or a hemorrhage startled them into an appreciation of the presence of a complication when it was still early enough for effective treatment. The condition of the patients' wounds was evident from the fact that as far as possible cases of this kind were isolated, and justifiably, to one ward or hall. At present with a corps of male nurses who spend practically all of their time on prostatectomy and allied bladder cases, it is rare that a wound has an odor, and the patients occupy any room in the hospital. The male nurses are alive to the necessity of anticipating complications and starting the necessary treatment sufficiently early to do good.

CONCLUSIONS

I would emphasize:

1. The value of nurses who are trained in prostatic work.
2. The direct ratio between the local infection and the number and severity of complications.
3. The necessity of early recognition and early treatment of complications.

POSTOPERATIVE TREATMENT OF PATIENTS FOLLOWING PROSTATECTOMY *

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The postoperative care in surgical cases is concededly one of the important factors of an operation. The policy of "watchful waiting" can have no place here, but rather one of preparedness. This preparation is doubly important in prostatic cases because of the advanced age of the patients and usually their lowered vitality, resulting from back pressure on the kidneys. To make use of an Irish bull, the preoperative preparation of the patient is the most important part of the postoperative care.

Generally prostatic patients present a history of frequent urination for some years, to which little attention has been given because such frequency was considered a natural condition in an old man's life. Only when they began to suffer from broken rest or experienced complete retention was their physician's attention called to these urinary symptoms. They are treated for dyspepsia, colitis, some cardiac condition, high blood pressure, Bright's disease — because of a trace of albumin in the urine—when the underlying cause is the enlarged prostate, with the coincident back pressure on the kidneys.

To relieve this condition and to put the patient in the best condition possible previous to operation should be the aim of the surgeon. Various methods have been used, such as frequent catheterization at regular intervals, the indwelling catheter in the urethra, and suprapubic puncture. The last is really akin to the two-step operation.

The two-step operation, brought into prominence by Lilienthal, has been popularized by Pilcher, through the use of the large mushroom or Pezzer catheter. The primary operation is performed under local anesthesia, the suprapubic opening being made high enough in the bladder, as suggested by Squier, to be just below the border of the peritoneum, and the Pezzer catheter slipped into the bladder through an opening around which a purse string suture has already been placed. A tight joint is thus made, the wound heals quickly, and, if necessary, we may wait for a week, a month, or three months, until the patient is in good condition. In my opinion this method is far superior to frequent catheterization or the indwelling catheter, with its accompanying traumation of the urethra and ensuing urethritis.

If there has been a dirty bladder and infection of the wound occurs, the patient can withstand it much better than if it were an added risk to a prostatectomy. Nature, in self-protection, lines this opening with granulation tissue. As it is only necessary to stretch this opening in the second operation, there is little risk of infection in this tissue during removal of the prostate.

The patient may now receive cabinet baths, bowel washes, and whatever attention is necessary to care for his vascular system or other complications. It is highly important that patients should sleep at night, and by this method they seem to thrive through their ability to make up for previous loss of sleep.

The cystitis, which is usually present, may now be treated by silver nitrate lavage two or three times daily. The rapidity with which severe cystitis will improve under this treatment is surprising, and a patient who has been septic from absorption of toxic material will yield most gratifying response in increased appetite and general well-being.

In patients who have never been catheterized and have a sterile urine, we have found that with the greatest care infection soon follows. A number of cases have been reported in which fatal results followed the first catheterization. It is this class of cases with the chronically distended bladder, and urine of low specific gravity, and where no great discomfort is complained of, that is most dangerous. Cabot claims that if an immunizing dose of colon vaccine be administered no infection follows. If this proves to be true, it will mark a great advance in the care of these cases.

Now that the patient has been given the preoperative care suggested, how are we to know when he is fit for the second operation? The best answer is had by looking at the general picture. Functional tests, which have been low at first, have been increased. The appetite is better, the urine output has improved and become nearly normal, and either a polyuria has been reduced or a scanty urine increased. As the function increases, the patient usually looks better. I myself rely a great deal on the phenolsulphonephthalein test; but reliance should not be placed on these tests alone, because I have operated successfully on a number of patients when the test remained low. It is most assuring, however, if the test improves and appears within normal limits.

During the period of preparation the patient usually is occupied during the morning with cabinet baths, etc., and is up and around during the afternoon, and sleeps well at night. These patients show a marked change after a week's care. They are being trained for a fight, and the more thorough the training, the greater the

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

resistance in the final combat. When they are prepared for the second operation, the most important part of the operation is over.

The second operation is performed under general anesthesia, and the time consumed is very short. The opening is usually stretched to admit two fingers, and the prostate shelled out in four or five minutes. The shock from the anesthetic is almost nil. Probably as many patients have died from hemorrhage, which has been called shock, as from any other cause. Hemorrhage can be obviated in various ways. First, and most important, keep to the line of cleavage. Second, after flushing out with hot water, by the use of the Hagner bag, the hemorrhage may be controlled by pressure. Third, the cavity may be packed with a long strip of gauze, the end being brought out through the drainage tube, or an indwelling catheter may be left in the urethra for drainage and packing around the catheter. Fourth, sewing up the edges of the torn bladder wall. The latter procedure, which has been attempted by various operators and has been more time consuming than the operation itself, has been much simplified by the adoption of an ingenious retractor by Dr. Danforth of the Mayo Clinic. The retractor is easily inserted in a small suprapubic opening and a running suture readily taken where the bladder wall has been torn in removing the prostate. This usually controls the greater share of the bleeding.

The drainage tube should be of sufficient size so that it cannot be plugged by a clot. I prefer the Marion because of its stiff wall, and also the small tube attached, which can be used for irrigation. In closing the wound, figure of 8 sutures of silkworm gut should be used, leaving the ends of the sutures long next to the drainage tube. The less irrigation and the least disturbance of the bladder following the operation the better. If left alone a clot will soon form. When continual irrigation was used, we did not realize just how much bleeding there was, and by our irrigation we inhibited just what we wanted to take place.

If Hagner's bag has been used, it is better to wait forty-eight hours before removal. If packing has been used and the end brought out through the Marion tube, we may begin to remove the packing at the end of twenty-four hours, pulling out that part which is loose, and repeating about every four hours until all comes away. On the third day, as a rule, the urine is clear, or but slightly tinged. The large Marion tube may then be removed and a large size Pezzer catheter inserted. The ends of the figure 8 sutures which were left long may now be tightened up, and the wound strapped with adhesive plaster to give it support. In another twenty-four hours the bladder will have closed sufficiently tight around the tube so that the patient is dry, can get out of bed and can move around quite comfortably.

Patients should sit up in bed on the third day and be out in a chair for an hour or so on the fourth. Men of advanced age do not do well if confined to bed, and should be stimulated to help themselves by getting out of bed early.

At this time a cork may be inserted in the Pezzer catheter and the patient told to void naturally, but he must not try to distend his bladder. The Pezzer is left in the bladder until the wound is solid, usually at the end of two weeks. The tube is then removed and the fistula heals in a few days. The healing can be aided at this time by inserting an indwelling catheter, so that the bladder will not be distended.

The comfort of a patient who is kept dry following operation is incomparable with the former method of letting the suprapubic wound fill up voluntarily. Even if the dressing were changed every two hours, the patient lay in a wet bed most of the time, and the odor surrounding the patient was most offensive.

From a financial point of view, the saving of a dollar a day for dressings is important to many patients, to say nothing of the comfort.

The urine should be watched for marked alkalinity. Acid sodium phosphate or lactic acid bacilli will clear up an alkaline urine, and this would tend to improve a cystitis and prevent formation of phosphates about the wound. It will also lessen the tendency of a complicated epididymitis, which is a frequent occurrence.

To protect the skin from an irritating urine and also to stimulate wound healing, some oily preparation should be used. Equal parts of balsam of copaiba and oleum ricini are very satisfactory. As the suprapubic wound closes, the patient frequently has a rise of temperature, often reaching 104, for twenty-four or forty-eight hours. This condition usually cares for itself without any specific treatment.

The Murphy drip should not be used, because following the trauma of removing the prostate the lower bowel is very sensitive, and the patient has more or less desire to strain and will expel any fluid.

Whiteside[1] reports two cases of rectal fistula following passage of the rectal tube and urethral catheter; also two cases of fatal hemorrhage caused by passing the rectal tube a day or two after suprapubic prostatectomy. These reports emphasize the fact that instrumentation of the lower bowel following prostatectomy is contraindicated.

Diverticula are frequently overlooked before operation because of the difficulty of cystoscopy. Following the operation they may be the cause of hemorrhage because of reducing the pressure in the sac. This may not be recognized until the wound heals, and the patient continues to have residual urine or cystitis that does not clear up. If silver iodid or thorium is injected into the bladder, the patient lying on his back and a roentgenogram taken, it will save much explanation afterward. If a diverticulum is recognized before operation, it is not wise to attempt removal of both diverticulum and prostate at the same time. If the diverticulum is small it may not give any trouble afterward, but if large it should be taken care of after the patient has recovered from the prostatic operation.

Hiccups are a most serious complication. If occurring before operation, they should be a warning of low renal function. They usually appear in from twenty-four hours to a week following operation. They do not occur so frequently following the two step operation as after the one step operation. Being of renal origin, all nourishment should be stopped and every effort made to increase diuresis.

Femoral thrombosis, although a rather unusual complication, is caused by keeping the limbs quiet, permitting the deposit of fibrin at this point. Aschoff suggests, as a prophylactic measure, massage of the legs daily, or having the patient flex and extend the legs for a period each day while in bed.

In the postoperative care of prostatic cases, as in all surgery, it is important and profitable that the surgeon give his personal attention to all details unless, of course, competent nurses can be directed or are experienced in such cases. The surgeon will gain by his personal attention to after-care, because he may early discover any alarming conditions and avoid serious consequences, and he will also derive from his experience in one case points which may prove valuable in subsequent cases.

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[1] Whiteside, G. S.: Prostatectomy Mistakes and Failures, The Journal A. M. A., Oct. 2, 1915, p. 1163.

CONCLUSIONS

It has been my endeavor to emphasize:

The importance of preoperative care and diagnosis.

The advantage of the two step operation because it causes less shock to the patient.

The use of the Hagner bag or packing to control hemorrhage.

The use of drainings which keep the patient dry and also permit them to be out of bed while convalescing.

The fact that instrumentation of the lower bowel following operation is contraindicated.

The importance of personal attention to details of postoperative care.

Electric Building.

THE POSTOPERATIVE AND CONVALESCENT PERIOD OF PROSTATECTOMY *

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For some years past, the importance of preoperative preparation of a patient to be subjected to prostatectomy has been well recognized. Few surgeons at present will operate until the functional capacity of the kidneys has been tested, and if found markedly deficient, attempt has been made to stimulate renal excretion to at least an approximation of the normal.

About a year ago, I became interested in the research work of Myers and Fine on the chemistry of the blood in diabetes and nephritis; and having the opportunity to have blood examinations of my patients carried out by these men, I believe that I have been able to avail myself of certain laboratory determinations which have been of material aid in preventing postoperative complications.

Many of the patients requiring prostatectomy are individuals who present a well defined degree of nephritis. A few have diabetes. The diabetes may vary from a simple glycosuria without acetone or diacetic acid to the more marked cases with a variable degree of acidosis.

Diabetes and nephritis are accompanied by characteristic alteration in the concentration of one or more blood constituents.

In diabetes the sugar concentration of the blood is usually about 0.2 per cent. and may reach as high as 0.8 per cent., and the chemical change in the blood is confined principally to the sugar concentration. Normally the sugar concentration varies between 0.09 and 0.12 per cent. It follows, then, that a knowledge of the concentration of blood sugar is very often a great aid in interpreting the fluctuations in the glycosuria which may be attributed to renal complications. Primarily we are concerned with the hyperglycemia and not with the glycosuria.

We have operated on a number of patients who showed simply a glycosuria but without a hyperglycemia, and have had no trouble in the postoperative convalescence. Again we have been able, by means of blood chemistry, to anticipate certain of the serious complications of diabetes. In a patient presenting a diminishing glycosuria with an increasing hyperglycemia, we have suspected that the threshold of renal retention for sugar has been raised. This not infrequently occurs when chronic kidney disease is associated with a diabetes. The determination of a diminishing glycosuria with a high blood sugar has enabled us to treat the case accurately and adequately before operation, and we feel sure has obviated complications that would have arisen had we not availed ourselves of these scientific determinations.

Previous to taking up the study of blood chemistry in its relation to operative risk, we made it a rule to test out the functional capacity of the kidneys, and have been impressed with the prognostic value that such determination gave us. There are, however, a class of cases in which the ordinarily functional test of renal capacity is fallacious, and we have found that the estimation of the urea, uric acid and creatinin retention has been a much safer guide as to operability. Occasionally a patient who has responded in an adequate degree to the phenolsulphonephthalein test, and would seem to indicate a condition that would be operatively safe, has been operated on and ended up in an acute suppression of urine and death. This has been particularly true of the type of uremic nephritis. Neubauer, Folin, Denis, Myers and Fine have shown that in uremic nephritis concentration of uric acid and creatinin are far in excess of those observed in any other condition. In fact, the uric acid exceeds the concentration observed in gout and lead poisoning, and may rise above 15 mg., while the creatinin is commonly from 5 to 15 mg., and may give as high as 34 mg. per hundred c.c. of blood. This degree of creatinin retention is confined to the uremic type of nephritis.

If one considers that the ratio of creatinin which is formed in the body in health and in disease is practically a constant quantity, and since creatinin is most readily eliminated by the kidney, it is found under normal conditions only in small amounts in the normal blood, from 1 to 2 mg. per hundred c.c. It follows, then, that the estimation of creatinin is of immense value in the prognostic value in this type of case.

It would appear that the permeability of the kidney in nephritic states is lowered and becomes evident in the blood: first, by an increase in the uric acid, second, by an increase in the urea, and lastly by creatinin; and therefore a case that has presented a creatinin retention of from 4 to 15 mg. per hundred c.c. has been a case that has almost invariably developed marked uremic symptoms.

The determination of urea, uric acid and creatinin retention indexes has been a matter of great usefulness in the way of indicating adequate preoperative treatment and thereby preventing the development of some of the major urinary complications after prostatectomy.

I would refer those interested in this phase of the subject to the recent papers of Myers and Fine.[1]

Among a number of factors making for success in prostatectomy, I doubt if I put it too strongly when I

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Myers and Fine: Chemical Conditions of the Blood in Health and Disease.

say that an experienced woman nurse is a prime essential, to the selection of whom considerable thought should be given, because in addition to surgical nursing ability, much tact is required in handling these old men and in keeping them interested, bright and cheerful. The patient who is tired out and no longer willing to try to live and wishes to lie down and sleep may easily go into his long sleep. On the other hand, there is the type of patient mentally too alert, too alive to his surroundings — watching and worrying about every little attention shown the irrigations, the dressings, each glance at his tongue or feel of his pulse. He, too, is on the border. Where the first case needs mental and physical stimulation, the second requires sedative and the quieting influences. A proper personality in the nurse will go a long way toward aiding the surgeon in the management of these different types.

I believe that the day has passed when the nursing of prostatic patients should be in the hands of male nurses, or as obtains in many hospitals, relegated to venerable women whose nursing training dates back to that dark period of hospital management when every urologic case was looked at askance, and considered the logical outcome of venereal disease and therefore a condition apart from other surgical cases. In my early prostatic experience I had the utmost difficulty in getting women of high type to nurse my prostatic patients. They had been taught to spurn them and rather considered it beneath the dignity of their profession to take care of a "G.-U." case. After considerable urging, I enlisted the interest of a number of high minded, able women nurses in making a specialty of the nursing of prostatics. Many since have joined their ranks, until at present, in our hospital, there is no such thing as discrimination against these patients, and we have produced a set of able urologic nurses.

Taking up in more or less detail some of the postoperative measures, it has been our treatment not to irrigate the bladder for at least twenty-four hours immediately following the operation. The reason for this is that nature's best method of stopping hemorrhage is to allow the blood to clot. Therefore, disturb the clot as little as possible, since all irrigations tending to remove the clot will only renew the hemorrhage. On the same principle all methods of suction or aspiration to keep the bladder empty are to be considered unwise.

It has been the practice to suture the bladder accurately but loosely, so that in a large number of cases fully one half of the urinary outflow will be discharged alongside of the tube and on the dressings during the first twenty-four hours or so; but as soon as repair of the bladder incision commences, leakage becomes scanty. The dressings are changed as often as necessary to keep the patient dry and comfortable.

Water by mouth is administered in small amounts as soon as the postanesthetic nausea has subsided. Hot water in small amounts has, in our hands, been found to be better borne than ice or cold water. Thirty-six hours or so after operation a brisk cathartic is administered, preferably castor oil. If the bowels do not act freely within six hours, a high colon saline irrigation is given. The patient is encouraged as far as possible to sleep and rest. After the first dose of morphin (¼ grain) is given; another may be administered if necessary, but the continued use of morphin is to be condemned. Morphin, as is well known, decreases all secretion except sweat, and in prostatics recovery is most dependent on the ability of the kidneys to keep secreting.

The critical period seems to be somewhere within the twenty-four hour and the seventy-two hour period. It is here that a persistent nausea or beginning singultus may be the first sign of uremia. Prompt measures will often check its progress. It is at a juncture such as this that the data derived from a chemical blood examination is of invaluable aid to demonstrate the degree of retention products.

The early use of the stomach tube with copious lavage and the administration of castor oil through the tube after the lavage and a little later a high hot colon irrigation will often be all that is required to establish normal convalescence. After a good washing out of the gastro-intestinal tract, a restoration of the proctoclysis, and especially if there is any tendency to arrhythmia of the heart, the administering of the fresh infusion of digitalis in the drip will at once steady the circulation and avert disaster. It is in this stage that early and prompt treatment is the supreme indication.

Within twenty-four hours, bladder irrigations with warm boric acid solution, 5 per cent., are instituted, the number of daily irrigations varying as to the condition of the bladder. In cases of old purulent cystitis the bladder is irrigated at least five or six times a day. This can be done without disturbing the patient at all.

It has been our custom to drain the suprapubic space of Retzius with a cigaret drain. This is removed in from forty-eight to seventy-two hours after operation, again depending on the condition of the bladder.

The suprapubic bladder tube is removed usually in from four to six days. This we think should depend on three factors: 1. The condition of the bladder as to surgical cleanliness — in a clean bladder early, in a suppurative condition late. 2. The amount of ooze and clots. The tube should be kept in until all clots have been removed and all ooze has ceased. 3. The tube should be kept in until there is a well lined granulation tissue fistula formed, so that on removal of the tube there will be no urinary infiltration laterally along the facial spaces and planes.

The patient is early returned to a good nourishing diet, fluids are forced, and these can be taken in any form, as Vichy water, milk, etc. Hexamethylenamin, 10 grains, is administered four times a day, with the addition of sodium acid phosphate or sodium benzoate, 5 grains, four times a day if the urine is alkaline or any tendency to phosphaturia is present. The scrotum should be well supported, and for this the old adhesive bridge is by far the best apparatus.

After removal of the tube the bladder is washed with a fine catheter inserted down into the suprapubic wound, several times daily.

One prominent urologic surgeon has commented on the number of epididymitis cases occurring among his prostatectomies — from 30 to 40 per cent. — and, in looking about for a cause, finally attributed this high percentage to the practice of inserting a retention catheter at the time of operation in an attempt to expedite wound healing. It seems best to avoid if possible any instrumentation of the urethra until at least two weeks have elapsed.

To pass a catheter across a bed of fresh granulation tissue with coincident trauma, especially the prostatic bed with the exposed ejaculatory ducts, is apt to be productive of more harm than good. Especially should the passage of a sound be advised against, at least until all chances of dislodging any clots in the plexus veins about the neck of the bladder has passed. Septic emboli have been the cause of quick death following stretching of the neck of the bladder in cases in which operation has recently been performed, the sounds having been passed because of an erroneous idea that a stricture might be forming.

After a sufficient time has elapsed, from two to three weeks, the passage of a catheter for irrigation purposes is to be recommended.

Patients may safely be set up in bed in six or seven days and allowed out of bed in from ten to twelve days; but, as these are old men, they should be treated as such, and getting an old man up and out of bed a few days after a major operation is poor policy. It is like "whipping a tired horse." Keep him interested and alive mentally, and make his surroundings pleasant, but by no means start him doing stunts that might not be even appropriate for a person thirty or forty years younger.

The suprapubic fistula heals usually in from two to four weeks, on the average, three weeks. In those that remain open longer it may be necessary to irrigate more often through the urethra. In an exceptional case it may be necessary to insert a retention catheter and drain the bladder so that the fistula will heal.

In those cases which have a tendency to deposit phosphates medication should be given to render the urine acid, and the patient should be dieted to lower the phosphate intake. The insertion of Bulgarian or lactic acid bacilli through the fistula in a large number of cases will quickly stop the incrustations. Sometimes if there is a small bit of slough of clot in the bladder, this may form the basis of an incrustation, and its removal by lithotrite may become necessary.

When the patient starts voiding he should be encouraged to empty the bladder frequently. It seems good judgment, in those patients who before operation had large, stretched, overdistended, trabeculated bladders, to allow the suprapubic fistula to remain open longer than routine, so as to restore by rest the lost bladder tone. Medication has no effect in this type of case.

The final word will never be said on just what constitutes an ideal routine for postoperative prostatic treatment.

More difficult problems come up in the management of urologic cases than perhaps in any other branch of surgery.

The resources of the surgeon are often taxed to the utmost; but in no other branch of surgery does a case well managed, and brought to a final successful functional restoration, produce a more gratifying result to both patient and surgeon.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAC GOWAN, YOUNG AND FRONTZ, GARDNER, CRENSHAW AND SQUIER

Dr. Paul M. Pilcher, Brooklyn: I do not agree that a male nurse compares with a female nurse in these cases if the latter is trained properly. Male nurses do not, as a rule, take as much care of their patients as female nurses do. If I have 100 per cent. phenolsulphonephthalein on one side of a membrane and simply water on the other there is going to be an osmosis between the two sides. That is exactly what happens when we have a hypertrophied prostate with a retention of urine and dilatation of the kidney pelvis. A certain amount of phenolsulphonephthalein will pass through that membrane without any function of the kidney at all. The first thing we have to do is to relieve the retention of urine, not to take the prostate out. You can do it by catheterizing or by doing a suprapubic cystostomy. The reason we do a cystostomy is because the kidney is already embarrassed and we do not want to increase that embarrassment. Every time you pass a catheter into the urethra, especially if you injure the urethra, you increase the embarrassment of the kidney. We recommend a suprapubic cystostomy early so that we can dissect up these tissues and choose our point of opening the bladder. Having put our button drainage tube in place we can sew up all of the tissues around that wound, and all we have to deal with then is a sinus from the skin into the bladder. There is no danger of infecting the prevesical space; it is absolutely unnecessary to drain the prevesical space even with a foul cystitis. Primary union will occur in the great majority of cases. With a button drainage tube in the bladder, and the wound sewed up the patient is perfectly dry, and he should remain dry following that operation for nine or ten days.

I have seen recently a number of methods of keeping the bladder empty. Suturing a Pezzer catheter into the wound and draining the bladder keeps it perfectly dry. It is better than any of the old cumbersome methods in which you attach a hose to a faucet and keep draining the bladder. Another point of importance is washing out the bladder after these operations. That, in our opinion, is absolutely unnecessary, and the men who were the greatest exponents of washing the bladder after prostatectomy have given it up. Some one said never to give morphin. I think that is one of the things to give. It conserves the strength, and I have never seen any disadvantage from it, and we should save our patients from as much pain as possible after operation. We do not believe in suturing of the primary suprapubic opening because we do not think it is necessary in this type of operation. After the primary operation it is possible by dilating with the fingers to take out the prostate without any other instrument.

Dr. A. J. Crowell, Charlotte, N. C.: I believe if we will let the bladder drain itself naturally and normally we will not have complications. I favor the perineal operation. I do not bother about draining the bladder following a perineal prostatectomy; it drains itself. The preparatory treatment is the most important work in our prostatic cases. Practically we know that phenolsulphonephthalein is a fine index as to the kidney function, and we rely on it and the blood urea almost entirely as a guide as to when we should and when we should not operate in our cases of hypertrophy of the prostate. If we will prepare our patients for operation, whether we do the suprapubic or the perineal operation, we can usually get excellent results. We have started out with the idea of doing 100 without a fatality. We have reached the thirty-six mark since a fatality and expect to reach 100 with a very low fatality, if any at all. We also expect to do practically all by the perineal route. We send these patients home in ten days to two weeks after operation with the wound closed or practically closed and of the 273 to 300 cases I have operated in there is not a single fistula left today.

Dr. William F. Braasch, Rochester, Minn.: In regard to the type of operation, it really does not make much difference whether the perineal or the suprapubic is used, because both routes have been demonstrated to be entirely feasible. It is largely a matter of ease of technic to the operator and with the functional after-results. As to drainage, Freyer's original method evidently has been retained, namely, a large single tube drainage. Every one seems to recognize the fact that a single large tube without irrigation is the standard method of treatment. As to the treatment of postoperative hemorrhage: The most interesting method suggested by Cabot of sewing up the capsule was discarded to some extent, but more recently it has again been picked up and used in a modified form, as suggested by Judd, making a wide exposure, and picking up the large blood vessels. It only takes a few minutes longer and requires no packing. The method suggested by Dr. Gardner and employed in the perineal route, namely, using a gauze packing, has its disadvantages. Dr. Judd was able to sew up the bladder without any drainage, without taking any care of the hemorrhage, and in a series of forty or fifty cases had good results, that is, primary union. But, after this large series of cases, we had two or three unfortunate experiences, so that, in common with the experience of others, we were forced to give up this method. As to the prevention of infection: Using the Freyer tube without any precautions for preventing infection of the prevesical space was found to be wrong. Infection resulted, and it did not remain in that area. Unfortunately it went into the urinary tract, causing pyelonephritis and other complications. So that we now recognize the fact that the prevesical space must be guarded carefully by draining, or as Dr. Pilcher suggested, carefully closed. Unfortunately the method Dr. Pilcher has suggested is not always theoretically very good; it does not always work out well; there is frequently more or less drainage around the tube, in spite of the precautions taken in a certain percentage of cases, and the resulting infection is unfortunate. I wish to make a plea for a standardization of the postoperative care following prostatectomy.

Dr. Charles E. Barnett, Fort Wayne, Ind.: One of the little things that impressed me was the fact that the carcinomatous prostatic will not keep a catheter in the bladder, consequently if the patient shows trouble from catheter irritation, you suspect carcinoma. I am in favor of the suprapubic prostatectomy, but the question of cancer has been in my mind ever since I changed from the perineal operation; that is to say, the cancer cells are found in the posterior lobes most frequently, and after you have removed the hypertrophic portion of the prostate you have not removed the posterior lobe, so that if you have removed the cancer it must be in the lateral lobes or in the so-called middle lobe. The hazard of the possibility of carcinoma occurring in the nonremoved posterior lobe still confronts you. I consider the use of morphin bad from the standpoint that you have an unnatural loosening up of the renal secretion, which is followed by a negative phase simulating anuria; its toxemia produces a great tendency to gas distention of the bowels, which is quite a menace to postoperative recovery. You will seldom find that morphin is indicated in any case. I think that morphin is always poison to everybody. A large incision is in the majority of cases unnecessary. Make the incision as small as you can in order to get at the prostate and remove it. All that you need is room enough to get your finger in and get the prostate out and insert the drainage tubes. The shock to the patient is the greatest factor to combat. I believe that local anesthesia will be used more and more all the time, and, as Dr. Pilcher said, the two-stage operation, whereby local anesthesia can be used for the suprapubic drainage of the bladder. In this way you get drainage without epididymitis. An epididymitis adds much to the pathology, and you so frequently have an epididymitis by having the catheter pressure force infection up from the sinus pocularis through the ejaculatory ducts and vasi to the epididymi. Consequently, suprapubic drainage is indicated, and it is indicated primarily before the prostatectomy is done in order to get the patient in shape for prostatectomy.

Dr. Martin Krotoszyner, San Francisco: As regards the preoperative functional study of old prostatics, I believe its application generally to be too one sided, as at the majority of clinics invariably only one test, and preferably the phenolsulphonephthalein test, is applied, which undoubtedly is overestimated in its value. Aside from the fact that, not infrequently, its interpretation is frustrated, as for instance in severe hematuria, it is often performed by inexperienced interns in a flimsy manner, thus often reducing its reliability. In doubtful cases, furthermore, one test does not suffice to give the desired evidence, and it ought always to be correlated and critically compared with at least one other test. Blood urea estimation, done simultaneously with the phenolsulphonephthalein test, is apt to substantiate the functional diagnosis. The blood urea test, though, having too wide a range of normal values, is prognostically not as valuable as blood cryoscopy, which, according to my experience, gives a much deeper insight into functional capacity in these cases than any other test. For bladder irrigation, prior to operation, I prefer silver nitrate, beginning with very weak solutions and gradually increasing in concentration. By these means even highly infected bladders can be cleared up very quickly. As regards the length of preparatory treatment, no time limit should be placed, and ever case should be treated individually. I, like Dr. Pilcher, feel that we have no right to take out the prostate of an old man unless we are reasonably convinced that he will be equal to the shock of the procedure, a knowledge that can only be gained on the basis of ample preliminary treatment. With reference to those patients who come to us with absolutely clear urine, requiring catheterization, I am of the opinion that this procedure will often result in infection, in spite of most stringent antiseptic measures. I recall the case of a diabetic of 59, who came to the hospital with retention due to an enlarged prostate. Although in this case catheterization was done under the most rigid antiseptic precautions, using rubber gloves and in a clean dressing room, the patient died within two weeks after entering the hospital from acute ascending infection of the kidneys. I have seen several similar cases, and at present I generally refrain from catheterizing these patients at my office.

Dr. William E. Lower, Cleveland: The reduction of the mortality rate in prostatic operations has been due largely to better preoperative and postoperative care. The operation is becoming more and more nearly standardized. We strive for certain results in prostatic as well as in other operations; first, a low mortality; second, the relief of the patient from the conditions for which he is operated; third, the minimum of postoperative complications. As far as the operation is concerned, a low mortality rate is brought about by more careful handling of the patient on the operating table. We must conserve the small amount of resistance these old people have. Whether the operation should be suprapubic or perineal depends very largely on the individual habit of the operator. Personally, I believe better results follow the suprapubic operation. The postoperative complications—urinary incontinence, continuance of residual urine, and persistent fistulas—all very annoying to the patient, are reduced to a minimum by the use of the suprapubic route.

The question of the treatment of carcinoma of the prostate is always an interesting one. After considerable experience, I have adopted the following procedure: In a case where there is great obstruction to urination, I operate suprapubically and remove such a part of the obstruction as I am able to get out. This relieves the patient of urinary symptoms, and I have seen many of these patients live for two or three years with no great amount of vesical disturbance. On the other hand, if there is no great amount of urinary obstruction, operation is not attempted in these old men, especially where the malignancy of the gland is evidenced by a hard, nodular and fixed prostate with pain in back and thighs, for the malignant growth cannot, with safety, be removed completely, consequently the patient is not aided by undergoing a mutilating operation. If the malignancy is recognized early in the younger men, a very radical operation should be done. I do not believe that in any form of prostatic obstruction prostatectomy should be a primary operation.

Dr. David W. MacKenzie, New York: I wish to report the case of a young man who came in complaining of pain in the back, shooting down both legs. Rectal examination revealed a hard, nodular prostate. Cystoscopy showed a normal bladder. Catheterization of the ureters showed normal findings from both kidneys. While the instrument was still in his urethra, rectal examination revealed a posterior lobe thickened, hard and nodular. The man was 28 years old. We explained matters to him and he decided he wanted it removed. We did a radical removal of the prostate, neck of the bladder and seminal vesicles. The operation went all right, the prostate not being particularly adherent. We made a section of the specimen in the operating room. There were numerous hard, somewhat cheesy spots in the posterior lobe. There was nothing that we could see in the lateral lobes macroscopically. The specimen was sent to the laboratory, and proved to be tuberculosis of the posterior lobe of the prostate. Nothing could be found in the epididymis on either side, and nothing in the seminal vesicles. Since then, on numerous examinations of the urine, we have not been able to find tubercle bacilli. We injected two guinea-pigs from a bladder specimen with a negative result.

Dr. Edwin Beer, New York: Prostatic carcinoma, as I see it, presents itself under a recognizable and an unrecognizable guise. The second group of cases are proved to be carcinoma by the microscopist after an enucleation of what was supposed to be a simple adenoma. When it comes to the type in which you make a preoperative diagnosis and there is no obstruction, leave those cases alone. Drs. Young and Albarran and Proust have come out for a perineal operation. Others have emphasized the fact that to get a cure in any proportion of cases it might be better to start from above, clean out the pelvic connective tissue, lymphatics, the bladder, prostate and seminal vesicles and implant the ureters. When we have a safe method of implanting the ureters into the bowel, that operation will be done much more frequently than at present. Personally, I favor the operation from above, or combined, so that the bladder comes out with the prostate, seminal vesicles and the terminal ends of the ureters. The important thing is the determination of the functional capacity of the kidneys; the heart is secondary.

Ether is a poor anesthetic in these cases. The operation is preferably done in two stages: the first step should be done under local anesthesia, and the enucleation later under gas-oxygen anesthesia. Hemorrhage is of slight danger. I have had very few cases that caused alarm. When it comes to the postoperative care, I disagree with Dr. Braasch that you need extensive drainage; a small wick of gauze above and below the tube will protect the prevesical space adequately. I do not know how many cases I have drained that way, and I have never seen a phlegmon of the prevesical space. Forty-eight hours after a prostatectomy it is my rule to withdraw the gauze which has been buried in the prostatic bed, pulling out the gauze by the string, pull out the tube, wash the bladder out with hot saline, and then, either at once or twenty-four hours afterward, a small hard rubber cap is glued onto the small suprapubic opening and is attached with the mass of adhesive plaster. That is dissolved in benzine which is allowed to evaporate after thorough solution of the mass. It is smeared onto the lip of the cap and the cap is glued onto the suprapubic opening. All the urine runs out through two tubes in the cap and the patients usually keep dry. In dressing the wound the top of the cap can be unscrewed so that you can see what is happening at the wound, and if you wish to irrigate you can do so. As far as morphin is concerned, I disagree with Dr. Pilcher. I think it is a bad practice to use morphin practically, as he said, ad libitum. I think he did not mean to make it as emphatic as that. I believe the pain can be controlled by suppositories of opium and belladonna.

Dr. John T. Geraghty, Baltimore: I want to take exception to what Dr. Pilcher said about kidney function as revealed by the phenolsulphonephthalein test before and after relief of back pressure. I do not think we can reduce the kidney to a question of osmosis and diffusion. No substances go through it by osmosis and diffusion, except water. It has been shown definitely that phenolsulphonephthalein does not go through in that manner, that it represents true secretory activity, that it is picked up by the renal cells and excreted. Therefore, the presence of a big hydronephrosis could not have the influence Dr. Pilcher states. The explanation of the high phenolsulphonephthalein output is that it is due to an ascending infection or development of an acute nephritis. You do not get that grade of hydronephrosis in prostatic obstructions; it is very rare. Even in the very marked cases the grade of hydronephrosis is comparatively slight, nothing to be compared to what is produced by a slight obstruction in the ureter itself.

As regards cancer, we do not make the statement that cancer occurs in the posterior lobe in all cases, but that in cases of hypertrophy the cancer occurs, as a rule, in the posterior lobe. We have had only one exception to that. In every other instance we have found it in the posterior lobe. Where a cancer occurs in a prostate not previously the seat of hypertrophy the cancer can occur in any part of the prostate. The only reason it occurs in the posterior lobe when associated with a hypertrophy is that hypertrophy does not degenerate into cancer. I do not quite agree with Dr. Beer that in these cases it will be possible for us to do such an operation as the Wertheim operation. It practically means the taking away of the prostate, the seminal vesicles and the whole bladder, transplanting the ureters into the bowel or doing a double nephrostomy and cleaning out the glands. Those operations will never be feasible in elderly men. Most carcinomas come at the age when we get prostatic hypertrophy—over 60—and the mortality would be entirely against the proposition. In the second place, we should not forget that these patients live for many years with carcinoma of the prostate. Carcinoma of the prostate is not a malignant type in the ordinary sense. Many of these patients live from four to seven years with comparative comfort. Some of the patients we see who are inoperable have had it for several years and live for three or four years. For that reason, in elderly men I do not think we are justified in doing these operations that involve such great risks.

Dr. A. W. Nelson, Cincinnati: One case came under my care eight months ago. In this instance the gland was enlarged, hard, and irregular in outline. The hardness extended to the seminal vesicles. The patient would not listen to operative suggestions. I suggested radium. At my request Dr. L. J. Ranshoff gave him two treatments of radium, with no particular improvement. After having the patient under my care, irregularly, for about two months, I lost track of him. Later on I heard that he submitted to an operation, which was followed by death.

Dr. Granville MacGowan, Los Angeles: This particular series of cases interested me much. Doing prostatic surgery since 1893 (when I did my first prostatectomy), I have seen a good bit of cancer of the prostate. I have seen cancer of the prostate in men as young as 34 or 35 years of age, but I find those people are much more interested in the preservation of the sexual powers than in getting rid of the cancer, and none of them would submit to operation. From November, 1913, to May, 1915, I operated on eight cases of distinct cancer of the prostate. In six, the dysuria had existed six months or less. In six, the rectal examination made over the shaft of a steel instrument in the urethra was negative as to thickening of the posterior lobe, and in five, negative as to cancer. In all, the organ was approached suprapubically for exploration and relief. In Case 2 the origin was in the acini of the right lobe. In Cases 3, 4 and 5 in the superior or anterior lobe, and two of these followed traumatism by a silver catheter. Case 1 had a prostatectomy, was comfortable for a year, but now has dysuria and vertebral metastases. Case 2 had a prostatectomy, was comfortable for a year and now has dysuria and sacral metastases. Case 3 had a channel cut and bit through the prostate, was comfortable for six months but died of metastases in September, 1915. Case 4 had a prostatectomy with perfect results and is alive and comfortable today. Case 5 had a partial prostatectomy and destructive treatment of the remainder with the d'Arsonval current, with perfect results and is alive and comfortable. Case 6 had a prostatectomy in two stages, with destructive treatment of the ragged capsule with the d'Arsonval spark. He is alive, urinates freely but suffers from general mestastases and will die soon. Case 7 had a partial prostatectomy and the destruction of the remaining growths by the d'Arsonval spark, is alive, and so far as can be observed by the cystoscope and urethroscope, perfectly cured. Case 8 had a suprapubic cystotomy for drainage, followed by a punch operation, the latter without merit. He is alive and fairly comfortable with his drainage apparatus. The lesson to be derived from this series is that a large percentage of the cases of cancer of the prostate, recognized before, or at operation, can be much benefited and sometimes, apparently cured, by a conservative prostatectomy, combined by subsequent treatment with the d'Arsonval spark, and that consequently they should not be abandoned as essentially hopeless.

Etiology of Eclampsia.—Eclampsia is still the field of contentious theories of causation and ideas of practice. As far as etiology is concerned we are not one whit wiser than we were ten years ago—or 100 years ago, when humoral pathology was in its prime.—J. B. De Lee.

BLOOD PRESSURE CHANGES INDUCED BY HOT AND COLD APPLICATIONS ON AND WITHIN THE ABDOMEN

FREDERICK S. HAMMETT, Ph.D.
WITH THE ASSISTANCE OF
E. W. TICE, A.B.
AND
E. LARSON, B.S.
LOS ANGELES

In view of the fact that many surgeons are using hot and cold packs for one reason or another, on and within the abdomen either before, during or after abdominal operations, it seemed advisable to determine the effect of these agents on the organism. As changes in blood pressure are conveniently recorded, and as at the same time these changes are an important index of the condition of the patient, we have determined the changes in blood pressure produced by the application of either heat or cold on or within the abdomen.

We obtained the results herein reported when using cats as the subjects of the experimental study. The animals were anesthetized with ether. Records were made of the changes in blood pressure by connecting the carotid artery through a cannula with a mercury manometer so arranged as to trace the pressure variations on a smoked paper attached to a slow moving drum kymograph. Sodium bicarbonate solution of 1.080 specific gravity was used as an intermediary fluid.

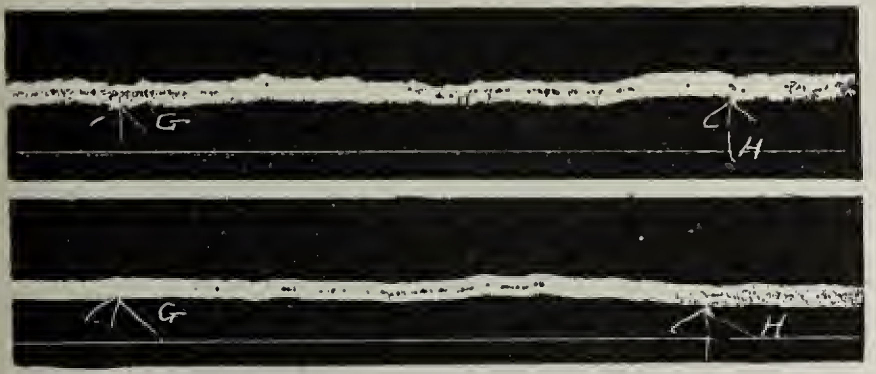

Fig. 1.—Tracing of blood pressure changes induced by cutaneous application of cold: *G*, cold applied; *H*, cold removed.

The application of the heat or cold was effected by passing hot or cold water approximately 25 C. (77 F.) above or below the temperature of the body from reservoirs through rubber tubing to and through a glass coil placed in intimate contact with the region studied.

The coil consisted of five turns of 5 mm. glass tubing, the total area covered being 7 by 6 cm. The coil was so suspended from a bar that the least possible pressure was exerted on the parts to which it was applied. Before the heat or cold was applied, sufficient time was allowed to elapse for the pressure tracing to become constant. The applications were then made for periods of fifteen minutes, then the coil was removed and the pressure curve allowed to return to its former level.

The experiments can be arranged in two groups. In Group A the applications were made on the external abdominal surface, thus giving the effect on blood pressure of heat and cold when externally applied on the abdomen. The hair was closely clipped from the abdomen in order to prevent loss of effective stimulation through dead air spaces in the fur. In Group B the applications were made within the abdomen in order to obtain the effect of heat and cold on blood pressure when used in this manner. The abdomen was opened by a median longitudinal incision and the coil placed within. The cut edges were approximated, and the wound closed by the use of bulldog clamps.

In both groups, control experiments were made by first applying the heat and then the cold and vice versa. The change in sequence produced no significant change in the final result.

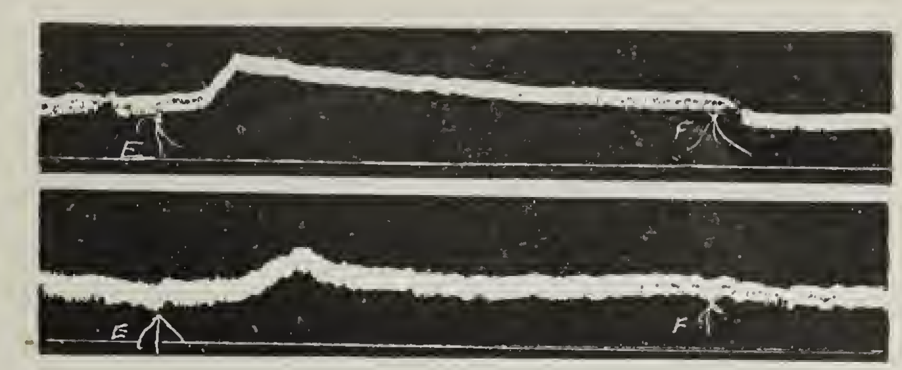

Fig. 2.—Tracing of blood pressure changes induced by cutaneous application of heat: *E*, heat applied; *F*, heat removed.

In a series of thirty-six experiments for which twenty-four cats were used, the application of cold on the external abdominal surface produced but little change in blood pressure, any variation observed being a tendency toward an increase. This is shown in Figure 1.

In a like number of cases the heat invariably produced a rise in blood pressure. This rise lasted as long as the heat was applied and decreased to normal shortly after the stimulus was removed (Fig. 2).

In Group B there were thirty-two experiments for which twenty-six cats were used. When the cold was applied there was produced a sharp fall in blood pressure, recovery from which was slow after the removal of the stimulus (Fig. 3).

As evidenced by Figure 4, the application of heat produced a like change in blood pressure.

We may say that the application of heat to the external abdominal surface produces a rise in blood pressure, while the similar application of cold has but little effect, any change occurring being in the direction of an increase. On the other hand, the application of both heat and cold within the abdomen invariably produces a sharp fall in blood pressure followed by a slow recovery to normal when the stimuli are removed.

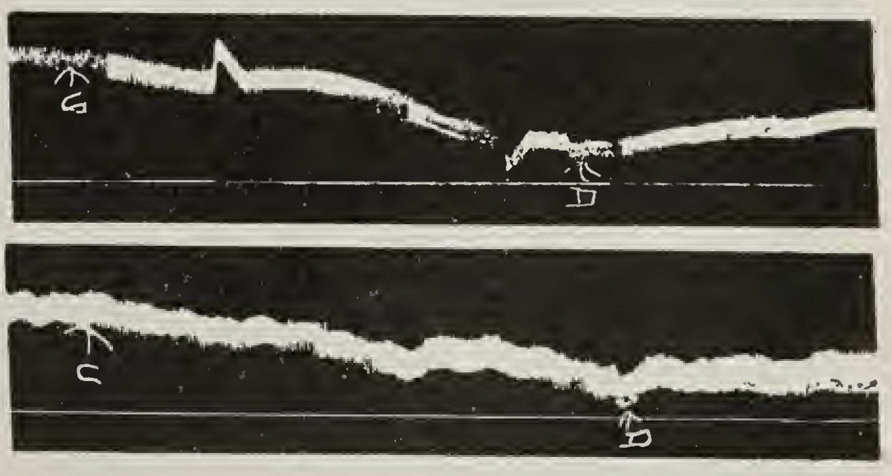

Fig. 3.—Tracing of blood pressure changes induced by cold application within the abdomen: *C*, cold applied; *D*, cold removed.

It is evident that the external application of either heat or cold to the abdominal surface sets into activity the vasoconstrictor mechanism with probable inhibition of the vasodilator mechanism, thus leading to an increase in blood pressure. It must be remembered that these applications are strictly localized, and set into activity the peripheral endings in the splanchnic area, in contradistinction to the work of Müller,[1] in which the external application of heat and cold was general with a general neural stimulation. Of practical importance is the fact that local applications of heat to the splanchnic or abdominal surface during anesthesia will produce a rise in blood pressure which may be able to counteract the fall caused by the anesthetic and thus permit the extension of operative procedure which otherwise might be prohibited through the condition of the patient.

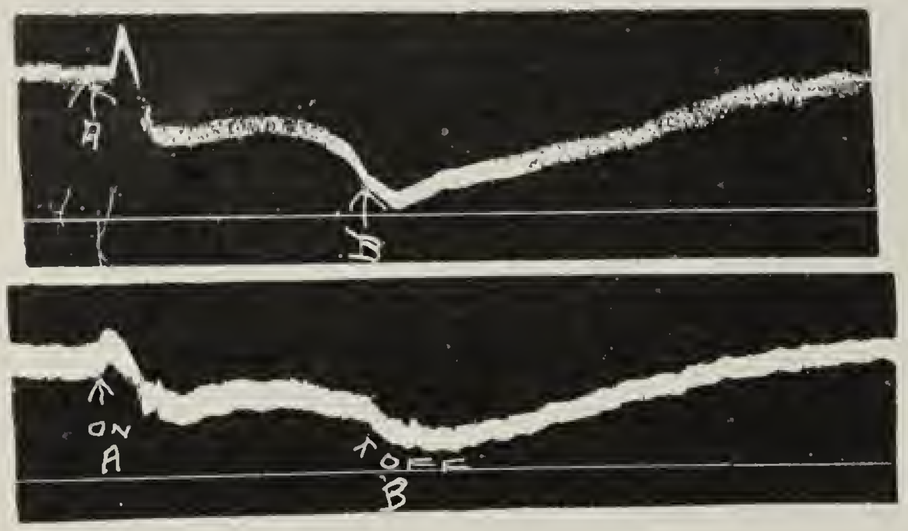

Fig. 4.—Tracing of blood pressure changes induced by heat application within the abdomen: *A*, heat applied; *B*, heat removed.

When we consider the fact that either heat or cold within the abdomen produces a sharp fall in blood pressure, we can offer two general possibilities explanatory of this phenomenon. The effect of these stimuli is to set into activity the vasodilator mechanism. This is evidenced by the fall in blood pressure. According to Barger and Dale,[2] there is present in the intestinal wall a depressor substance, beta-iminazolylethylamin, which Dale and Laidlaw[3] have shown to exert a significant action on the vasomotor nerves leading to depressor effect. Mellanby, Edward and Twort[4] have demonstrated that this substance can be produced by the action of intestinal bacteria on histidin; hence the probability of the observed reaction being the result of hormone liberation is doubtful. The recent work of Burton-Opitz[5] on the effect of stimulation of the splanchnic nerve on blood pressure offers a more plausible explanation, and it is not improbable that the consistent results obtained in these experiments are the result of this stimulation.

However that may be, the fact remains that the application of either heat or cold within the abdomen during ether anesthesia invariably results in a decided drop in blood pressure. The practical significance of these findings is obvious. The cumulative depression occasioned by anesthesia plus that resulting from the use of heat or cold, not even taking into consideration hemorrhage and surgical shock, is obviously not conducive to the best interest of the patient. In the procedure wherein the abdomen is internally packed with ice after certain operations, care should obviously be taken to determine the blood pressure level before the application, inasmuch as a marked fall of blood pressure, which is sure to be occasioned by this measure, might well be an extremely dangerous occurrence.

It might be argued by some who carefully study the curves that the instantaneous or momentary application of heat or cold within the abdomen produces a sharp rise in blood pressure before the onset of the drop, and that this rise might well be beneficial or at least not harmful. This cannot be gainsaid, although we have produced evidence that after repeated momentary applications of heat or cold this rise does not occur, and the fall in blood pressure comes on immediately.

In view of these facts, it is evident that the use of hot or cold packs on or within the abdomen is attended by marked changes in blood pressure, and it is accordingly of importance to follow carefully, so far as possible, during and after operations, the blood pressure changes when these applications are utilized.

516 East Washington Street.

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[1] Müller: Deutsch. Arch. f. klin. Med., 1902, p. 74.
[2] Barger and Dale: Jour. Physiol., 1911, **41**, 499.
[3] Dale and Laidlaw: Jour. Physiol., 1911, **43**, 182.
[4] Mellanby, Edward and Twort: Jour. Physiol., 1912, **45**, 53.
[5] Burton-Opitz: Am. Jour. Physiol., 1916, **41**, 103.

CHRONIC MULTIPLE ARTHRITIS DUE TO BACILLUS MUCOSUS *

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About three years ago I[1] reported a case of multiple arthritis due to a Friedländer bacillus (*B. mucosus*). The present case was so similar to the former one that the resemblance was apparent from a casual examination of the hands, which were the parts most affected in both patients. As in the first patient, repeated cultures from the throat yielded many colonies of *B. mucosus*. Isolated in pure culture, the bacillus produced experimental arthritis in all of three rabbits which were inoculated intravenously.

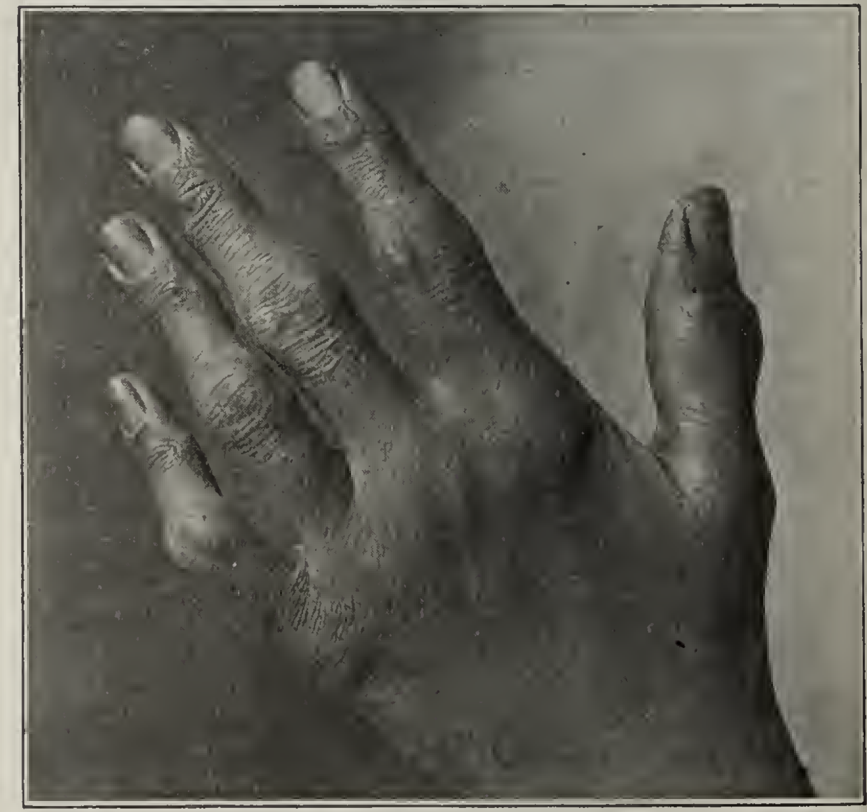

Fig. 1.—Appearance of left hand.

History.—The patient, a Swedish woman, aged 30, has had arthritis for many years. She remembers having had medical treatment for it fifteen years ago, but has had the disease much longer. The arthritis began insidiously and has been progressive. The joints are stiff, especially in the morning. They are somewhat painful, although the pain is never very severe. Using the hands usually makes the joints more limber. Aside from the arthritis, the patient feels "pretty well," except for habitual constipation.

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* From the Memorial Institute for Infectious Diseases.
[1] Dick, G. F.: Jour. Infect. Dis., 1914, **14**, 176.

The patient has had measles, chickenpox and whooping cough, and occasional attacks of bronchitis. She is married and has two children who are well.

Physical Examination.—The patient is a rather slight, thin woman. There is pyorrhea alveolaris; the tonsils are ragged but not enlarged. The pharynx is pale and covered with mucus. The cervical glands are palpable below the angle of the jaw. The physical examination otherwise is negative except for the hands. The urine is normal, the blood pressure 120. The Wassermann and gonococcus fixation tests are negative.

The appearance of the hands is well shown in the illustrations. The joints are nearly all affected, but the most marked deformity is that of the first interphalangeal joints. These joints are so distended with fluid that the synovial membranes have formed hernias through the joint capsule, resulting in soft fluctuating swellings. There is but little restriction of motion in the joints, no change in the skin covering them, and no muscular atrophy. Roentgenoscopy reveals some absorption and proliferation of bone; but such changes are slight, and the increase in joint fluid is the most striking change present. The fluid aspirated from a joint is very thick and mucoid. It is clear, and no cells are found in smears stained with Wright's stain.

Cultures.—The fluid from the joints yielded sterile cultures on aerobic and anaerobic blood agar slants and in agar shake cultures. A number of throat cultures on ordinary agar slants yielded many colonies of *B. mucosus.* Pure cultures of this bacillus showed the typical gram-negative short, plump bacilli with large capsules. The growth on ordinary mediums was thick, heavy and mucoid, and slightly fluid. The bacillus fermented lactose, dextrose and mannite with gas, coagulated and acidified milk, and did not ferment raffinose or saccharose.

A rabbit injected intravenously with one slant died the following night. The knee joints showed hemorrhages into the synovial membrane. *B. mucosus* was cultivated from the joint fluid.

A second rabbit injected intravenously with one tenth of an agar slant died in about twenty-four hours with findings similar to those of the first rabbit.

A third rabbit was injected intravenously with 0.5 c.c. of a slant of the bacillus suspended in 10 c.c. of broth. Two days later it was again injected with 1 c.c. of a suspension of one agar slant of the bacillus in 10 c.c. of broth. Four days after the second injection the rabbit died. Both knee joints showed the following changes: The synovial membrane was red, the joint fluid was increased in quantity, was turbid, and on microscopic examination showed many leukocytes and many bacilli of the typical *B. mucosus* morphology. The liver contained some small abscesses, which on microscopic examination contained granular detritus, many round cells and a few polymorphonuclear leukocytes. The kidneys showed degenerative changes, and on microscopic examination a cellular exudate into the pelvis made up mostly of polymorphonuclear leukocytes with some round cells.

BACILLI ISOLATED

Sugar	Arthritis 1	Arthritis 2	Pharyngitis	Rhinitis	Pneumonia
Dextrose....	Acid, gas	Acid, gas	Acid, gas	Acid, gas	Acid,gas
Mannite.....	Acid, gas	Acid, gas	Acid	Acid	
Lactose.....	Acid, gas	Acid, gas			
Litmus milk	Acid, coag.	Acid, coag.	....	Acid	Slight acid

Further experiments were not carried out in this case, as the results were the same as those obtained in the former case, in which by prolonged repeated injection of smaller doses of live bacilli a more chronic experimental arthritis was obtained which was an exact reproduction of that found in the patients. In one case of chronic experimental arthritis the joint fluid was sterile twelve days after the last intravenous injection. The histologic changes in this case are described in the previous report.

The bacilli isolated from the two patients belong to the same group of the Perkins classification[2] of *B. mucosus,* while organisms which produced no arthritis in animals fall into other groups. This is illustrated in the accompanying table.

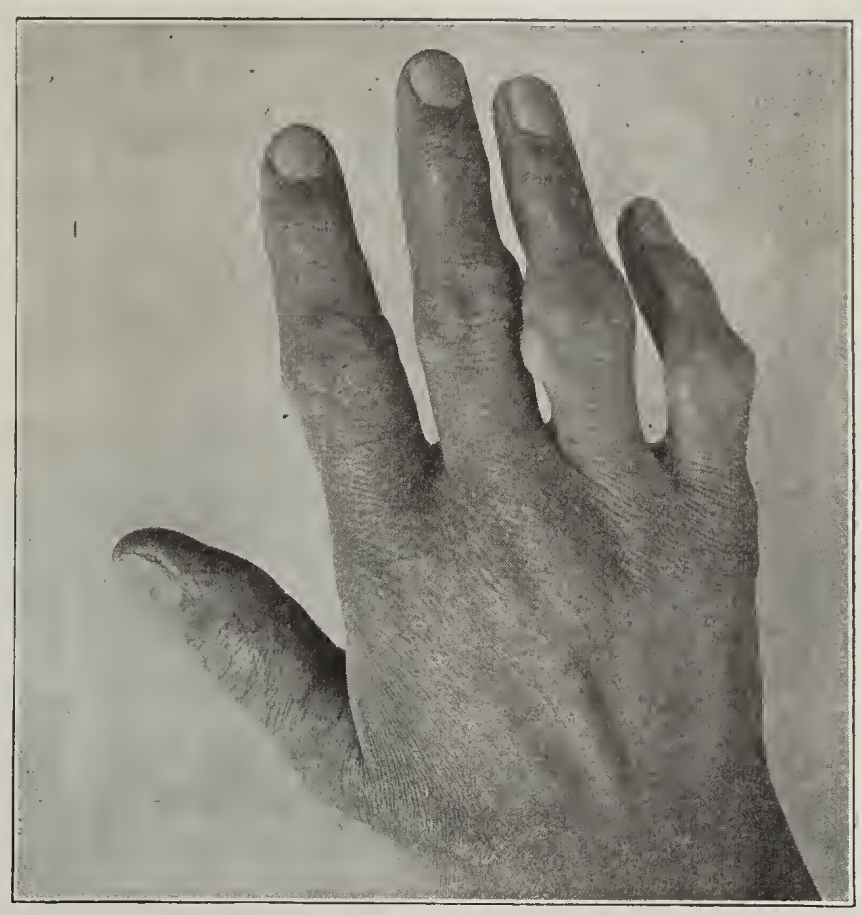

Fig. 2.—Appearance of right hand.

From the pathogenesis of these cases it seemed indicated to rid the throat of the causative organisms by such means as have been developed in the case of diphtheria carriers.

After tonsillectomy and vaccine treatment, the arthritis in the first case was so much improved that the patient was able to do housework without inconvenience. Most of the fluid was absorbed. During the four years that the patient was under observation, the improvement was permanent; but the throat was never entirely free from *B. mucosus* for any length of time.

The patient returned for several courses of vaccine treatment. During the courses the joints gave her no pain and remained painless for periods which varied from a few weeks after the first course to a year following the fourth course of vaccine.

SUMMARY

Two cases of chronic multiple arthritis have been described which resemble each other in every way. From the throats of both these patients there were isolated bacilli of the same group (1) of Perkins' classification of *B. mucosus.*

On intravenous injections into rabbits, the bacilli constantly produced an experimental arthritis which varied from an acute hemorrhagic inflammation to a chronic deforming arthritis.

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[2] Perkins: Jour. Infect. Dis., 1904, **1**, 241.

SPONTANEOUS ANASTOMOSIS BETWEEN TRANSVERSE COLON AND DUODENUM

ERNEST CLYDE FISHBAUGH, A.M., M.D.
LOS ANGELES

Perhaps one of the rarest complications of carcinoma of the colon is perforation into another hollow abdominal viscus. These perforations may occur into the stomach, small intestine, bladder, or into another portion of the large intestine. Osler[1] says:

> It is a peculiar fact that perforation of a carcinoma of the large intestine is more prone to occur into another portion of the large intestine than into the small intestine.

The rareness of spontaneous anastomosis between the colon and other hollow abdominal organs is emphasized by the report of Körte,[2] in which he made a critical analysis of 254 cases of cancer of the cecum and colon and did not mention this condition, and by that of White,[3] who, in a review of necropsies in 3,583 cases of cancer in the Vienna General Hospital, of which 343 were intestinal, did not record this complication. Even spontaneous benign visceral anastomosis is only occasionally reported. Voorhoeve[4] made a contribution to the roentgenologic as well as to the clinical diagnosis of gastrocolic fistula. Urrutia[5] made observations on jejunocolic fistula associated with peptic ulcer and reported a case, as did also Dorrance and Deaver.[6]

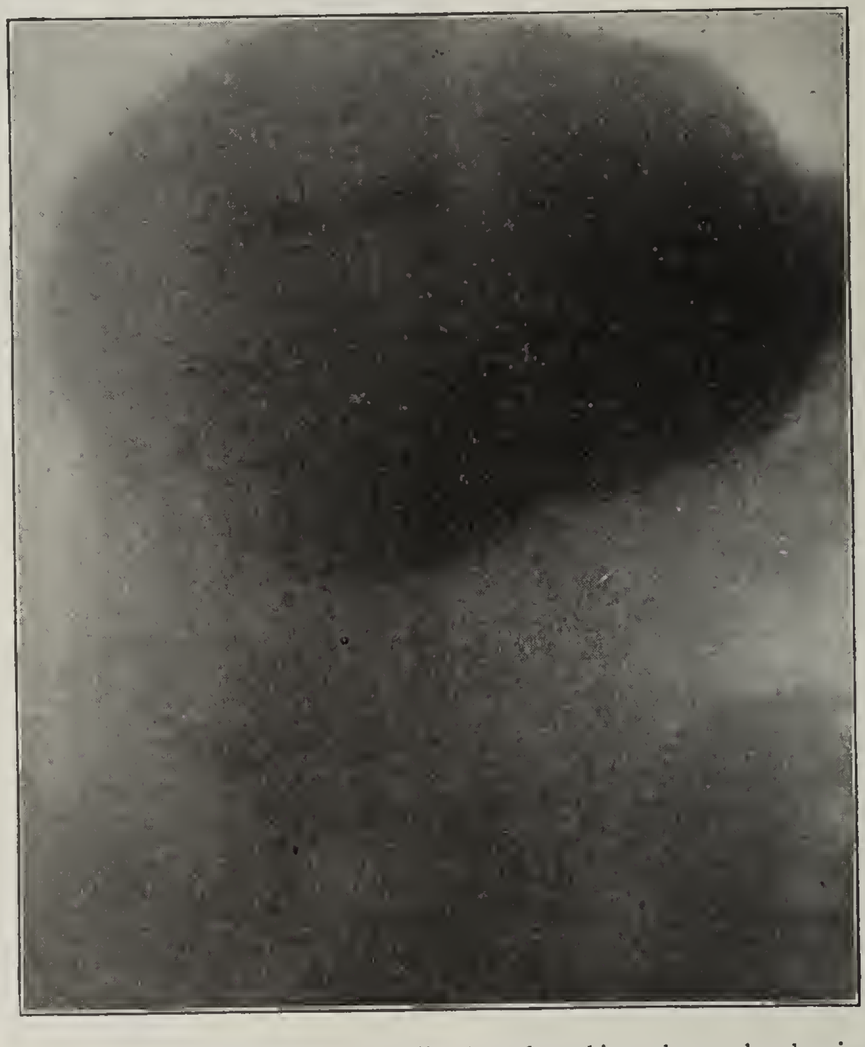

Fig. 1.—Roentgenogram immediately after bismuth meal, showing irregular greater curvature.

From the meager references in the literature concerning carcinoma of the transverse colon in relation to duodenocolic fistula, it would seem that this condition was exceedingly rare and that it was found only at operation or necropsy. The following case is of interest not only because of the infrequency of the condition, but also because it presented sufficient clinical and laboratory data for a positive preoperative diagnosis:

History.—M. D., man, aged 48, Irish, referred for gastro-intestinal study, April 3, 1915, complained of diarrhea and marked loss of weight. The father died of cancer at 60 years. The mother died of pneumonia at 70 years. The patient was the fifth of eight children, all of whom were healthy. He was born in Ireland, where he lived until 18 years old, after which he came to California and then to Nevada, where he was engaged in mining. During recent years he had lived in Chihuahua, Mexico, where as overseer and owner he had been engaged in silver mining. As a child and young man he was strong, sturdy and healthy. He never had any kind of illness. The cardiorespiratory history was unimportant. He had always been a big eater and a hasty eater. He ate considerable meat. The bowels were regular, never needing a laxative oftener than once in three or four months. When 30 years old he had a "sick spell with his stomach." He vomited for eight or ten days, but had no pain. At first there was bile in the vomitus and later he had "empty vomiting." He remained in bed eight days, and during this time lost weight rapidly. He was working in quicksilver at the time, and his illness was attributed to quicksilver poisoning. During his entire life he had had very little flatus and never had any eructation of food or gas. He had had no kidney trouble. He denied history of gonorrhea or syphilis. He had never used tobacco or alcohol in excess. He had at times done hard manual labor. When 29 years old he weighed 210 pounds, and had kept that weight until his present illness. He had been married nine years. His wife had had no children and no miscarriages.

Present Illness. — About eight or nine months ago he had a "spell of indigestion following ingestion of badly cooked pork." The bowel movements were loose and frequent for a short time, but they were not watery. Following this attack he became very constipated, and had to strain considerably in order to have a bowel movement. As a consequence he developed hemorrhoids. They did not bleed, but there was some swelling and protrusion. After a few weeks of constipation he began again to have diarrhea. There were frequent, large watery bowel movements without straining. There was no mucus or blood. The hemorrhoids disappeared. There was no diarrhea at night, but it started immediately on arising in the morning or after eating. The more physical exercise, the more frequent were the bowel movements. There was very little flatus at this time, but the stools were very foul smelling. Appetite was good and there was no change in diet. No loss of weight was noted at this time. Nov. 4, 1914 (four months before), he had a hard chill followed by temperature as high as 103. There was considerable annoyance from gas and a pain in the region of the heart. On the second day the temperature was lower, but there was considerable soreness in the left upper abdomen which remained for some time. The diarrhea continued. For one week large doses of bismuth lessened the diarrhea, after which it was as bad as ever. He was then losing weight and strength. About Christmas time (three months before), he had another chill, but symptoms and rise of temperature were not so severe. He had with this attack "considerable gas in the bowels." At that time proctoscopic examination was said to be negative; the stools contained no blood or pus. On the supposition that it might be amebic dysentery, he was given emetin hydrochlorid, one-third grain hypodermically, every other day for two weeks, but with no improvement. He continued to lose weight and strength, and his eyes appeared glassy. Jan. 26, 1915 (two months before), he had a third chill followed by slight fever. He had some bloating, but there was no pain or soreness reported. The rectum was again examined and a small ulcer was said to have been found, and smears from it were said to contain amebae. Following this the patient was again given emetin hypodermically every day for four or five weeks, and also enemas of ipecac, opium and water. The patient was able to retain these enemas four or five hours and sometimes all night. The bowel movement following such an enema often contained bright red blood. There was slight griping and soreness in the abdomen before and after a bowel movement containing blood. The Wassermann test at this time was said to be positive, following which the patient was given yellow mercurous iodid for a few days. While still taking the daily ipecac and opium enemas, he began to have attacks of vomiting, which had continued during the past four or five weeks. Medication was stopped. He would vomit after taking food of any kind, and at times there would be empty vomiting. The vomitus was never sour, and contained no mucus or blood, but was usually yellowish. Any solid food was vomited, and recently broth as well. The patient eructated large quantities of gas. At times he had noted the appearance of a swelling in the epigastrium, and felt "movements." This swelling always disappeared after vomiting. At other times he noticed a swelling in the right side of the abdomen and sometimes the entire abdomen would bloat. This could be relieved by an enema, and there would be large amounts of flatus expelled with the enema. He had had no pain or tenderness in the abdomen.

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[1] Osler, William: Modern Medicine, **5**, 483.

[2] Körte, W.: Die chirurgische Behandlung der malignen Dickdarmgeschwülste, Arch. f. klin. Chir., 1913, **102**, 653-660.

[3] White, Sinclair: Brit. Med. Jour., 1913, **2**, 57.

[4] Voorhoeve, N.: Die klinische und radiologische Diagnose der Fistula Gastro-colica, Deutsch. Arch. f. klin. Med., 1912, **106**, 294.

[5] Urrutia: Cas de fistule jejuno-colique par ulcération peptique dur jejunum consecutive a une gastroenterostomie, Arch. d. mal. de l'app. digestif, 1912, **6**, 680.

[6] Dorrance and Deaver: Internat. Clin., 1915, **2**, 235.

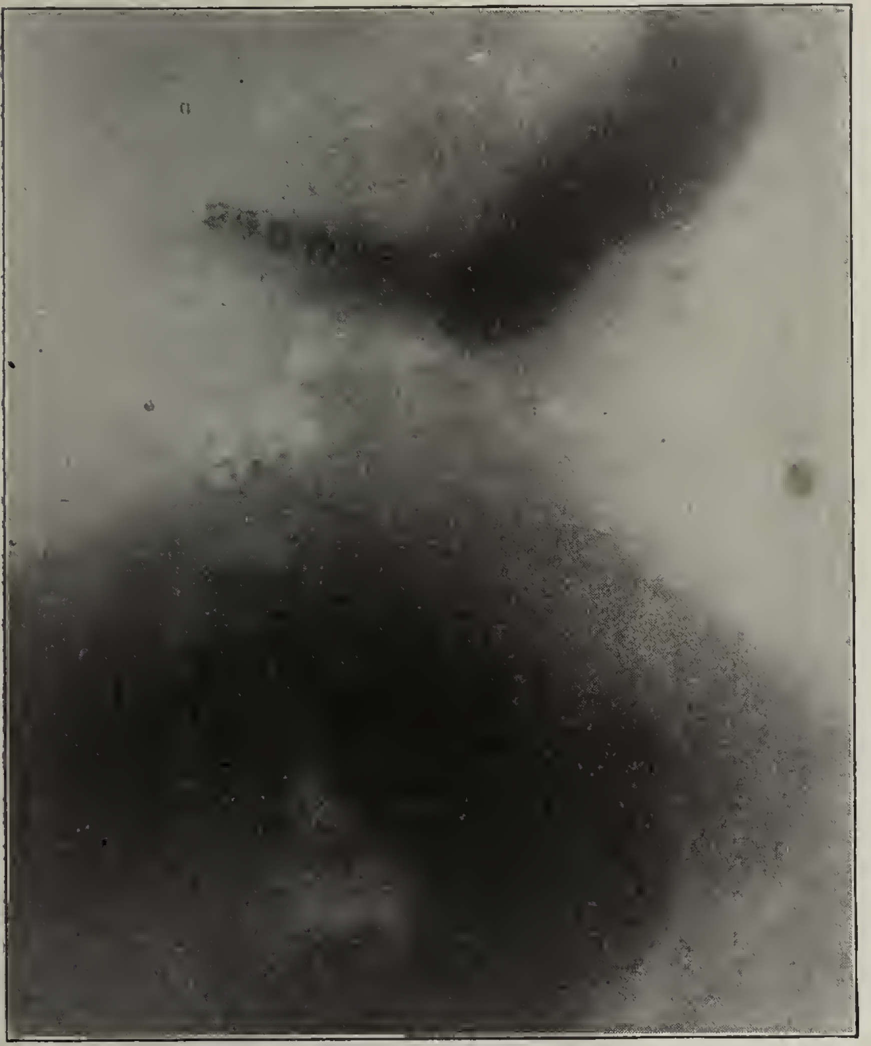


Fig. 2.—Roentgenogram three and one-half hours after bismuth meal, showing bismuth residue below greater curvature of stomach.

Physical Examination.—The cheeks were hollow and the eyes sunken. The hair and beard were gray. The skin was smooth, dry and loose. The mucous membranes were rather pale. The tongue was heavily coated. There was marked pyorrhea alveolaris, and the gums bled freely. The cervical glands were palpable but not enlarged. The inguinal, epitrochlear and supraclavicular glands were not enlarged. The heart and lungs were negative. The temperature was normal; pulse rate, 80; blood pressure, diastolic, 70; systolic, 90.

The abdomen was scaphoid in appearance, with no visible peristalsis or bulgings. There was dull tympany throughout, with no shifting dulness in the flanks. The relative hepatic dulness was normal. On palpation the abdominal muscles were everywhere resistant, but there was no general or localized rigidity or muscle spasm. There was no general or localized tenderness. The liver and kidneys were not felt. There was an ill-defined resistance in the left upper quadrant, with its lower edge on a level with the costal cartilages and extending obliquely across the epigastrium to the right hypochondrium. It moved slightly with respiration, and on deep inspiration the hand could be slipped above the mass, but on expiration it passed under the left costal margin and only a small part could be felt in the midline. It felt quite firm to the touch, and although somewhat irregular in outline, did not seem to be nodular. A notch could not be felt. The area of splenic dulness was normal. Palpation caused no pain, and elicited no tenderness. April 7, there was general abdominal distention. There were visible peristaltic waves starting in the cecal region and moving upward and inward, where they disappeared. An enema (soapsuds) relieved this general abdominal distention, the patient expelling large volumes of flatus. Later in the day, typical stomach stiffening was observed, which completely disappeared after the patient had vomited.

The deep reflexes were rather sluggish, but present.

There were a few internal, nonbleeding hemorrhoids. The prostate was normal. Proctoscopic and sigmoidoscopic examinations were negative.

Blood examination revealed: hemoglobin, 73 (Fleischl); red blood cells, 4,336,000; white blood cells, 10,000; 300 white blood cells showed: polymorphonuclear neutrophils, 74.3 per cent.; polymorphonuclear eosinophils, 0; polymorphonuclear basophils, 0.6 per cent.; small mononuclears, 16.3 per cent.; large mononuclears, 7.6 per cent., and transitionals, 0.6 per cent. The rather high cell count is misleading, as the patient had been vomiting constantly and there had been practically no fluid intake for many days.

The urine was amber, with a specific gravity of 1.030, no albumin or sugar, and a few hyaline and granular casts.

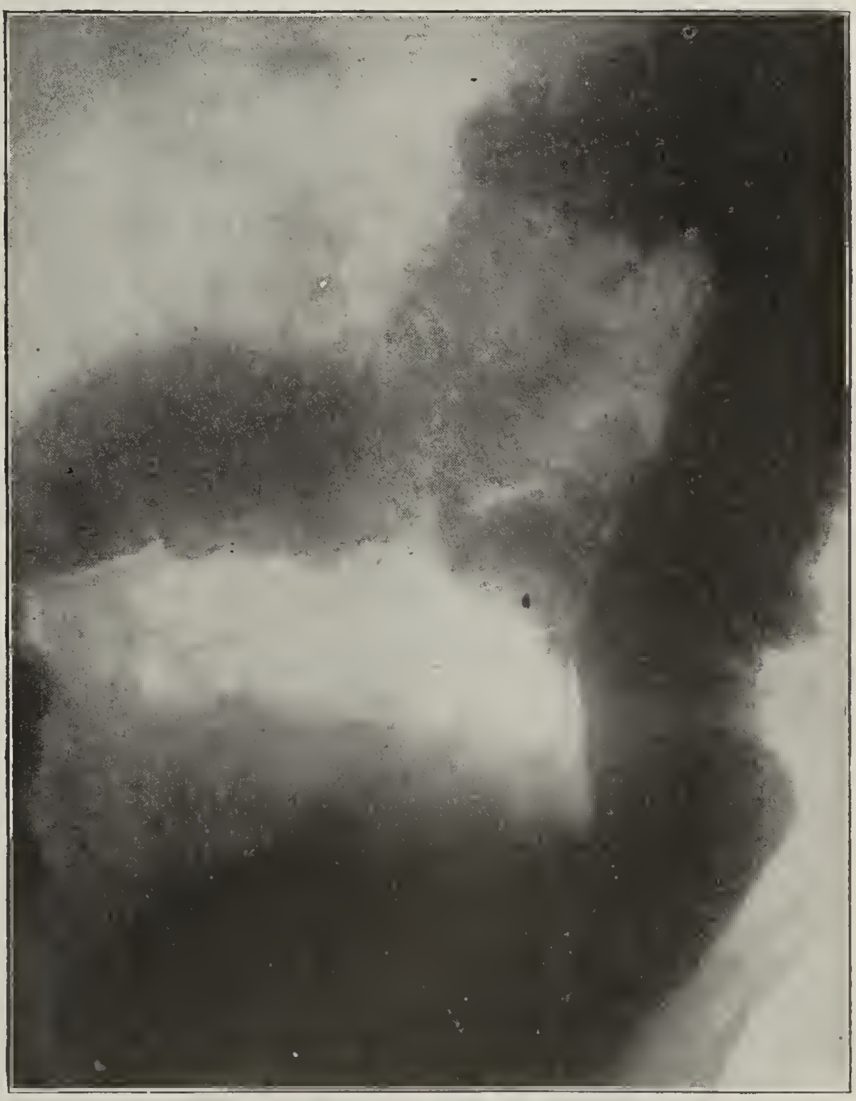


Fig. 3.—Roentgenogram of barium enema, demonstrating enterocolic fistula.

Fasting stomach wash (ten hours after last food intake) revealed: bile, positive; occult blood, negative; no free hydrochloric acid; no Oppler-Boas bacilli, yeasts or sarcinae. Otherwise it was unimportant.

After a test breakfast (Ewald), 15 c.c. were recovered at the end of one and one-half hours. The total acidity percentage was 10; free hydrochloric acid, 0; hydrochloric acid deficiency, 10; bile, negative; occult blood, negative; lactic acid, negative.

The stool (collected from above the hemorrhoid-bearing area) was a light chocolate-colored fluid, fermenting and very foul smelling, alkaline in reaction, positive for bile and strongly positive for occult blood. The microscopic examination was not remarkable except for the numerous pus cells, fat globules and starch granules. The little food ingested had been broth and gruels. Many subsequent stool examinations gave identical findings.

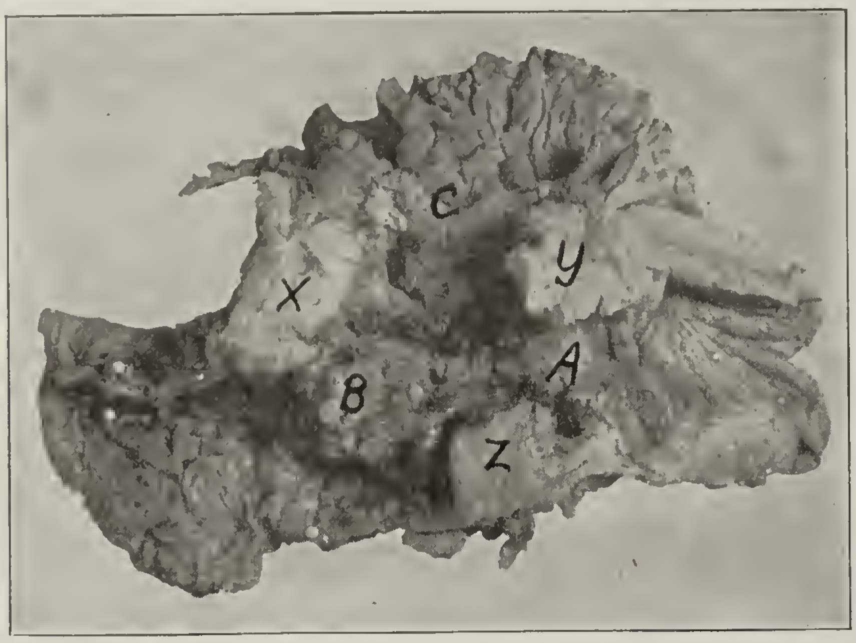


Fig. 4.—Photograph of gross specimen. *X*, *Y* and *Z*, when joined, formed openings, *A* into proximal colon, *B* into distal colon, and *C* into the duodenum, forming a duodenocolic fistula.

Specimens of the vomitus were frequently examined, and they showed constantly the presence of bile and no occult blood.

The Wassermann reaction in the blood was negative.

Before Roentgen examination it seemed that the following deductions and conclusions were justifiable:

A. Data indicating a cancer of the transverse colon:
  1. History of initial diarrhea followed by constipation.
  2. Pus and blood in the stools.
  3. Partial colonic obstruction.
  4. Palpable tumor.

B. Data indicating that the stomach was not involved:
  1. Occult negative vomitus and test meals.
  2. Absence of hydrochloric acid secretion in the stomach, not uncommon in cancer of other abdominal viscera.
  3. Constant presence of bile in the vomitus, and at times definite "stomach stiffening" relieved by vomiting material containing bile, pointed to a partial extragastric obstruction as a cause of frequent vomiting.

C. Data indicating an enterocolic fistula:
  1. History of localized peritonitis in the region of the tumor mass (chill, fever, localized pain and tenderness).
  2. Increase in the frequency of bowel movements during exercise and after taking food, with none at night.
  3. Undigested food particles in the stool, fat globules and starch granules (patient on a liquid diet).
  4. Diarrhea following a period of constipation with evidence of carcinoma of the colon.
  5. Persistent diarrhea, although associated with partial obstruction of the colon.

It therefore seemed that the only possible explanation of the foregoing group of findings was a carcinoma of the transverse colon complicated by an enterocolic fistula.

Roentgen Examination.—Three ounces of bismuth oxychlorid were given in 1 pint of buttermilk on a fasting stomach. The bismuth mixture entered the stomach normally. The greater curvature was somewhat irregular in outline, as shown in Figure 1; but on palpation this irregularity could be obliterated, suggesting that the moth-eaten appearance was due to external pressure on the stomach wall. There were no filling defects in the greater or lesser curvature. A good cap was not seen. The duodenum passed to the right across the midline and then downward and inward below the fundus. Although well defined, the duodenum did not seem to be distended.

Examination after three and one-half hours revealed considerable bismuth still in the stomach. Just beneath the greater curvature and in the region of the tumor mass, there was a constant irregular shadow, as shown in Figure 2, which could not be dislodged by palpation.

The six-hour examination revealed the stomach empty. The head of the bismuth column was in the transverse colon. The cecum and ascending colon were widely distended.

The ten-hour examination revealed the terminal ileum empty. The cecum, the ascending colon and first portion of the transverse colon were widely distended.

The patient had a liquid bowel movement at the end of twenty-two hours, but at the twenty-four-hour examination there was still a small amount of bismuth in the cecum and ascending colon.

Barium Enema.—Four and one-half pints of a barium sulphate suspension were given without any discomfort to the patient. Even though such a large quantity of the mixture was retained, the head of the column remained in the terminal third of the transverse colon. After vigorous manipulation over the head of the barium column, numerous loops of small intestine in that region were seen to fill, and later some of the mixture entered the other portion of the colon, gradually filling the cecum as well. This is shown in Figure 3.

The Roentgen examination showed no lesion of the stomach, but confirmed the diagnosis of carcinoma of the transverse colon with an enterocolic fistula.

Until April 9, 1915, the patient was fairly comfortable, with very little nausea and vomiting. At times there was some distention of the stomach, which was relieved completely by vomiting or lavage. At times there was general abdominal distention which was relieved by enemas. Late that afternoon the patient became markedly distended and nauseated. He vomited some fecal material. He had no pain, and the pulse was good.

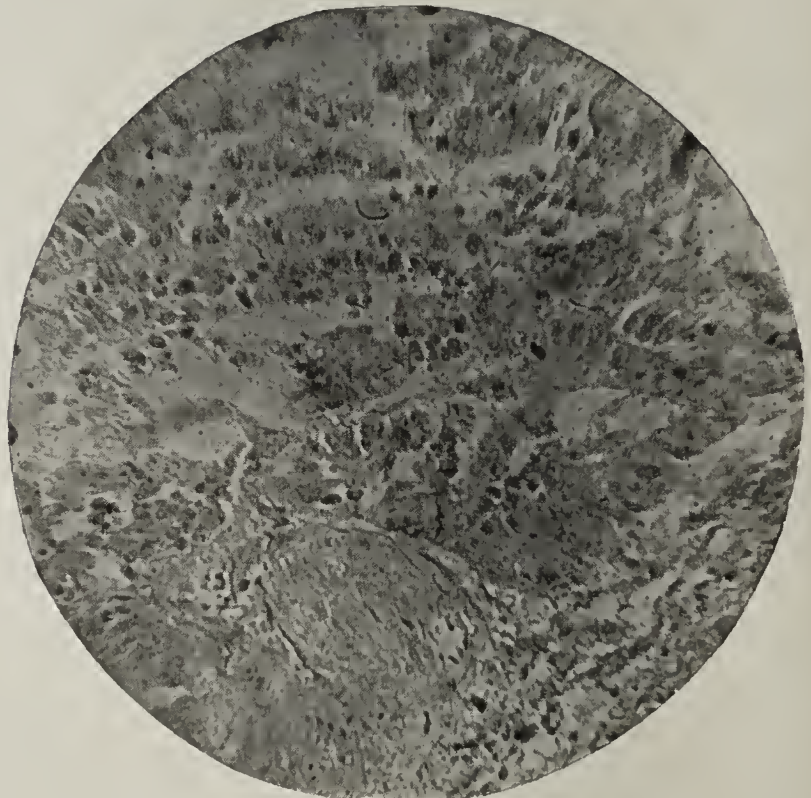


Fig. 5.—Photomicrograph of tumor.

Operation.—It was evident that superimposed on the foregoing findings was an acute intestinal obstruction. The patient was operated on immediately by Dr. Rea Smith. The abdomen was filled with distended loops of small intestine. The large tumor mass of the colon had a distended loop of small intestine attached to it. Through this loop, an enterostomy was quickly made. The patient returned to his room in good condition.

The enterostomy drained perfectly, and the following day the abdomen was soft and there was no pain. On the third day the patient began to have an occasional hiccup and eructation of gas. There was no pain or fever. The pulse was between 80 and 90. The next day there were considerable hiccup, nausea and vomiting, some of which had a fecal odor. The enterostomy was found to be free, and there was no distention. The pulse was from 90 to 100. The following day the vomiting continued, and the patient gradually became weaker, and died, April 15, 1915.

Necropsy (April 16, 1915).—A tumor of the distal half of the transverse colon was found, which was freely movable. Aside from a few recent adhesions to the greater curvature, the stomach was normal. The duodenum was distended, and entered the tumor mass 9 inches from the pylorus. The enterostomy opening was 3 inches distal to the tumor mass, thereby affording drainage for the small intestine, cecum and ascending colon, but not affording drainage for the duodenum. The obstruction was not complete, for fluid forced into the tumor mass from either of the four intestine ends would emerge from the other three. The openings from the duodenal and colonic sides, however, would just permit the passage of a small probe. When the large intestine through the tumor mass was opened, the cancer was seen to extend completely around the colon, and to include on one side about half of the wall of the duodenum (Fig. 4), thereby forming a fistula between the duodenum and the transverse colon. There were a few enlarged retroperitoneal glands; otherwise the examination was unimportant.

The pathologic report and photomicrograph (Fig. 5) by Drs. Brem, Zeiler and Hill showed the tumor to be an adenocarcinoma.

COMMENT

Some features of this case, aside from those outlined above, deserving special attention are:

1. The value of the Roentgen examination in confirming the clinical diagnosis.
2. An instance of true "stomach stiffening" without pyloric obstruction.
3. The possibility of a double intestinal obstruction should not be overlooked.

412 West Sixth Street.

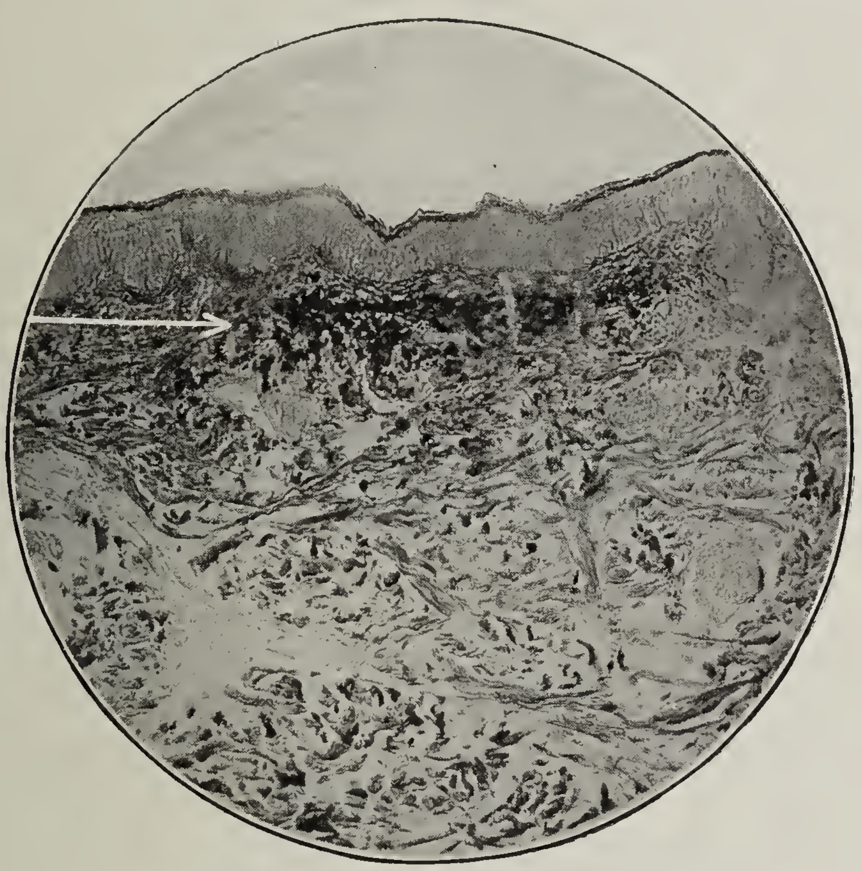
The Rittman Process.—*Commerce Reports,* January 22, says that the Rittman process of breaking up petroleum products has now issued from the experimental stage, and has taken its position as a recognized industrial asset. By this process vast quantities of petroleum waste hitherto used practically only for fuel purposes can be transformed into gasoline, for motor engines or into benzene and toluene for the manufacture of picric acid and trinitrotoluene. They also form the starting point for the synthesis of an almost endless variety of dyestuffs, medicinals, flavors, perfumes, etc. It is said that the by-products of the coke ovens of the country are at present sufficient to meet the demand for making the variety of chemicals referred to, but the Rittman process will serve to help out the gasoline supply. The process is thoroughly protected by patents, but no license fees or royalties are required in the United States.

BROWN STAINS IN THE SKIN FROM WET DRESSINGS OF A SOLUTION OF COPPERAS

WILLIAM ALLEN PUSEY, A.M., M.D.
CHICAGO

Miss M., aged 55, consulted me in February, 1915, for a peculiar permanent punctate staining of the skin. On first glance the picture strikingly suggested a follicular purpura in an unusual location. At the sides of the neck, over the shoulders and deltoid regions, and about the wrists and elbows the skin was peppered with yellow to dark brown stains. There were a few such stains on the feet and over the lower back. The individual lesions for the most part varied from the size of a pinpoint to that of a pinhead, with a few about the elbows 4 or 5 mm. in diameter. The spots were flat or slightly depressed, some of them showing punctate slight scarring. The picture closely resembled one of powder stains, except that the individual stains instead of being bluish black were yellowish brown. The skin was otherwise normal.

In the previous autumn the patient had had a violent outbreak of weeping dermatitis which had been attributed to poison ivy. It had been treated, according to her statement, with many applications, including a solution of lead subacetate, a chalky mixture and a grayish black solution which contained ferrous sulphate and vinegar. Her physician reported that this solution consisted of ferrous sulphate, 1 ounce, to vinegar, 1 gallon. At the time of the application of wet dressings of the solution, there was a violent dermatitis with a good deal of suppuration. The dermatitis finally healed under salves of unknown composition. The brown spots appeared in the skin after the application of the wet dressings of copperas solution and had remained. I first saw the patient four or five months after they had developed, and she thought the skin had not changed since their appearance. Ten months later she reported to me that they were, she thought, slightly fainter. She reported to me in September, 1916, almost two years after the stains were formed, that the spots were growing lighter.


Deposit of iron in the skin showing as Prussian blue after treatment with potassium ferrocyanid; tissue stained with Van Gieson's method.

One of the stains was excised for examination. It was hardened in 4 per cent. dilution of liquor formaldehydi and embedded in paraffin.

The epidermis over the pigmented spot was practically normal, showing, however, slight parakeratosis and scaling. As usual in scars, the papillae were destroyed, and the line of juncture between the epidermis and corium was flat.

The deposit of pigment in the skin is shown in the accompanying illustration. There were in the section two areas of pigmentation like the one shown. The pigment was situated in the subpapillary layer, with a thin zone of clear connective tissue between the pigment and the basal layer. In unstained sections, and in sections stained with hematoxylin and eosin, the pigment was of a light yellowish brown rather closely resembling melanin. Examined under the high power, it was seen to be composed of definite amorphous granules. These granules were not scattered diffusely through the area, but were in masses and clumps which varied greatly in size. The pigment for the most part lay between the fibers of the corium and between the cells of the inflammatory infiltration which surrounded it; but frequently clumps of pigment were found arranged about the nuclei, having either partially or wholly replaced the protoplasm of the cell. In some cases both the protoplasm and the nucleus appeared to be filled with pigment. Around the deposit there was an inflammatory infiltration rather definitely confined to the area of pigment deposit. The infiltration was mainly perivascular, but it was found throughout the deposit. The cells were chiefly small round cells with some epithelioid cells.

To determine positively that the pigment was iron, sections were tested with ammonium sulphid and potassium ferrocyanid. Ammonium sulphid turned the pigment black, the remainder of the section remaining unstained. Sections were treated with dilute acetic acid solution, and then with potassium ferrocyanid solution. This turned the color of the pigment deposit to the characteristic Prussian blue. As a control, in order to determine that the amount of iron in melanin is not sufficient to produce these reactions of iron, sections of a deeply pigmented mole and of pigmented sarcoma were tested in the same way for iron. Neither test produced any discoloration of the melanin.

The explanation of the accident undoubtedly is that the ferrous sulphate in the vinegar solution came in contact with points where the skin was destroyed down into the corium. The alkaline lymph at these ulcerating points caused a precipitate of organic iron compounds which were ultimately oxidized into ferric hydroxid. This ferric hydroxid, or oxid, an insoluble substance in the blood plasma, remained as permanent stains in the skin.

It is very rare for accidents of this sort to happen, although insoluble substances are constantly applied in eczema and dermatitis. The reason for the rarity of the accident lies in the fact that unless a dermatitis is very severe, the deep layers of the epithelium are not thrown off. If an insoluble powder becomes entangled in the epithelium, it is gradually exfoliated. A stain will occur only when the epithelium at points is completely destroyed and there is ulceration in the corium, so that particles of pigment can be deposited in the corium itself. If this accident happens, healing takes place by the formation of connective tissue around the deposited pigment; there is then no chance for exfoliation to take place, and permanent stains are left, exactly as in gunpowder stains or tatooing. This case and one or two others that I have seen suggest the danger of using insoluble applications in cases in which there is a complete destruction of the epidermis or ulceration, no matter how minute the ulcers are.

I am told that particles of iron in the eye usually in time completely disappear. These particles are too large to be removed by phagocytes, and if they disappear it must be by their gradual solution. This suggests the possibility of the ultimate disappearance of iron stains in the skin, but the course of this case thus far indicates that this disappearance, if it takes place, will be only after a very long time.

7 West Madison Street.

Common Colds.—The phrase "common colds" like "charity," covers a multitude of sanitary sins, and curiously enough, the name has been applied to a group of affections which far from depending absolutely on cold are frequently the direct result of living in close, overheated surroundings having a lower relative humidity than the dryest desert known to man. —*Health News,* U. S. P. H. Service.

THE USE OF KEPHALIN TO HASTEN COAGULATION AND HEMOSTASIS AFTER SURGICAL OPERATIONS *

H. L. CECIL, M.D.
BALTIMORE

The need of hemostatic gauze to be used where packing is now necessary in deep seated operations, such as perineal prostatectomies, in which bleeding occurs within the prostatic capsule from which large hypertrophied lobes have been enucleated, has long been recognized at this clinic. This hidden intracapsular bleeding is often considerable, and many strips of iodoform gauze tightly packed within the prostatic capsule have often been necessary, and are even then not entirely successful. Accordingly I have experimented with a gauze impregnated with kephalin, which was shown by Prof. William H. Howell to be the best clot forming substance. Following his methods I have made kephalin from the brains of hogs.[1]

The gauze is prepared as follows: The kephalin is dissolved in an excess of ether, about a 5 per cent. solution being made, and this concentrated kephalin solution is poured over gauze strips 6 feet long and 6 inches wide. The packs are then folded, rolled, wrapped in two muslin covers and sterilized in the steam autoclave at a temperature of 120 C. for ten minutes. The heat necessary to sterilize them effectively does not interfere with the coagulation action of the kephalin.

Kephalin-coated catheter used in "punch" cases.

As soon as we began using kephalin gauze packs, it became evident that hemorrhage ceased much more quickly than when iodoform gauze was used, and that it was unnecessary to introduce so much gauze as previously or to pack it as tightly within the capsular cavities. This was at once a great advantage. Another effect was that the postoperative bleeding which came through the bladder drainage tube diminished rapidly. The gauze has now been used in thirty-four perineal prostatectomies. In many of these cases the urinary drainage has been clear from four to six hours after operation, and in nearly all other cases it is clear on the following morning. In only four cases has the drainage remained bloody for forty-eight hours, and I believe that in these cases the packs did not reach the bleeding point, as the bleeding may have been from a torn piece of mucous membrane at the bladder orifice. When these packs were removed there was only one case in which more than slight bleeding occurred, there being about 150 to 200 c.c. of blood lost. In the majority of cases there was scarcely enough blood to stain the dressings, while many of the patients did not bleed a drop, if one can judge by external appearances. It is important to mention in this connection that fewer packs were used than had been used previously, and thus tension within the wound by very tight packing in order to stop the bleeding was avoided. This would undoubtedly be of even greater importance in other branches of surgery than in urology.

After our success in prostatectomy it occurred to me that the bleeding which occurs after Young's "punch" operation — or median bar excision — might be stopped by a kephalin coating to the catheter drain which lies within the wound at the prostatic orifice. The kephalin-coated catheters were prepared as follows: A very concentrated solution of kephalin in ether was made and smeared on the terminal 3 inches of a large gum coudé catheter, the tip and eye of the catheter being left uncoated. This coating was best secured by allowing the solution of kephalin to drop on the catheter, which is being revolved at the same time. This coat is about 1 to 2 mm. thick, and surrounds the catheter, as shown in the illustration. The catheter is then sterilized in a glass tube by steam in an autoclave at a temperature of 120 C. for ten minutes. In this way a large amount of kephalin is brought into direct contact with the cut surface at the vesical orifice.

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*From the James Buchanan Brady Urological Institute, Department of Urology, Johns Hopkins University and Hospital.

[1] We are now using kephalin made by Armour & Co., at my suggestion.

The kephalin has been used in four "punch" cases, the catheters being prepared as described above. Whereas previously these patients had frequently to have clots evacuated from the bladder, it was necessary in only one of the cases in which it was used, and in this case the clot was very small, being only large enough to plug the eye of the catheter. Though it has been tried in only a small group of cases, the results seem to be a striking improvement over the plain or iodoform gauze which has been previously used in all of the perineal prostatectomies, and if one is allowed to judge from four "punch" cases, the result in these cases was still more striking, as there was practically no bleeding at all.

With such results as these to report it seems well to say a word of caution in regard to the method of using kephalin. I believe, from the few times I have seen it tried, that if the gauze soaked with kephalin is used to sponge wounds, no good result is produced, since the sponge takes away with it the clot before the vessel is plugged. In a like manner the smearing of kephalin on a wound to prevent bleeding is equally open to criticism. It appears to me that both of these methods are theoretically and practically open to objection. The widespread recommendation of such an application may serve to condemn a method which if properly used would be of very great benefit to surgery.

Dr. A. D. Hirschfelder, also following the work of Howell, has used in an experimental way the same substance, but in a more impure form. He found that it was of great benefit in bleeding from bone.

CONCLUSIONS

The following conclusions may be drawn:

1. Kephalin causes a quicker and firmer clot.

2. Not as much pressure in packing is required to control hemorrhage as when plain or iodoform gauze is used.

3. When the packs are removed, the clot is of sufficient firmness to prevent bleeding. This is not true of other packs.

Comment by Dr. Hugh H. Young.—Active hemorrhage and slow oozing, which together amount to considerable loss of blood in a few cases, have been a well recognized complication after all forms of prostatectomy. In perineal prostatectomy the gauze packs can be so placed under visual guidance that this complication rarely causes any harm. As a result, the mortality is much less than suprapubic prostatectomy. In some cases, however, many strips of gauze tightly packed in the capsular cavities were necessary to stop the bleeding. This mass of gauze was objectionable — particularly when time came for its removal.

This new kephalin gauze is unquestionably of great value; the capsular bleeding ceases as a rule very quickly after the insertion of a small amount of gauze, and much less packing is required. The large single retention catheter with a kephalin coating acts like magic in the median bar "punch" cases, and removes the one objection to this simple, safe and satisfactory operation.

THE FREEDOM OF THE MEDICAL PRESS *

EDWARD C. REGISTER, M.D.
CHARLOTTE, N. C.

I have chosen a most serious theme, quite well realizing that, far more than we dream, we are making history in our deliberations. The subject may sound somewhat strange. To many of us, the freedom of the press is an accomplished fact, and we listen to the term as one listens to the battle-cry of some ancient age. It is, therefore, not an easy subject to discuss, for two reasons. First, as I have said, we are very prone to take for granted that the freedom of the press is one of the fundamental liberties that were wrought out and won by the heroic endeavors of our fathers, and that it is a fixed and immutable heritage of us, their sons, and as changeless as the process of the stars. The second reason for the difficulty of my theme is that unconsciously we think of the freedom which is ours, either political, industrial or religious, as a right that can be destroyed only by governmental tyranny, and we console ourselves that the freedom of the press has no enemy. But I remind you of the words of a great patriot, that "eternal vigilance is the price of liberty." And the freedom of the press is an essential part of that larger liberty of mankind which has been the object of the evolution of government and of the people. So important did our fathers consider the freedom of the press that many of our states saw fit to write it into their constitutions, and you are quite well aware that it forms a part of the constitutional history of the older nations. We must realize how essential to all liberty is the liberty of the freedom of expression of ideas. I know of no greater proof of the worth of the freedom of the press than the fact that military despotism even today must limit that freedom among the warring nations, in order to make military government possible.

But, you will inquire, in what way is the freedom of the medical press endangered? Am I not uttering a false alarm? Am I not calling to arms men when no enemy threatens? Let us consider this matter deeply and calmly. In the beginning of the consideration, let me say in all justice to those who differ with us that I do not say that any man, or company of men, is trying to defeat that freedom of the press which we so highly esteem. The men and the movements of which I speak would be, perhaps, the first to disclaim any desire or purpose to put on the medical press a censorship which would practically destroy this freedom. I say this in justice to them. Still, unconsciously those things can be brought to pass which we come too late to see are destructive of the best in our scientific life. Let me give an illustration: The wind and rain of ages covers the ancient Roman forum with a fine coating of débris and dust. To no one generation was this process visible, but each generation and each country added to the layer of dust until, in our modern age, Byron stood and looked out on a wilderness that was once the heart of Rome and saw the top of a single shaft where once the pride and the pomp and the beauty of Rome were centered. The sphinx will again illustrate this process. But these are only two illustrations among many. It is in this gradual, and sometimes unconscious way that the best possessions of mankind are lost. And it is my purpose to call your attention to some of those things that seem, slowly and unconsciously, to threaten the freedom of the medical press.

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* President's address, read before the American Medical Editor's Association, New York, Oct. 25, 1916.

In my judgment, the greatest enemy of this freedom is the attempt on the part of some very good and sincere men in our profession to put the medical press officially and irrevocably under the medical organizations — the different state medical societies — and to destroy beyond repair the privately owned and edited journal. Let us scrutinize closely this movement. In the first place, on account of the interlocking and ramifying systems of medical associations, the officially owned and edited medical journal becomes a unit, to such an extent that there will be, practically, but one official medical journal in all our profession. Just as the policies of all medical associations are coming more and more to be controlled and directed by the great parent American association, so all officially owned medical journals must more and more come under the dominance and powerful influence of the central journal. Surely he is blind who cannot see this evolution. One compact and all-inclusive organ will be as necessary for the official journals as it is for the official associations. What will be the result of this? That the entire medical press, if the privately owned journal is whipped from the field, will be under the management and direction of what will practically be a central board of censorship. This is precisely that condition of the secular or political press against which English and American democracy struggled through long generations.

We find a perfect parallel of this development in the industrial world. So powerful and so compact did industrial organizations become that America awakened to find that large communities of workers had been reduced to a point of industrial serfdom, and that thousands on thousands of the honest toilers of our land lived and moved at the command of some single great central organization. I would not have you understand that, in my opinion, this movement was without its beneficial aspects. I am trying only to point out that powerful and unified organization tends, at least, to destroy individual freedom both in thought and in policy. So much does it tend in this direction that the greatest statesmen of our day have given themselves to the hard task of saving industrial liberty out of the hands of the predatory trusts without destroying the efficiency of commerce.

It is precisely this possibility to which I call your attention in the present-day movement among medical associations. Compact and powerful organization is a thing to be desired, for many reasons; but we need to be eternally on our guard lest we lose more than we gain. Let us be very specific for a moment. Let us suppose that all medical journals are brought under the official control of medical organizations, and that those organizations are more and more closely united and compact. Who will be the dictator of the editorial policies of the medical press? It is not difficult to answer this question. There could be found no local association or local journal that would have the power to resist the influence and control of a great central press without a great deal of timidity or without jeopardizing his relations to the great central medical press. Even now, our great central association and our great medical association journal dictate the policies of every state medical journal and possibly two thirds of the policies of every state medical society. As I have said before, I repeat that we would, practically, have but one medical journal in America; there would, practically, be but one expression of opinion, and that would be the opinion of the few in control of the great central association and its journal. For some reasons, this might not be a bad thing. Monarchy has its strong features; but to quote an illustrious statesman, "No man is great or good enough to control the expressions of opinion of a great profession such as ours."

To those of you who may be doubtful whether or not we are threatened by any such thing, I would say, examine the condition of the public press in Russia. See how it is controlled by a central board of censors, and you will quite fully realize how little liberty is possible under such conditions. The Russian bureaucracy is too well known to need description here, and it is almost unnecessary that I should say that in our profession of medical editorship we want no bureaucracy; and our greatest defense against such a calamity is to see clearly just in what direction the present tendencies in medical organizations and in the medical press are tending.

In the system of officially owned and controlled medical journals there is far too fruitful a field for the medical politician. It is a well known fact that the medical associations, as every other association known to man, is often dominated by a political clique, certainly so far as the distribution of honor and the places of power are concerned. This is always true where individual ambition and success depend so largely on the publicity which can be obtained through the press. This condition makes it possible that the selection of an editor for such an organ is not always on the basis of merit. With your permission, I will declare it as my belief that the freedom of the medical press is greatly hampered when an editor must depend for his election, or his reelection, on a majority vote of the medical association, or when his journal must succeed or fail according to the pleasure or displeasure of the society politician.

In addition to this, the control of the medical editor of the official organ involves a too frequent change in editors. No one knows better than we how long must be the training of the man who becomes an efficient director of a medical publication. Long and weary years in apprenticeship, disappointments, struggles and work must be the discipline of him who seeks to be an efficient spokesman and publisher in the interest of the world's most vital profession. This training cannot be had, in the nature of things, when the editor must be changed with the changing official life and control of the association. From the standpoint of mere efficiency, the selection of an editor must depend on the merit and not on those qualities of popularity and good fellowship which so often secure for a man favor and votes. In the years of the centuries that are gone the dependence of a publisher or editor on some monarch's whim, or worse still, the whim of some monarch's favorite, was precisely the condition that made the freedom of the press impossible.

Again, an officially owned journal has a life that is not dependent on the value of its product. It is officially supported and can exist independent of popular approval or disapproval, a condition that has always limited freedom in the exercise of popular judgment and selection. This is precisely why it is possible to charge 3 or 4 dollars for a journal worth about 80 cents. In reply to this charge that we editors of private journals are selling medical literature that has a commercial taint about it, it is very easy for us to rejoin that their system enables them to sell medical literature that is without commercial value. The official organ can sell its produce by force of organization. The independent medical journal must obtain a market by force of merit, only.

Referring to the medical association journal, it must be clear to every one who is familiar with the question that it is not for the best interest of the medical profession for medical associations and medical journals to be financially and politically too closely related. I have known the whim or capricious desire of one influential man in a medical society to cause good men to lose their official position. This cannot be when a medical journal is independent. The editor can go about his task unafraid of all things save his own inefficiency, and can be true to his own ideals without a continually haunting fear of incurring the displeasure of some powerful clique and losing his position, through the failure to do the bidding of aught save the truth.

I think that no cultured, professional gentleman will question the statement that lack of competition is one of the surest roads to tyranny and injustice and corruption. One needs but to look on the industrial world to realize the truth of my statement. Our wisest statesmen continually remind us that competition is in many ways essential to industrial success and freedom. At this point, it behooves us to be most serious and careful. In the plan of the officially owned medical journal there is no place for competition. One state medical society journal cannot compete with another, and certainly it would not be wise for them to differ in opinion or policy with the great national medical journal. And who will deny that lack of a fair and spirited contest in the field of journalism is just as destructive of freedom as it is in the field of industry or of government or in any other calling in which we might be interested?

Again, I call attention to another serious menace in this system of officially owned medical journals. The freedom of any press depends largely on the open forum which its columns furnish for the free expression of honest opinion and totally without prejudice. In the system of privately owned and competing journals, there is the broadest possible opening for such an expression of medical opinion; but in a system of centrally owned and controlled journals what will become of this open forum? It will lie in the power of a few men, and often of one man, in all this nation to see who shall gain entrance to the columns of the American Medical Association journal and what opinions shall be given expression there. The editor of a state medical society journal also has this power.

There is no appeal in this circumstance. If his paper is refused by his state medical society editor, it must find its way to the waste basket. I need not call your attention to the fact that such a condition would practically make the freedom of medical opinion merely a word having no reality or respectability, and each of us would be compelled to sue at the feet of some central board or of some sanctified individual to be allowed to give expression to our medical opinion, or to give publicity to a remedy, an apparatus, a fixture, or a machine which we had found to be of value to mankind.

Let us turn now to consider those elements of the privately owned journals which seem to offer the best guarantee for freedom and efficiency in the medical press. In the first place, its financial and professional success depend wholly on its ability to meet the need of the profession. Its excellence and its real scientific value to the medical world are its only assets. It has no artificial subscription list. No physician is allowed to purchase it, and its management is forced to give an adequate return for its subscription price and to gain subscribers through its ability to serve. To put the matter squarely, it must win its life through service, and service not only to the whole profession but also to mankind. It cannot, therefore, be unmindful to the voice of the profession, nor can it ignore a democratic expression of opinion. Quite a little bit of our therapeutic knowledge has been derived from quacks and irregulars.

Again, medical journalism may well learn the lessons of the broader journalism of the world of which it is a part. In this broader journalism, it is the free and privately owned periodicals which have come to the place of greatest power. The London *Times*, the New York *Evening Post*, the *Outlook* and many others are an illustration of the excellence of independent journalism. In comparison with these great newspapers where stands your political organ? It is very easy for one to see that the independent secular press is growing in power and prestige, and the officially owned organ is becoming less and less in the world of politics.

The privately owned medical journal is without the power to oppress. By the process of competition, of which I have spoken, the medical public has its remedy. If it should enter into the purpose of the editor of a private medical journal to be dictatorial, unfair, to shut his columns to those in whom he has no personal interest, or to make of his journal a means for the attainment of his own selfish purposes or ambitions, or to lend its powerful influence to those ideas or remedies which are either untrue or fraudulent, he would find himself without a constituency and the medical profession turning to some other journal for enlightenment and medical literature. It is this law of competition which forces men in all departments and activities of life to seek to render honest and efficient service, and it is precisely this competition which the official medical journal would not have, and this lack, as I have pointed out, would become a great menace to medical journalism.

Again, if we may be allowed to adopt the standard set by mankind's wisest spirit, and judge the tree by the fruits thereof, I make the unhesitating claim that the wisdom of the system of privately edited journalism is established beyond all question of cavil. He would be a bold man, indeed, who would dare to give aught but praise to the great journals of Europe and America that through the centuries have won to honorable leadership in the world of the medical press and to places of power and influence in all the journalism of the world. The reading of their names sounds like an honor roll: I have in mind the London *Lancet*, the *Edinburgh Medical Journal*, the *Glasgow Medical*

Journal, the *Dublin Journal of Medical Science*, the *London Medical Times*, the *Liverpool Medico-Chirurgical Journal*, and in our own country the *Medical Record*, the *New York Medical Journal*, the *American Journal of the Medical Sciences*, and others.

They have not been backed by official organizations. They won their places of distinction by excellence and efficiency, and as long as there is a medical profession, so long will honorable mention be given to these journals and their editors. Judging, then, the tree by its fruit, are we not abundantly justified in claiming for the tree, the privately controlled medical journals, not only strength and golden fruit, but a green immortality?

I am well aware that this debate really centers itself in the question of the censorship of advertisements. It is very boldly claimed by those who favor official medical journals that it would thus be possible for the medical profession most easily to censor the advertising columns and to defend the profession and the public from medicines and prescriptions that are novel, untried and dangerous. In point of fact, we all know that this is the storm center of the discussion with reference to the medical press. Now, just what is the truth in reference to this question? In discussing it, let us try to rid ourselves, as far as possible, of all prejudgment, self-interest or desire save for the good of our ancient and honorable work. Let me say that the nation-wide movement for pure advertising that has become such a distinct characteristic of present-day journalism began in, and was fought most energetically by privately owned, weekly and monthly medical periodicals. I cannot find that a single political, official organ raised its voice in favor of the war against quack advertising and impure foods until the fight had, practically, been won by the independent journals. This fact alone should close the mouth of those who contend that a free, independent journal of any kind is incapable of purifying its advertising columns.

In the second place, the most powerful incentive to the medical journal to defend the public and the profession from unsafe and untried remedies is its dependence on the respect and good will of the men of the medical profession. It has no other support. It cannot hope to gain subscriptions by mere official standing. It is compelled to appeal to the sane, righteous judgment of the highly trained physicians and surgeons who form its constituency. And I venture to make the statement that there is not a journal represented here so powerful or so rich that it could continue to exist if it dared to sell its advertising space merely to the highest bidder. If the official organ is censored by the central Council on Pharmacy and Chemistry, the independent journal is censored by the wide medical profession. And, who is the best judge after all, of the therapeutic value of medicine: a board of expert chemists, or a trained practicing physician or surgeon? I think there can be but one answer to this question. The methods of the Council on Pharmacy and Chemistry of the American Medical Association have accomplished a great deal of good, and, no doubt, they will continue to accomplish good. There are many reasons, however, for intelligent physicians, physicians whose integrity is beyond reproach, whose training and judgment are unquestioned, to conclude, after deliberation, experience and investigation, that many proprietary remedies of unquestionable value have been condemned by the Council. We indulge in discussions in every other interest of life, in every other department of our science, in every other branch of our professional work, and why is it amiss for us to differ with the opinion of the members of this great council on pharmacy? Why should not the members of this great association discuss every phase of our professional work to the end that our society may promote, with utmost fidelity, this vital function? In the matter of advertising, the members of this association follow the practice and high precedents of all the great English and Oriental medical journals. We have tried to imitate their work, their policies and the methods of the administration of their great men.

We have always been, and are now, in perfect accord with them in every honest and useful way. And the association of men of such distinguished spirit is, I boldly claim, the best censorship, not only on advertising but also on every other policy of our journals that could be obtained. A member of this association may not be censored by the Council on Pharmacy and Chemistry of the American Medical Association, but his work is censored by the great and noble men in whose company he labors and to whose association he belongs. He would do nothing that would lower the high standard that has been set by the best of English and American journals. And I, for one, am quite convinced that this is the most purifying and restraining process to which editors can be subjected. Just one other word on this point: I solemnly warn the medical profession against putting into the hands of a few men, however good or however distinguished they may be, the power that must, necessarily, be in the hands of an official council on pharmacy and chemistry. In saying this, I reflect on no person. So far as I know, there is no present isolated or specific cause for complaint. Still, here is a danger we should acknowledge, watch and fear.

Again, I dare to warn the medical profession against a bureaucracy that would make possible in the future a condition that might bring shame to our whole profession. There are instances in history that might well cause us to think deeply at this point. Military boards that have had in their hands the passing on the supplies of ammunition on which their nation depended have sometimes been known to be untrue to their trust and to be influenced in their purchases and in their selection of munitions of war by motives that did not spring from patriotism. Such is the danger of putting too great power in the hands of too small a committee of men. Again, reasserting that this is in no way understood to be a reflection on any man or men in the present organization, I call the profession's attention to this element of danger that might arise in the years to come.

If the freedom of the press has been a thing of value to the world, if it has been worth the price that mankind has paid, then the freedom of the medical press is, perhaps, the most valuable element in such independence, for precisely the reason that the medical press carries more of the real weal or woe of mankind than any other present-day agent of publicity. You will, no doubt, agree with me in expressing the sentiment that the freedom of all other newspapers and periodicals, of every kind and name, could be lost with less evil effect on mankind than that which would follow the destruction of the freedom of the medical press.

That we may know the value of our freedom, let us think a moment of the vital nature of our work. We form a forum for the open discussion of those questions which vitally affect the physical weal of man, and it is through this discussion that truth is established. The reason for the great value of discussion is not far to seek. The view, the theory or the investigation of an individual or a minor group of men is liable to many errors, arising from their inability to investigate all conditions from every angle and from every point of view. It is only when the subject is open for discussion through the medical press and the world-wide profession, and the powerful and acute criticisms of the learned and scientific men are brought to bear on it, that truth is finally established. Our Council on Pharmacy and Chemistry is not approachable. Its members are as secluded as the pope of Rome. Do you think for a minute that they would discuss their opinions with you? We cannot meet for discussion except rarely and in small groups in medical associations, but in the medical press a platform is furnished for the expression of opinions of the universal brotherhood of physicians and surgeons. Too great an emphasis cannot be laid, therefore, on the value of our great brotherhood of medicine, and of the medical press. To hush its voice or to hamper its freedom would be all but a crime, to all men and to all time.

Again, the medical journal furnishes an instrument for the swift distribution of knowledge, which is essential to the progress not merely of our beloved profession but also of the physical welfare of the world. Before the day of medical publications, discoveries reached the individual practitioner through a very long and slow channel. He rarely received help that was not given to him by his medical faculty. But the modern medical publication gives wings to truth. In a few short weeks a valuable idea or discovery of a gifted scholar, or an operator in his laboratory, in his hospital, in his operating room, or by the bedside, is laid at the feet of the practitioner far out on the firing line of our profession, and weary thousands are not compelled to wait in suffering and in the shadow of death until a new generation of physicians shall bring them the remedy which the modern scholar and the operator have perfected.

The medical journal also forms a process of what I have termed, previously, intellectual confluence. By this term I mean a bringing together of all the thoughts, of all the ideas, of all the practices, and all the discoveries of all the physicians into a central reservoir of knowledge from which flows back through the journal to the whole profession that knowledge corrected, validated and certain. We cannot overstress this function of the medical journal. Through it drains into this reservoir the healing waters of medical knowledge from all the world, and sends forth those waters circulating even through small and isolated communities to bless mankind.

Let me speak of another of the vital features of our work. There is always a knowledge which has not yet found its way into books. It is this knowledge of today which will be found in the textbooks of tomorrow. You will not find the last word of pragmatism in the written works of the great Professor James, who coined the term. The world of thinking men has made valuable additions to his great philosophy, and those additions will not be published, perhaps, for a generation. You will not find the last word in law in the written textbooks of the lawyers, but in today's thinking of the men who will write the books of tomorrow. It is so in the world of theology, of medicine, and it is also true in the world of sciences. Like the moisture in the air that has not yet condensed into the healing rain, so is there knowledge in the air, so to speak, that is not condensed into books. The medical journal is precisely the expression of that knowledge, and the reader of its pages will find those things that will fill the textbooks of the next few years. We, therefore, in a sense, furnish to the world the advanced galley sheets of the books that are yet to be published. These first statements, or truths, will become a part of the teaching of our medical colleges in a decade.

We are the prophets of our profession. Pardon an illustration: I stood once in a valley from which the shadow of night had not yet flown. It was morning twilight. Far exalted in the heavens the white brow of Mount Everest had caught the first rays of the rising sun and reflected them through the night in the valley below. So the medical journal catches the first light of a new truth and becomes, in a way, a prophet or a searchlight of the oncoming day.

I need not mention the valuable place which we fill in making permanent the records of all medical facts, discussions and discoveries. When we are dust and our work is done, in the dusty files of our journals mankind will possess for all time the deathless record of the evolution of medical science. What is there written cannot be lost, but will furnish forevermore the material with which research and medical history can work. This function of the medical journal is a very sacred one. Sometimes we may not quite appreciate its greatness, its value or its advantage. All literature is, in a sense, the preservation of the thoughts of all men for the use of every man. Libraries are the conserved minds of the great poets, painters and prophets of the earth. It is through the process of publication that we are able to think the thoughts of Socrates, paint with Rubens, sing with Wagner, build empires with Richelieu and become Americans with Washington. Such is also the function of our journals, to gather and to preserve for all time the thoughts, discoveries and ideas of the master seers and builders in the medical profession.

Contemplating the greatness of our work and the greater dependence of the world on the perpetuity and excellence of our contribution to mankind, I say that we should pay any price to prevent the hampering or the limitation of the freedom of the medical press. Lose every other freedom first. And to this contest for freedom we have a right to bring all the enthusiasm and the sense of consecration that have characterized the men of other ages who have sought to win the largest liberties for the human race. With this purpose we will work, to this ideal we will hold and those lofty principles we will keep in mind, feeling confident that it is a battle in which we must win at last.

In conclusion, suffer a personal word. I have spoken in deep seriousness. Only after long deliberation and consultation could I gain my own consent to give open expression to my fears. I beg you to believe that in so doing I am actuated neither by personal ambition nor the possibility of material reward. With your extreme indulgence I will dare to be personal enough to say that I have reached those years when the work of my hands is established. Changes cannot easily affect that work now. The contest of the future we who are older must leave to younger men. And conscious that I am, in a sense, voicing an official valedictory, speaking not for myself but for the whole brotherhood of physicians and surgeons, not for my good but for the good of all the generations yet unborn, not for my own little life but for the limitless life of mankind, I shall urge you to preserve in its purity the right of open and free expression of medical opinion, and hand on to the generations yet to be the fine and high traditions of our profession, which have been given to us by the fathers.

DOUBLE FEMORAL HERNIA IN A MAN

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W. L., colored soldier, aged 31, eight years since in the United States Army, and at present a cook in the Quartermaster Corps, about eighteen months before coming under observation noted a small swelling in the left groin which gave him some pain. The swelling was not constant, and he noted that by applying pressure it could be made to disappear. As the swelling persisted over a period of months, gradually showing a tendency to become larger, and as the attacks of pain became more marked, he reported at sick call for treatment, the diagnosis of femoral hernia was made, and the soldier was admitted to the hospital for operation. This consisted in high ligation of the sac, suture of the stump to the abdominal wall, suture of the pectineal fascia to Poupart's ligament, and closure of the skin. The patient made an uneventful recovery.

During the first week that he was permitted to be up and about, he reported that he had felt a sudden pain in the abdomen, similar in character to that preceding each appearance of the hernia in the left groin. He immediately investigated the site and, failing to find anything in this region, turned to the right groin, where he noted a swelling very much like the former one on the opposite side, which disappeared on his lying down. These facts were reported to the ward surgeon, and the patient was advised on the recurrence of this tumor to report immediately to the first medical officer available. The next afternoon he reported to the medical officer of the day, who identified the tumor as a femoral hernia. On being told that another operation was necessary, he asked if an opening in the abdominal wall at the site of the umbilicus could not be closed at the same time. He stated that this defect in the abdominal wall had been present since childhood, and that while nothing had ever come through it, it pained him considerably when on long hikes. Examination disclosed a defect in the abdominal wall at the site of the umbilicus sufficiently large to admit the tip of the thumb readily, with no evidence of any protrusion of abdominal contents. At operation no sac was found at the umbilical opening, which was closed by overlapping the rectus sheath, and the femoral hernia was treated as in the first operation. The patient again made an uneventful recovery, and at present is apparently cured.

The comparative rarity of this condition is believed sufficient justification for the report of this case.

The Route of Investigation.—So much yet remains to be done in the field of chemical pathology that we are sometimes inclined to disparage past achievements. But these are not inconsiderable. In edema, concretions, diabetes and other conditions of acidosis, pathological variations in metabolism, in fever, and in numerous other directions substantial gains have been recorded. Uric acid has been found not guilty of most of the offenses charged in the earlier indictments, and part of the responsibility for gout must be borne by as complete a chemical abstraction as tautomerism. But, by all odds, the greatest progress in the field of pathology is the widening recognition that in the future the important advances must be made by the chemical rather than by the histological route.—L. J. Desha, *Science*, September, 1916.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 549)

ACUTE CONGESTION OF THE KIDNEYS

Circulatory disturbances frequently occur in the kidneys. With every acute infection, with every high rise of temperature, with every extreme chilling of the body, and with every pathologic chill, the kidneys become more or less acutely congested. Chilling of the body will increase the amount of urine passed by raising the general arterial tension, and, if this amount is large, it will be of low specific gravity. Lowering of the general arterial tension, especially the surface tension, will diminish the amount of urine passed, and usually raises its specific gravity. During the high fever of all acute illnesses the amount of urine is generally diminished; it is usually concentrated and of high specific gravity, and urates and phosphates may be deposited on standing. It may contain albumin and hyaline casts. Lumbar backache is associated with the first stage of most acute infections, doubtless owing to kidney congestion. There are occasional cases of hematuria without special local pathologic condition.

During the increased metabolism of high fever, the kidneys must do an additional amount of work to eliminate the increased waste products, as in a disease accompanied by high fever, much perspiration, or diarrhea, the amount of water excreted by the kidneys is diminished, thus requiring a greater effort in the excretion of salts. Therefore it is a physiologic necessity (unless some circulatory or stomach affection prevents) to give the patient a liberal amount of water during all feverish processes. If water cannot be retained by the stomach, it should be introduced into the colon.

If the skin is perspiring normally, the disturbance of the kidneys is less than when the secretion from the skin is abnormal; if the skin is dry or inflamed, as in scarlet fever, and is excreting little or no water, there is a strain on the kidneys. When the skin is affected by scarlet fever, erysipelas, large burns or other infections that interfere with its secretions, kidney irritation is a concomitant factor. When the skin is covered with perspiration, particularly if it is cold and clammy and if there is depressed circulation or shock, kidney excretion is generally diminished, and no treatment that does not improve the circulation and raise the blood pressure will be efficacious.

When the patient is suffering with edema or a more general dropsy, less water should be imbibed, and the treatment should be that of circulatory failure or nephritis, according to the cause of the condition. If an enormous amount of liquid has been lost from the body, whether by profuse watery diarrhea, persistent vomiting, diabetes mellitus, diabetes insipidus, or severe hemorrhage, water must be introduced into the tissues and circulation in the manner most effective for the preservation of life.

Ordinarily these acute congestions of the kidneys quickly disappear, and the kidneys again function in a normal manner. However, the cause of congestion may be greatly prolonged, as is the case in an eruptive fever with serious inflammation of the skin, such as scarlet fever. The irritation may then be prolonged until acute nephritis results, as the germ or the toxin of the germ of scarlet fever may be an added irritant to the weakened kidneys. In many acute general dis-cases, such as influenza and tonsillitis, the fever is short-lived and the acute congestion of the kidneys soon disappears. In more chronic infections, such as typhoid fever, the onset of the disease is often accompanied by a high fever; however, the temperature soon falls, and the slight kidney congestion apparently disappears, so that the only treatment necessary is to give the patient plenty of water.

Acute congestion of the kidneys may be caused by many drugs, such as the irritant diuretics, mercury, arsenic, potassium chlorate and antimony. Many coal-tar products of the phenol type, and synthetic drugs of the sulphonal type may cause irritation and even slight congestion of the kidneys. Acute nephritis may result from extreme intoxication produced by some of the more irritant poisons; kidney congestion may follow absorption of bacterial poisons from the intestine.

The symptoms of kidney congestion are backache and a frequent desire to urinate, while the small amount of urine passed is usually concentrated, with or without albumin, cylindroids, hyaline casts, and occasionally granular casts. Of course, many serious conditions of the kidneys do not cause backache, and furthermore, many lumbar pains do not have any relation to kidney disturbances; but it is believed that the lumbar myalgias associated with the beginning of acute infections, associated with signs of kidney disurbances, are due to kidney congestion.

CHRONIC (PASSIVE) CONGESTION OF THE KIDNEY

This disease is caused by interference with the return circulation in the renal veins; in other words, by any cardiac insufficiency which causes a damming back of the blood in the inferior vena cava, or by any pressure in the abdomen that causes interference with the circulation in the renal arteries or veins. This localized interference with the kidney circulation may be due to disturbances of the liver, ascites, tumors, pregnancy, lordosis or a loose kidney. Passive congestion of the kidneys may also be caused by lung conditions which hinder the return circulation through the inferior vena cava, such as pleurisy with effusion, emphysema, advanced tuberculosis, and tumors in the thorax. The urine in passive congestion is ordinarily concentrated, of a rather high specific gravity, tends to deposit urates on cooling, may contain albumin, and often shows blood corpuscles.

Chronic irritation of the kidneys often accompanies diseases of the liver, chronic diarrhea, or continued intestinal disturbance, such as chronic colitis. Chronic irritation long continued and chronic passive congestion will eventually cause kidney degeneration and chronic nephritis.

The only efficacious treatment for passive congestion of the kidneys is the removal of the cause. If this cannot be done, anything which will improve the circulation may, temporarily at least, improve the condition of the kidneys and increase the amount of normal urine.

ACUTE NEPHRITIS (ACUTE BRIGHT'S DISEASE)

Acute inflammation of the kidneys is usually caused by some acute infection, such as scarlet fever, diphtheria, measles, cerebrospinal meningitis, typhoid fever, smallpox, yellow fever, any septic infection, serious burns, erysipelas and acute general eczema, and by various poisons, especially the metallic poisons. Occasionally it begins as an inflammation without apparent previous cause, and in these cases it is supposedly due to cold; but cold alone does not ordinarily have such serious effect. The apparent onset may be sudden, edema, which generally develops in twenty-four hours, being the first symptom; or the inflammation may be preceded by a chill, followed by a slight fever. Nosebleed may occur, followed by hemorrhages into the retina, and if the amount of blood and albumin lost by the kidneys is great, anemia will rapidly follow. Almost similar symptoms indicate an acute exacerbation of chronic inflammation of the kidneys.

Inflammation of the kidneys is attended by the usual local symptoms accompanying any inflammation. There are an increased blood supply, swelling of the kidney, exudate into the tubules, and impaired kidney function; the urine diminishes and becomes concentrated, albumin, casts and blood appear, and frequently suppression is the eventual stage. Associated with these symptoms are headache, vomiting, and often diarrhea. There may be no fever, unless the acute nephritis is a complication of a condition that was already producing fever. There may be an increase or a decrease in the rate of the pulse; the former condition is the usual one. A certain amount of general edema occurs, its seriousness depending on the region of the exudate; edema of the lungs or edema of the brain may develop. The blood pressure generally rises, and with suppression of the urine, uremia with all its symptoms and dangers will probably result.

As stated above, when acute nephritis is a complication of some other infection or general condition, the symptoms will be modified by those of the causative disease; but when acute nephritis is the principal condition, if the patient is to recover, the kidneys begin to functionate, and a small amount of smoky, muddy urine, loaded with casts — hyaline, blood, epithelial and granular — is passed. Little by little the bulk of urine increases, the blood vanishes, the casts and albumin are diminished, edema disappears, and the patient slowly becomes convalescent. The excretion of chlorids, which have at first been almost absent from the urine, gradually increases as the edema lessens. The urine of acute nephritis is generally of a high specific gravity; however, the total amount may show a greatly diminished excretion of solids, while the blood retains nonprotein nitrogen.

If the nephritis is a complication of one of the exanthems, the skin may show the eruption of that particular disease; if the nephritis is not caused by an eruptive disease, it will probably be accompanied by urticaria, itching of the skin, and perhaps by a severe eczema. Forerunners of approaching uremia are eye-blurs, possibly retinal changes, severe headache, momentary losses of consciousness, muscle twitching and cramps, and eventually convulsions and coma.

When numerous cerebral symptoms announce the beginning of this disease the prognosis is very unfavorable and the patient may die within a few days; while in mild cases the inflammation may last several weeks. Whether the kidneys will again become entirely normal cannot be determined for several months, as small amounts of albumin and casts may persist in the urine for weeks and months, and yet the kidneys will finally return to a healthy condition.

The first intimation of an acute nephritis may be a general edema, with few other symptoms. Backache is not necessarily an accompanying symptom even in acute nephritis. This affection may also be superimposed on a chronic nephritis, due to some infection or to some carelessness in diet, or to exposure to cold

(To be continued)

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SATURDAY, FEBRUARY 24, 1917

OCCUPATIONAL DISEASES IN CHEMICAL TRADES

Almost every industrial environment furnishes certain dangers to health. These occupational hazards, usually caused by such conditions as darkness, dampness, bad ventilation, exposure to extremes of heat and cold, long hours, fatigue, or monotony of employment, are more or less common to many industries. There is an evident awakening of the public conscience in respect to the importance of the hitherto largely neglected problems which are presented by modern industrial hygiene. An international congress dealing with the subject of industrial diseases was held in Brussels in 1910 and was attended by more than 600 delegates from various quarters of the globe. Societies and commissions are being organized to undertake the investigation of the questions at stake. Governmental agencies have been stirred up to the desirability of securing more knowledge in respect to the effects of industrial life on the health of a large part of our population and of devising more adequate methods of remedying known defects.

Certain factors have served, of late, to emphasize more effectively than ever before the paramount duty of the nation toward its factory workers. The widespread introduction of workingmen's compensation laws has made it desirable and sometimes necessary to determine the distinction between disease from occupation and injury from accident. Some maladies are clearly traceable as resulting from occupational causes; but in many cases a fair decision as to the responsibility for bodily harm has been made only with difficulty, owing to the prevailing lack of acceptable information of a scientific or statistical character. The projected plans for health insurance on a large scale furnish an added reason for devoting attention to the problems of occupational hazard.

The chemical industries, in particular, are in need of consideration with respect to their occupational diseases. They involve certain specific hazards of a peculiarly serious nature; and the enormous growth of chemical manufacturing in the United States since the beginning of the European war has only added to the need for activity in this field of industrial hygiene, as pointed out in the symposium on occupational diseases in chemical trades before the American Chemical Society a few months ago.[1] The specific hazards in the chemical industry have been summarized by Dr. Schereschewsky of the U. S. Public Health Service as consisting of effects on the body by irritating or poisonous dusts, fumes and gases. Not long ago, eighty-two substances were included in a list of industrial poisons,[2] and the actual number of menacing compounds is unquestionably decidedly larger.

Among the poisonous fumes and gases, some are primarily of an irritating character; but many of these are far more dangerous than was believed a few years ago. After stopping the inhalation of such gases, there may come a prompt relief from the sense of suffocation and an apparent recovery; in a few hours, however, symptoms of severe and fatal illness ensue. In addition to the more purely irritating gases which attack, above all, the mucous membranes of the respiratory tract, and the effects of which have incidentally been illustrated over and over in the present war, there are the so-called toxic vapors, formed by mercury, lead and certain arsenical compounds. Carbon monoxid, hydrocyanic acid gas, hydrogen sulphid, and the volatile coal tar derivatives also have prominence in the group of fumes and gases. It has been stated that anilin probably causes more industrial poisoning than any other chemical compound with the exception of lead. Many of the coal tar derivatives acquire an added danger from the fact that they may be absorbed not only by inhalation but also through the unbroken skin.

The manufacture of explosives has brought an unexpected share of dangers, aside from accidents such as explosions or burns. Dr. Alice Hamilton[3] of the U. S. Department of Labor has already encountered more than thirty poisonous substances which may play a part in the chemical hazards of the munitions industry. Besides the fumes of nitrogen oxids, of chlorin gas and of sulphur dioxid, there are benzene and toluene and their many derivatives, the nitrobenzenes and nitrotoluenes, phenol and sodium phenylate, the nitrophenols, ammonium picrate, anilin, diphenylamin, dimethylanilin and tetranitromethylanilin. More familiar substances also enter into this manufacture: sulphuric ether, ethyl alcohol, methyl alcohol, ethyl nitrite and amyl acetate. In the making of detonators we find mercury, mercuric nitrate and fulminate of mercury. The new poison, tetrachlorethane, used in the varnishing of aeroplanes, has already been referred to in The Journal.[4] This substance, which had given no trouble at all in 1913, produced, in 1914, twenty-three cases of poisoning in the British factories with four deaths.

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[1] Symposium on Occupational Diseases in Chemical Trades, Jour. Indust. and Engin. Chem., 1916, 8, 1054.

[2] Sommerfeld, T., and Fischer, R.: Bull. 100, Dept. of Commerce and Labor, Bureau of Labor, May, 1912.

[3] Hamilton, Alice: Dangers Other Than Accidents in the Manufacture of Explosives, Jour. Indust. and Engin. Chem., 1916, 8, 1064.

[4] Poisoning by Tetrachlorethane, Miscellany, The Journal A. M. A., Feb. 27, 1915, p. 766. Tetrachlorethane, Current Comment, Oct. 30, 1915, p. 1561.

This hasty review may suffice to indicate the seriousness of the menace to the health of our chemical workmen. The causes of possible distress are so diverse in character, mode of action and entrance into the organism that no simple or single rule of preventive hygiene will suffice to cover the cases. Manufacturing interests have begun to realize that removal of unnecessary risks to life and health tends to increase efficiency and economy of production. But occupational hazards must be combated for humanitarian as well as purely selfish reasons. This does not mean that American chemical manufacturers are indifferent or entirely inactive in this matter. Their initiative, which is largely local and personal, must be supplemented.

"THE FREEDOM OF THE MEDICAL PRESS"

Elsewhere in this issue we publish an address delivered some time ago by Dr. Edward C. Register, editor of the *Charlotte Medical Journal.* Some of our readers may wonder why such an article was accepted for The Journal. It was accepted and is being published because it plausibly presents a bad cause, a cause whose principles The Journal has criticized in the past and continues to criticize. The article was a presidential address before, and enthusiastically received by, an organization practically kept up by the privately owned medical journals. It presumably represents the views of the majority of the members of that organization. It was accepted with the distinct understanding that it would be discussed editorially in the same issue in which it appeared. Nothing said is to be taken as a personal criticism of its author. Our comments are concerned with Dr. Register only as he happens to be the editor and publisher of the *Charlotte Medical Journal,* a publication which The Journal has criticized more than once.

"The Freedom of the Medical Press" is ostensibly a defense of the privately owned medical journal and a warning against the supposititious dangers of autocracy or bureaucracy in the medical profession due to organization. Actually, it may be regarded as a plea for nostrum-controlled, in contradistinction to physician-controlled, medical journalism. It "views with alarm" what its author considers a menace to the freedom of the medical press, viz., the growth of official medical journalism. With every desire to avoid *argumentum ad hominem,* it is essential to a correct perspective that attention be called to certain facts. We believe that it is impossible for the editor and publisher of such a journal as the *Charlotte Medical Journal* to view the subject of medical journalism from the broad standpoint of the best interests of the medical profession and the science of medicine, because, as an examination of the advertising pages of the *Charlotte Medical Journal* will show, that publication has for years been supported more largely by the nostrum interests than by the medical profession. "Sal Hepatica," "Angier's Emulsion," "Campho-Phenique," "Pluto," "Pond's Extract," "Sanmetto," "Hayden's Viburnum Compound," "Tongaline," "Cactina Pillets," — these and many, many other products of a similar nature, which have nothing to commend them either from a standpoint of scientific medicine or from the simpler problem of honesty to one's patients, are advertised in the *Charlotte Medical Journal.* It may be inferred that on the broad question of conducting a medical journal, Dr. Register's views can but be warped by the sponsorship he has assumed in accepting advertisements of such products for his publication.

"The Freedom of the Medical Press" voices at the outset the fear that the American Medical Association has become and is, in effect, a "Trust." This self-conjured bogy has long been used by those interests that have opposed organized medicine and whose activities are notoriously inimical to the public health. It is not usual, though, to find intelligent physicians seriously putting forward a charge that is obviously ridiculous and fundamentally false.

> "Even now, our great central association [the American Medical Association] and our great medical association journal [The Journal] dictate the policies of every state medical journal and possibly two thirds of the policies of every state medical society."

This statement will seem humorous to those who are familiar with most of the official organs of the state societies. In the nature of the case, however, the average physician sees but few of such journals; probably not more than one, that of his own society. The facts are that of all responsible medical journals the state journals have been and are the most severely critical of the Association and The Journal.

> ". . . I will declare it as my belief that the freedom of the medical press is greatly hampered when an editor must depend for his election, or his reelection, on a majority vote of the medical association. . . ."

Certainly a far cry from the charge of bureaucracy and autocratic power! In one breath the organization journal is said to endanger the freedom of the medical press because the power is too centralized; in the next breath the freedom of the medical press is threatened when the editor's position depends upon the will of the majority!

> "Again, an officially owned journal has a life that is not dependent on the value of its product. It is officially supported and can exist independent of popular approval or disapproval. . . . This is precisely why it is possible to charge 3 or 4 dollars for a journal worth about 80 cents.

If there is one fact connected with medical journalism that has been demonstrated beyond cavil it is that the journals of the various organizations can not and do not exist independent of the approval or disapproval of those organizations. So far as organization journals are concerned, we know of no case, and none is specified, in which the profession is paying "three or four dollars for a journal worth about eighty cents." But supposing, for the sake of argument, that there were such cases, The Journal would contend that it would be better for the public, for the honor of our profession and for the science of medicine, to say nothing of the intellectual honesty of physicians, to pay four dollars for a medical journal worth only eighty cents, but free from the taint of nostrum domination and influence, than to get for eighty cents a journal costing the publisher four dollars, the other three dollars and twenty cents necessary to its maintenance having been paid by the nostrum interests.

> "The independent medical journal must obtain a market by force of merit, only."

Yes, by force of merit of a kind — merit as defined by nostrum advertisers. The great majority of so-called independent medical journals today are sold to the profession at a cost far below that of actual production. Obviously, the advertisers and not the subscribers are the controlling element in the production of such journals. It is not strange, then, that in such cases the editor jumps to the crack of the advertiser's whip. To call such medical journals "independent" is to play tricks with the English language. The only "force of merit" that such journals need to "obtain a market" is the questionable merit of suave subserviency to those that support it — the advertisers!

> "The editor [of the "independent" journal] can go about his task unafraid of all things save his own inefficiency, and can be true to his own ideals without a continually haunting fear of incurring the displeasure of some powerful clique and losing his position, through the failure to do the bidding of aught save the truth."

The "unafraidness" of most of the editors of so-called independent medical journals is really a contempt for the wishes and opinions of the medical profession and a deadly dread of incurring the displeasure of the advertiser. How many so-called independent medical journals will discuss, without fear or favor, problems that may involve products which they advertise? They may be counted on the fingers of one hand! Not long ago the "unafraid" editor of one "independent" medical journal published a tabulated list of nostrums which the government had declared false and fraudulent, overlooking the fact that in the same issue of his journal he was carrying a half-page advertisement of one of the nostrums listed. He demonstrated his "unafraidness" by publishing in the next issue of his journal an apology — not to the medical profession, but to the advertiser of the nostrum in question! "Whose bread I eat, his song I sing!"

> "Let us turn now to consider those elements of the privately owned journals which seem to offer the best guarantee for freedom and efficiency in the medical press. In the first place, its financial and professional success depend wholly on its ability to meet the need of the profession. Its excellence and its real scientific value to the medical world are its only assets. It has no artificial subscription list. No physician is allowed to purchase it, and its management is forced to give an adequate return for its subscription price and to gain subscribers through its ability to serve. To put the matter squarely, it must win its life through service, and service not only to the whole profession but also to mankind."

So the "only assets" of the so-called independent medical journal are its "excellence and its real scientific value to the medical world"? This sounds well and falls trippingly from the tongue. When, however, one attempts to appraise the "scientific value" of such publications as the *Medical Standard* — mouthpiece of the proprietary interests — and the "excellence" of the *Medical Brief,* one realizes that such a panegyric is as sounding brass and a tinkling cymbal.

Further, we are asked to believe that the "independent" medical journal has "no artificial subscription list" and it is "forced to give an adequate return for its subscription price and to gain subscribers through its ability to serve." Yet, we have in our files letters written on the stationery of the *Charlotte Medical Journal,* signed by its editor, that were sent to physicians in different parts of the country, reading in part as follows:

> "I appreciate very much your style of writing and, if you will pardon me, I believe I will make you this proposition: If you will send me four typewritten editorials of about five hundred words each, to be used unsigned, I will send you the *Charlotte Medical Journal* for four years."

It will be remembered that The Journal of October 11, 1913, published some correspondence showing another method of "subscription-boosting" on the part of this same "independent" journal. In this case the letter, written to the physician, read in part:

> "If you will send me an article for the journal I will be glad to publish same and will place your name on my complimentary mailing list."

Not that these methods are peculiar to the *Charlotte Medical Journal.* By no means; they are common among "privately owned journals." In view of these facts it is impossible to take seriously the claim that the independent medical journal has "no artificial subscription list." Incidentally, what is the scientific value of a journal that offers to accept for publication articles before these are written and in obvious ignorance of their scientific value?

> "The privately owned medical journal is without the power to oppress."

Literally, yes; substantially, no. The worst tyranny is that which, under a fair-seeming exterior, corrupts and demoralizes. The typical so-called independent medical journal may not oppress in the literal sense of the word — it debauches. In the history of modern medicine no one thing, not even the low-grade, privately owned medical college, has done so much to debase the science of medicine, to subordinate therapeutics to proprietary interests and insidiously to lower the ethical and scientific standards of the profession, as the so-called independent medical journal.

> "Let me say that the nation-wide movement for pure advertising that has become such a distinct characteristic of present-day journalism began in, and was fought most energetically by privately owned, weekly and monthly medical periodicals. I cannot find that a single political, official organ raised its voice in favor of the war against quack advertising and impure foods until the fight had, practically, been won by the independent journals. This fact alone should close the mouth of those who contend that a free, independent journal of any kind is incapable of purifying its advertising columns."

One can only stand aghast at the frame of mind that permits the advancement of such a perversion of facts as argument. All that can be done is categorically to deny. If the history of American medical journalism proves anything, it demonstrates that the fight against the nostrum evil within the profession, that is, against misleading and fraudulent advertising in medical journals, was originated and carried forward wholly by the organized medical profession and by that part of the medical press that has been owned by the profession. There may have been isolated instances of privately owned medical journals making a pretense of exposing fraud in the proprietary medicine world with the motive of dragooning proprietary medicine manufacturers into advertising in such journals as the price of silence. It is but fair to say that the bulk of independent medical journals has not descended to this cowardly form of journalistic blackmail. Most of them have frankly and openly ignored the subject and have simply accepted such advertising largess as might come their way. It is true that some privately owned journals vociferate against quacks and "patent medicines"; neither of these are sources of advertising income! Against the more insidious nostrums that are offered to physicians under the guise of "proprietaries," no protest ever appears except in such medical journals as are owned and controlled by the medical profession.

Dr. Register hits the nail on the head when he says "I am well aware that this debate really centers itself in the question of censorship of advertisements." It does. And the journals that censor their advertisements with an eye single to the best interests of scientific medicine and the safety of the public are those whose continued existence does not depend on the financial support derived from nostrum advertising. As was suggested at the outset, the address on "The Freedom of the Medical Press" is a plea, not for freedom, but for license. Slowly but surely the medical profession is awakening to the fact that it has been, and still is, shamefully exploited by the proprietary medicine interests. Physicians are beginning to realize that the last stronghold of the nostrum interests is the advertising pages of the nostrum-controlled medical journal. Even this defense is crumbling. Medical men are learning that they cannot eat their cake and have it; they cannot expect medical journals that are supported by the nostrum interests to reflect professional ideals. The advertising standards of the typical privately owned medical journal are lower than the advertising standards of the better class lay magazines and of the more progressive newspapers. A publication is no cleaner than its dirtiest page.

It must be understood that THE JOURNAL is not opposed to independent medical journalism per se. It has in the past given, and will in the future give, specific credit to privately owned medical journals free from the domination of the nostrum interests. No greater inspiration for American medicine can be imagined than the establishment of fearless, high-class, privately owned medical journals with breadth of vision and a willingness to fight for principles. A weekly journal of this type is especially to be desired; none would welcome its advent more heartily than THE JOURNAL.

THE VENEREAL DISEASE PROBLEM—IV

Western Australia's Effort to Control the Venereal Diseases

The government of Western Australia by an amendment to its health act which went into effect, Dec. 8, 1915, established a public system for the diagnosis and treatment of the venereal diseases which is similar in outline to that established in England.[1] It is a measure based on the principle of controlling the venereal diseases by attending to their treatment until after they have passed the contagious stage. But it goes much farther in this direction than any other act thus far put into force. It does not simply offer facilities for treatment. It operates on the assumption that, for the good of the community, the person with venereal disease must submit to treatment until he is free from contagion, and it proposes to see to it that he does this.

On developing a venereal disease, a person, within three days, must go to a qualified practitioner for treatment. If he fails to seek treatment immediately he will be fined £20 or imprisoned. The physician must report to the health officials the age and the sex of the patient and a diagnosis of his condition, but not the name or address. The patient is to return for treatment at least once a month; penalty for failure, £20 or imprisonment. If he remains away from treatment for six weeks the physician, under heavy penalty, must notify the health authorities, giving this time the patient's name and address, and the health authorities must bring the patient into court and compel him to have treatment. The patient may change his physician, but on doing this he must disclose the name of his previous physician, who must be notified by the second physician that the patient is now under treatment by the latter. Treatment must be continued until the patient can obtain a satisfactory certificate of cure; penalty for failure, £50 or imprisonment. The health boards have authority to apprehend any person suspected of having a venereal disease which is not being treated, and to compel him to submit to examination by qualified physicians and to obtain a certificate of health, or to submit to treatment until such certificate can be obtained.

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[1] The Venereal Disease Problem—I, editorial, THE JOURNAL A. M. A., Feb. 3, 1917, p. 375; II, Recommendations of the Royal Commission on Venereal Diseases, Feb. 10, 1917, p. 463; III, The English Venereal Disease Act, Feb. 17, 1917, p. 550.

The measure takes ample precaution to prevent the treatment of venereal diseases by any person other than a qualified physician. It stops absolutely the advertising, the circulation or the sale of medicines intended for the venereal diseases, or of literature bearing in any way on their treatment. An important provision of the act looks to the protection of the secret of the patients by making private all legal procedures which have to do with the enforcement of the provisions of the act. Newspapers are prohibited under heavy penalties from publishing any reference to such legal proceedings. Every provision of the act is guarded by heavy penalties. It is evidently intended that it shall be enforced, and that infringement of it in any particular shall be an offense which nobody will commit lightly.

So far as we know, this Australian act is the most drastic which has been put into force against the venereal diseases. While drastic, it is as logical, as practical and as just an enactment as can be established against the venereal diseases, under the present state of public opinion. It makes every provision possible to protect the patient's secret. It does not take the step, urged in much less radical programs, of giving even anonymous notification in the case of venereal diseases. It requires the return of neither the patient's name nor his address. The whole proposition is that for the good of the community the venereal patient shall be treated by a person qualified to treat him until he is free from danger to others. He can choose his own physician, but the physician must see to it that treatment is kept up, and the physician will be held responsible for attending to this. As long as the patient continues treatment he will keep out of the hands of the board of health and the legal authorities. If he does not do this, he falls afoul of the law; he is reported to the health authorities, and they are empowered to see to it that he lives up to his public responsibility of not remaining a danger to the community.

Western Australia, before anybody else, has taken the two essential steps toward the solution of the venereal problem. First, it has recognized the importance of universal, prompt treatment of venereal diseases as the most efficient measure toward their control. Secondly, it has had the wisdom and—what is unique—the courage to make laws compelling venereal patients to have treatment. If as much intelligence and courage are used in enforcing the act as were used in its enactment, there can be no doubt that an attack in large part successful will be made on the venereal diseases in that province. Australia and New Zealand seem to resemble some of our Western states in their radicalism, which is a would-be offensive name for the intelligence and willingness to act logically on social problems. This law probably represents the highest degree of intelligence that has yet been applied by a state to the venereal problem. It is too much to hope now for such a law in this country, but probably before long the Western Australia law will provide a pattern for enactments elsewhere—perhaps in some of our states.

It may be repeated that the Western Australian act has the great virtue of compelling patients with venereal diseases to submit to treatment until they are no longer a menace to others. At the same time it is a law which has not the objections of notification. It protects the patient's secret, if he does his part and submits to treatment. Even if he does not do this, it protects his secret as far as possible by making all legal proceedings under the act private. But it wastes no great amount of sympathy on the miscreant who is indifferent to his duties in getting himself cured.

RECENT OBSERVATIONS ON TYPHUS FEVER

Naturally the occurrence of typhus fever on a large scale in some of the countries engaged in war has aroused much interest in the cause and prevention of this disease. Most physicians are familiar with the measures used for preventing typhus infection by destruction of the body louse. At this time attention is directed to observations bearing directly on the primary cause of typhus fever. Some time ago Plotz described a bacillus, *B. typhi-exanthematici,* which he cultivated from the blood of a patient with the mild form of typhus — Brill's disease — occurring in New York, and also from the blood of immigrants with typical epidemic typhus. Now the bacteriologic study of the blood has been extended to the disease as it occurs in the Balkans and Russia, as well as in Mexico, blood cultures on typhus patients in these countries in a large percentage of cases revealing the presence of *B. typhi-exanthematici.* In Mexico, Olitsky, Denzer and Husk[1] obtained the bacillus in most of the cases studied, the bacilli being most numerous in the early stages of the attack and in the most severe forms of the disease. They found the blood of the typhus patients whom they studied to be infectious for guinea-pigs, and recovered the bacillus from the spleen of guinea-pigs infected with typhus blood or by means of lice from typhus patients. They also assert that they have obtained the bacillus from lice from typhus patients; but when so isolated the bacillus is gram-negative, becoming, however, gram-positive on subculture. Baehr and Plotz,[2] who made the investigations in the Balkans and Russia, obtained cultures of the bacillus from the blood in nineteen of forty patients in Serbia and Bulgaria, while in Russia and Galicia, where the conditions were more favorable, the cultures were positive in nineteen of twenty-four cases. They were able to show that the bacillus is present in the blood during the entire course of the fever from the first day on, and that the more severe the disease the more marked the bacteremia. In two cases in which cultures were made during the initial chill, the blood contained enormous numbers of bacilli; in one case ninety-one colonies developed to each cubic centimeter of blood inoculated.

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[1] Olitsky, Denzer and Husk: Jour. Infect. Dis., 1917, **19,** 811.

[2] Baehr and Plotz: Jour. Infect. Dis., 1917, **19,** 201.

The results obtained so far from blood cultures show, then, that the bacillus described by Plotz appears to be present in the blood in the febrile period of typhus fever as it occurs in the United States (Brill's disease and epidemic typhus), Mexico, Serbia, Bulgaria, Austria and Russia, and certainly the intimate association of this bacillus with typhus fever would seem to be established clearly enough. It is a matter of regret, however, that, owing to the prevailing conditions in the countries in which the disease now is epidemic, it has not been possible to carry on still more extended investigations on this important bacillus, more particularly in the line of prophylactic inoculations, which, so far as the results at hand appear to indicate, may be of great value. The agglutinins for *B. typhi-exanthematici* first appear at about the time of the crisis and describe a typical immunity curve.

An exceedingly interesting development in the typhus work is the demonstration of Prowazek, Rocha-Lima,[3] and Toepfer and Schüssler[4] that lice which have bitten typhus patients in the febrile stages of the attack contain large numbers of peculiar minute bodies, especially in the epithelial cells of the digestive tract. In Giemsa preparations these bodies are reddish, short, elliptic and coccus-like, sometimes with polar staining. It may be recalled that Ricketts and Wilder also described rods with polar bodies in lice infected with typhus fever,[5] and Rocha-Lima has given these bodies the designation *Rickettsia prowazeki*. So far these bodies have been found only in lice which have been picked up from typhus fever patients or from their clothes or from other sources, and placed on typhus fever patients and allowed to bite them. Early in the attack there are only a few infected lice found on the typhus patient under natural conditions, but as the attack progresses the number increases and in the early stages of convalescence most of the lice found are said to contain the bodies. Experiments appear to show practically the same conditions; that is to say, early in the disease the lice must be left in contact with the patient longer before the bodies develop to any extent; but toward the ninth day or so, only a short time, even a single bite suffices. When convalescence has set in it is impossible to secure the development of the bodies by letting lice bite the patients. As stated, the bodies are absent in lice obtained from healthy persons and from persons suffering with diseases other than typhus fever; hence the presence of such bodies in a number of lice obtained in suspected cases of typhus fever is said to be sufficient to make the diagnosis of typhus.[6] Toepfer and Schüssler state that abortive cases of typhus fever give rise to a rich development of *Rickettsia* in lice. Lice containing them are infectious for guinea-pigs; that is to say, when guinea-pigs are injected with suspensions of crushed bodies of such lice, they develop the febrile reaction which is regarded as characteristic of typhus infection in guinea-pigs. Rocha-Lima was unable to obtain growths of the bodies in the mediums employed by Plotz to grow *B. typhi-exanthematici*, and he also found only a superficial similarity between the Plotz bacillus and *Rickettsia*, the bacillus being larger and gram-positive, whereas the bodies are gram-negative; but Baehr and Plotz appear to regard the bodies as identical with the bacillus, and Olitsky, Denzer and Husk report the successful isolation of the Plotz bacillus from typhus lice.

Nicolle is an investigator of typhus fever who holds that we are still ignorant of the actual cause of the disease. In his experimental work he employs what he calls typhus virus, by which is meant virulent emulsions of the spleen and other organs of typhus-infected guinea-pigs. His most recent work deals with the production of an antityphus serum.[7] The serum from typhus convalescents having been found to possess specific preventive properties, he assumed that the typhus virus would serve as antigen. Accordingly, asses were injected intravenously with emulsions of leukocytes of infected guinea-pigs, and then many times with emulsions of spleen. The serum was found to acquire antityphus properties, being preventive as well as curative in guinea-pigs, and the Tunisian investigators even claim that the serum has given favorable results in human typhus, the death rate in a series of serum-treated cases being much reduced as compared with the ordinary death rate. By means of suitable immunity tests, Nicolle shows that Algerian, Moroccan and Balkan typhus viruses appear to be identical.[8] These apparently significant results are not of necessity inconsistent with the view that the bacillus described by Plotz is the cause of typhus, as this bacillus has been found in the blood and organs of guinea-pigs infected with typhus and consequently may have been the actual agent of immunization. If that is the case, immunization with the bacillus itself should give the same or even better results. At all events it is clear enough that still further work will be required to settle all the questions as to the causation of typhus, even though great progress has been made.

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[3] Rocha-Lima: Deutsch. med. Wchnschr., 1916, **42**, 1353; München. med. Wchnschr., 1916, **63**, 1381.

[4] Toepfer and Schüssler: Deutsch. med. Wchnschr., 1916, **42**, 1157.

[5] Ricketts, H. T., and Wilder, R. M.: The Etiology of the Typhus Fever (Tabardillo) of Mexico City, The Journal A. M. A., April 23, 1910, p. 1373.

[6] Otto: Med. Klin., 1916, **12**, 1143.

[7] Nicolle and Blaizot: Ann. de l'Inst. Pasteur, 1916, **30**, 446.

[8] Nicolle: Arch. Pasteur Inst. of Tunis, 1916, **9**, 215.

Current Comment

SARGOL CONCERN FINED $30,000

On February 17, 1917, Wylie B. Jones and Herbert E. Woodward, the two men convicted of fraud in the exploitation of Sargol, were fined $30,000, Jones having to pay $20,000 and Woodward the balance. Both fines were paid and the defendants waived their right to appeal and agreed to have the Sargol Company go out of business. Thirty thousand dollars is not a large amount to be assessed against men who have defrauded the public of millions. The fact, however, that these individuals but narrowly escaped going to the federal penitentiary and were undoubtedly put to no small additional expense in attempting to defend their nefarious business will have a wholesomely deterrent effect on other mail-order medical fakers.

NUXATED IRON FOR THAT TIRED FEELING

Is there to be a Renaissance of the testimonial epoch? Ten or fifteen years ago the testimonial industry was at its height, especially as it is applied to medicinal products. Every "patent medicine," however quackish, was able to publish testimonials from persons whose position, if not their intelligence, should have made them hesitate to give such endorsements. Those were the days when "Peruna" published panegyrics from such notables as Admiral Schley, Rear-Admiral Hichborn, Julia Marlowe, etc., when the praises of "Duffy's Malt Whiskey" were declaimed by Sarah Bernhardt, the virtues of "Fahrney's Blood Vitalizer" sung by Schumann-Heink, and the attributes of "Electric Bitters" immortalized by Champ Clark. Those were the happy days of the "patent medicine" vendor. Neither should it be forgotten that the writing of testimonials for the so-called "ethical proprietaries" had become an ingrown habit with the medical profession. Then the light was turned on. Lay magazines exposed the fraud and viciousness of the "patent medicine" business, while The Journal demonstrated by numerous examples that a large proportion of the proprietary medicines sold for physicians' prescriptions were little, if any, better, than the "patent medicines." Gradually, testimonial writing became unpopular, at least among the intelligent portion of the population. Physicians virtually abandoned the practice, while among laymen it gradually became confined to the ignorant and credulous. Recently there have been indications that the habit is being reestablished. Hence, the question with which this comment begins. Our readers will remember that Mr. Jess Willard credits "Nuxated Iron"[1] for his victory over Mr. Jack Johnson, while Mr. Ty Cobb declares, in very black type, that this panacea is responsible for his "winning" qualities. Now comes the Hon. William E. Mason, former United States senator, now congressman-elect from Illinois, advising the people of the United States that "Nuxated Iron Should Be Made Known to Every Nervous, Run-down, Anemic Man, Woman and Child." This is the same Mr. Mason whose name appeared as "General Counsel" of the "International Institute for the Treatment of Tuberculosis" operated by the "rupture-dope-dyspepsia-consumption-curer," O. E. Miller. When The Journal called Mr. Mason's attention to the questionable company in which his name appeared he pleaded ignorance of the nature of the "Institute" and withdrew from it. Doubtless when his attention is called to the "Nuxated Iron" quackery, he will ask those who are responsible for the quarter-page advertisement now appearing in the newspapers to return his photograph and testimonial. Congressman Mason testifies that he had suffered greatly from "that horrible tired feeling." After reading the testimonial, those holding old-fashioned ideas of the dignity and intelligence that should characterize the House of Representatives will appreciate just what a "tired feeling" means.

A CLEVER RUSE IN DIETARY REFORM

Among the difficulties sometimes encountered in the administration of any health propaganda is the persistent demand of custom and habit for recognition in any plan of procedure adopted. There are some persons who are afflicted with a stubborn respect for usage which apparently prevents them from accepting anything new — not to say voluntarily adopting an innovation — in their life routine without a severe mental struggle. The time of meals, the mode of dress, the hours of work and innumerable other incidents of daily experience are looked on as permanently fixed. Any proposed violation of the traditional regimen is viewed almost as a sacrilege. Many of the wholesome and common foods of life have their "personal enemies based on dietetic prejudices which are largely imaginary." These must always be reckoned with by every reformer who hopes to win success for his plans. There is usually more than one way of routing an enemy. Sometimes the favorable mode of attack is a direct one; in other instances a circuitous approach may furnish an easier path to victory. An illustration of the application of the latter plan of campaign is the carefully studied luncheon service of a large American corporation. In its Cleveland factory a charge of 6 cents is made for a cup of coffee, because the corporation believes that coffee is not a healthy and nourishing beverage for its employees, at least for the young women; but certified, sweet milk, attractively served, is sold for 2 cents, or less than the wholesale price, because the employers believe that milk is preferable to coffee as a beverage. The same care is exercised in the preparation and service of the rest of the menu. Coaxing the appetite by the device of a bargain in foods is not an entirely novel scheme. Sometimes it is purposely planned by the dietitian; usually, however, it is the device of the purveyor. In the case just cited it may be urged by some that such insidious schemes are objectionable because milk is not well tolerated by every one. This contention is rapidly being abandoned. "Any one can take milk" is the sane comment of a recent writer.[1] "If a person tells me, 'I cannot take milk,' I always say, 'You can if you will take it in a certain way.' It is a question usually of flavoring it aright or of taking it like soup, with a spoon, with a bite of some carbohydrate substance, cracker or bread, between the sips. I do not think everybody must take milk, but I think everybody can."

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[1] The Journal A. M. A., Oct. 21, 1916, p. 1244; also, editorial comments, "Sporting Note," Oct. 28, 1916, p. 1309, and "Science Note," Nov. 4, 1916, p. 1376.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

FLORIDA

Personal.—Dr. Charles E. Terry, formerly health officer of Jacksonville, has gone to New York to assume charge of the health department of the *Delineator.*——Dr. Henry Hanson has been elected health officer of Jacksonville.

IDAHO

State Board Election.—The state board of health has elected Dr. William R. Hamilton, Weiser, president, and Dr. Edward T. Biwer, Boise, secretary.——Dr. Ellis Kackley, Soda Springs, has been appointed a member of the state board of health, succeeding Dr. Oscar B. Steely, Pocatello, resigned.

ILLINOIS

Society Joins Red Cross.—The Peoria Medical Society at its meeting, February 6, unanimously voted to join the Peoria Chapter of the American Red Cross.

Personal.—The house of Dr. James H. Oughton, Dwight, was destroyed by fire, February 11.——Dr. Karl F. Snyder has been elected president of the Freeport Club.

Paralysis Conference.—A conference of physicians under the auspices of the state board of health was held at St. John's Hospital, Springfield, February 20 to 23, to study the treatment of children suffering from infantile paralysis. A clinic was also held. This is the first of a series of clinics to be held in twenty-eight towns and cities in the state.

Epidemic Diseases.—On account of the prevalence of scarlet fever in Winchester, a proclamation has been issued suspending all public gatherings.——The public schools of Alexis have been closed on account of scarlet fever.——Smallpox has appeared in Belvidere, where eight cases have been reported. The moving picture shows and churches of the city have been closed.——February 3, Dr. Charles W. Miller, Peoria, discovered ten cases of smallpox in one family.

Chicago

Mrs. Ryerson Offers Summer Home.—The board of directors of the Children's Memorial Hospital voted to accept, February 12, the offer of Mrs. Arthur Ryerson of the use of her home during the summer for convalescent children.

Institute of Medicine.—At a meeting of the Institute of Medicine of Chicago, February 22, Dr. Horatio B. Williams of Columbia University, New York, delivered an illustrated address on "Electrocardiography and its Applications to Medicine."

New Base Hospital Unit.—A number of physicians headed by Drs. J. Rawson Pennington and Charles H. Parkes are organizing a base hospital unit with headquarters at the Sheridan Park Hospital. Dr. Clarence L. Wheaton has been selected as adjutant.

Army Medical Officers.—The Illinois Division of the Medical Reserve Corps has issued an appeal to recent graduates of medical schools who have had a hospital internship to consider entering the medical service of the army or navy. There are at present, or soon will be, 500 vacancies in the medical corps of the army and navy.

Personal.—Dr. Arthur F. Schuettler was held up and robbed of a watch, diamond pin, money and a case of surgical instruments near his home, February 17.——Dr. Harry C. Rolnick has returned after several months' duty in military hospitals on the Rhine and in Western Prussia and Bohemia.——Dr. and Mrs. E. Wyllys Andrews left for Florida, February 8.

Hospitals Buy Land.—Michael Reese Hospital has purchased, from the estate of William M. McClintock, property on Lake Park Avenue, 50 by 92 feet, adjoining the hospital, for $18,000.——The Beulah Home and Maternity Hospital has purchased property on North Clark Street, near Webster, 40 by 50 feet, for $14,000.

Ambulance Transfers to American Service.—Sixty-five students of the University of Chicago who have enrolled for service with the American Ambulance in Paris have transferred their service to the American Ambulance Corps which is being organized. The corps will be connected with one of the four base hospitals in Chicago, and will be under the charge of Dr. H. Wernicke Gentles.

Prevention of Infantile Paralysis.—The health officials, philanthropic workers, physicians and nurses of Chicago and its suburbs have organized an association for the prevention of infantile paralysis. Health Commissioner Robertson is president of the association; Mrs. Harlan Ward Cooley, vice chairman, and Dr. Willis O. Nance, secretary.

Deaths from Contagious Diseases. — According to the *Bulletin of the Chicago School of Sanitary Instruction,* Feb. 10, 1917, in 1916 there were only forty-nine cases of smallpox in the city, with no deaths. There were 8,732 cases of measles and 130 deaths; 8,681 cases of scarlet fever with 160 deaths, and 6,980 cases of diphtheria and 785 deaths. In January, 1917, there were 1,734 cases of scarlet fever with 68 deaths; 948 cases of diphtheria and 135 deaths, and 1,222 cases of measles with 22 deaths. In 1916 the death rate from measles almost equalled that of scarlet fever.

Tuberculosis Study.—A systematic course of lectures intended for those interested in tuberculosis problems will be given on Thursday evenings of March at the City Club of Chicago from 6:30 to 7:30 p. m., under the auspices of the Chicago Tuberculosis Institute. The class will be known as the Theodore B. Sachs Tuberculosis Study Class, and the following subjects will be considered:

March 1: "How the Visiting Nurse can Aid in the Discovery of Tuberculosis"; "Home Instruction by the Nurse," Edna M. Foley.

March 8: "Cook County Welfare Department and the Tuberculosis Problem," Mrs. Gertrude Howe Britton.

March 15: "What may Lead the Layman to Suspect Tuberculosis"; "The Return Sanatorium Patient"; "How to Deal with the Tuberculosis Carrier," Dr. Charles Segal.

March 22: "Crippled Children and Tuberculosis," Dr. Edwin W. Ryerson.

March 29: "The Results of the Tuberculosis Survey," Dr. Clarence L. Wheaton. "Incidental Problems of the Survey," Dr. John Ritter.

LOUISIANA

Clinic Dedicated.—The Corinne Casanas Free Clinic connected with the Presbyterian Hospital, New Orleans, was formally dedicated, January 16.

Medical Society Gives Concert.—A society event of New Orleans, January 27, was the concert given at the Athenaeum by the Orleans Parish Medical Society for the benefit of its building fund.

Mayo in New Orleans.—Dr. Charles H. Mayo, Rochester, Minn., delivered a lecture, January 20, in the theater of the Charity Hospital on "Cancerous Growths and Operation on Cancer of the Intestines."

Physician Found Guilty.—The Louisiana State Board of Medical Examiners reports that Dr. Emory W. Reeves, who had previously been refused a license to practice medicine, has been found guilty in the Federal Court of violating the Harrison Narcotic Law.

State Health Board Election.—The Louisiana State Board of Health has reelected Dr. Oscar Dowling, Shreveport, president, and has elected Dr. J. M. Mosely, Arcadia, vice president, and Dr. Merrick W. Swords, New Orleans, secretary. Dr. John H. Ellis, Kentwood, has been appointed registrar of vital statistics. Dr. Henry B. White, Gueydan, has been retained as medical inspector of the board, and Miss Agnes Morris has been appointed instructor in school hygiene.

Personal.—Dr. Frederick H. Parham, New Orleans, is reported to be ill with appendicitis in Touro Infirmary.——Dr. William M. Perkins, retired secretary of the state board of health, has been presented with a gold watch by his friends and associates on the board.——Dr. Charles A. Schilling, Abbeville, has been elected superintendent of the State Baptist Orphanage, Lake Charles.——Dr. William H. Robin has been reelected secretary of the New Orleans Board of Health,

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1. Cabot, R. C.: A Layman's Handbook of Medicine, 1916, p. 115.

Dr. Paul Gilpin, inspector of communicable diseases, and Dr. Abraham L. Metz, bacteriologist.

MARYLAND

Workers' Health Under State Care.—The state bureau of labor and statistics has taken up the investigation and inspection of factories and factory workers, with a view to checking occupational diseases.

Rest Room for Women at Hopkins.—A women students' rest room, dedicated to the late Mary Elizabeth Garrett, is being constructed just off the corridor of the main hospital building at the Johns Hopkins Hospital. The women medical students, the women alumnae and the women resident physicians planned and financed the project. The building will contain thirty-seven lockers and two dressing alcoves.

Alumni Provide for Annual Deficit.—The general alumni association and the alumni council of Johns Hopkins University have begun a campaign among the 4,000 graduates to raise half a million dollars, the income of which is to be used for the next three years to apply to the annual deficit of the university. The trustees and friends of the university have subscribed $70,000 a year for the three years, and the alumni have promised to raise $20,000, also a definite sum for laboratories, additional facilities for research work, dormitories and a gymnasium.

MASSACHUSETTS

New Medical Organization.—The Physicians Club of Worcester has been organized with Dr. Clarence F. Desmond as president and Dr. Max Baff as secretary.

New Hospital for Adams.—Mr. William B. Plunkett, a prominent cotton manufacturer of Adams, will erect and equip a hospital which he will present to the town of Adams.

New Officers Elected.—At the meeting of the Boston Society for Medical Improvement, January 29, Dr. Abner Post, Boston, was elected president, and Dr. George Clymer, Boston, secretary-treasurer of the society.

Japanese Physicians Visit Boston.—Drs. W. Ocacka, Y. Honda and Okada, members of the faculty of the Imperial University, Tokyo, Japan, were guests at Forsyth Day at the Dental Infirmary, Boston, January 20.

State Health Officers Meet.—At the annual meeting of the boards of health, held in Boston, January 25, under the presidency of Dr. Frank A. Woods, Holyoke, papers were read by Dr. Donald B. Armstrong, New York, on "The Framingham Health and Tuberculosis Demonstration," and by Dr. Thomas F. Harrington, on "Industrial Health." The following officers were elected: president, Dr. Francis X. Mahoney, Boston; vice presidents, Drs. John S. Hitchcock, Northampton, and William G. Kirseelbaum, New Bedford; secretary, Dr. Francis H. Stack, Boston, and treasurer, Dr. Francis G. Curtis, Newton.

Fellowship for Public Health Men.—Harvard Medical School, in cooperation with the Boston Dispensary, offers a fellowship to graduates in medicine who desire to pursue a course of study leading to the certificate of public health in the school for health officers, or to the degree of Doctor of Public Health in the department of preventive medicine and hygiene. Fellows are required to give half their time to the treatment and supervision of the sick in their homes, in a district of the city of Boston, and half their time to study or research at the Harvard Medical School. Appointments may be made for one or two years. The stipend is $750 per year. Applications stating previous experience, references, etc., should be made to Dr. Milton J. Rosenau, professor of preventive medicine and hygiene, Harvard Medical School, Boston.

Personal.—Dr. Morton Snow, Springfield, formerly of Chicago, was elected a medical director of the Massachusetts Mutual Life Insurance Company at the sixty-fifth annual meeting, February 6.——Dr. William T. Porter, Boston, has returned after several months on the western war front.——Dr. Henry S. Rowen has been elected a trustee of the Boston City Hospital, succeeding Dr. Francis J. Keany, deceased.——Dr. Howard A. Streeter, Marblehead, has been appointed district health officer for the Berkshire District, succeeding Dr. Stanley H. Osborn, who has been appointed epidemiologist.——Dr. William Howe Merrill, Lawrence, has been appointed a member of the board of trustees of the Danvers Hospital.——Dr. Herbert B. Howard, Boston, has been appointed a trustee of the Gardner State Colony.——Dr. William L. Richardson, Boston, has been elected a trustee of the Perkins Institution and School for the Blind, Boston.

MISSOURI

Tuberculosis.—The Jasper County Tuberculosis Sanatorium will be ready for occupancy, June 1.

Personal.—Dr. Hardy D. Havard, St. Louis, sailed for Europe for service with the British troops on the western war front.

Dinner to Lester Hall.—An anniversary dinner is to be given, March 10, at the Hotel Baltimore, Kansas City, under the official sanction of the Jackson County Medical Society and the Kansas City Medical Association, with the cooperation of the officials of the Missouri State Medical Association, in honor of Dr. C. Lester Hall, on the occasion of his completion of fifty years in the practice of medicine.

St. Louis

St. Louis Unit Defers Trip Abroad.—The St. Louis Unit of the American Physicians' Expedition Committee has indefinitely postponed its proposed trip to Germany, as the members considered that their first duty is to the United States.

Personal.—Dr. Hartwell N. Lyon, who has been seriously ill at the Barnes Hospital, is now reported to be out of danger.——Dr. Scott Heuer has returned after a term of service with the American Ambulance in Paris.——Dr. Fred T. Murphy delivered a lecture at the Washington University Medical School, February 6, on "The Methods of Treating Wounds," illustrated with stereopticon slides showing the character of wounds made on European battlefields.

MONTANA

Personal.—Dr. Carl F. Easton has resigned as city chemist of Butte, and has been succeeded by Mr. F. M. Harris.

Hospital Addition.—The addition to the Deaconess Hospital, Great Falls, which has been built at a cost of about $100,000, will be ready for occupancy next month.

NEW YORK

To Transfer Quarantine.—A concurrent resolution was adopted by the legislature, February 15, recommending the transfer of the New York Quarantine Station from the state to the federal government. The resolution calls on the New York members of Congress to support a measure appropriating $1,395,275 by July 1 to reimburse the state and take over the plant now utilized by the health officer of the port.

Personal.—Dr. Charles C. Sweet, Ossining, has been appointed temporarily to succeed Dr. Thomas J. Barry as physician and surgeon of Sing Sing. The attorney general has ruled that Dr. Barry's Tennessee license to practice medicine does not entitle him to practice medicine in the prison of this state.——Dr. Edward G. Whipple, medical director of the Rochester Public Health Association, has resigned.——Dr. Waldon E. Munz has been made assistant city bacteriologist of Rochester, succeeding Dr. William L. Culpepper, resigned to accept a position at the Rockefeller Institute.

New York City

Long Island College Hospital to Be Coeducational.—The Faculty of the Long Island College Hospital has voted to make the college coeducational.

New Hospital Open for Babies.—The new home of the St. Christopher Hospital for Babies, Brooklyn, has been opened for inspection. The building provides eighty-five beds, and has the full equipment of a modern hospital.

Investigate Illness Among Negroes.—On February 17, over 400 nurses of the department of health made a house to house visit in the colored districts of Manhattan for the purpose of gaining information which will aid in improving the health of colored people.

Denounce Health Insurance.—At a meeting of the Central Federated Union, February 16, James P. Holland, president of the State Federation of Labor, and Francis X. Sullivan, counsel of the organization, denounced the Mills Bill for health insurance.

Work of Babies' Welfare Association.—The annual report of the Babies' Welfare Association shows that more than 59,000 babies less than 2 years old were reached during the year 1916 by the milk stations of the association. The department of health served 48,302 of these, the diet kitchen 6,432, and the Straus milk stations 3,986. There are seventy-eight milk stations under the direction of the association.

Personal.—Major J. Richard Kevin, M. C., N. G., N. Y., assigned to the Twenty-Third Infantry, and Lieut. Edward H. Marsh, M. C., N. G., N. Y., assigned to the Fourteenth Infantry, have resigned.——A news item in The Journal, February 10, p. 470, is incorrect. Dr. Samuel M. Strong has been appointed president of the staff of the Flushing Hospital, and Dr. Charles B. Story is surgeon in chief of the institution.

Lectures on the Prevention of Disease.—The course of free lectures given under the auspices of the public health education committee of the Medical Society of the County of New York began, February 5, and will be given weekly until March 29. The subject on February 6 was "The Relation Between Diseased Teeth and General Body Infection." The subject on February 15 was "Dietetics." Other subjects announced are as follows:

SURVEY OF INFANTILE PARALYSIS

Wednesday, February 21, 8:15 p. m.:
"The Disease and Its Early Recognition," Genevieve Wilson, M.D.
"Treatment and After-Care," Henry W. Frauenthal, M.D.
"What the Recent Epidemic Has Taught Us," Haven Emerson, M.D.

NEW PRACTICAL METHODS IN CHILD HYGIENE

Thursday, March 1, 3:30 p. m.:
"How We Prevent Diphtheria," Anna I. von Sholly, M.D.
"Results Obtained in Experimental Hygiene," Miner C. Hill, M.D.
"Parental Care," Josephine Hemenway Kenyon, M.D.

NORTH CAROLINA

New District Officers.—At the annual meeting of the Third District Medical Society, at Wilmington, Dr. Tilton V. Moore, Acme, was elected president; Dr. Gabe H. Croom, Wilmington, vice president, and Dr. James B. Sidbury, Wilmington, secretary-treasurer (reelected).

Bennett Bill a Law.—The Bennett Bill has passed both houses of the legislature and is now a law. It constitutes the offering for sale, sale, or advertising of any remedy purporting to cure cancer, paralysis, consumption, diabetes, Bright's disease, "or any other disease for which no cure has been found," or "any mechanical device for the treatment of diseases when the North Carolina State Board of Health shall declare that such device is without value in the treatment of diseases," a misdemeanor, punishable by a fine not exceeding $100 for each offense. It is made the duty of registered pharmacists to report such sales to the State Board of Pharmacy on penalty of forfeiture of their pharmacy license.

OHIO

Barberton Asks Help.—The Barberton Board of Health has asked aid from the state board of health in fighting an epidemic of smallpox.

New Officers.—The Dayton Academy of Medicine has elected the following officers: president, Dr. Harry H. Hatcher; vice president, Dr. Howard V. Dutrow; secretary, Dr. Edgar L. Braunlin, and treasurer, Dr. John F. Fouts.

Proposed Substitute for State Board of Health.—A bill has been introduced into the legislature abolishing the present state board of health and establishing a commissioner of health with an advisory board of four members, following the lines of the New York law establishing a commissioner of health.

Training Schools for Pupil Nurses.—A bill enabling hospitals with five beds continuously occupied during the year to maintain a school for the training of pupil nurses has been passed by the house of representatives. The law now requires an average of fifteen patients in the hospital as a minimum. The State Nurses' Association and the larger hospitals are opposed to the measure on the ground that it is lowering the standard of nursing.

Personal.—Dr. Lillian G. Towslee has been appointed chairman of the advisory board of the Cleveland City Hospital Nurses Training School.——Dr. Joseph M. Kells, Columbus, recently underwent splenectomy at St. Joseph's Hospital, Rochester, Minn.——Dr. Harley H. Emerson, Columbus, has been appointed assistant medical examiner for the State Industrial Commission.——Dr. Estell H. Rorick, Wauseon, has resigned as a member of the state board of administration, and has been succeeded by Dr. Arthur F. Shepherd, Columbus.

Cincinnati

New Officers.—At the meeting of the Medical Research Society, Dr. Oscar Berghausen was elected president; Dr. Walter H. Stix, vice president, and Dr. R. Isaacs, secretary-treasurer.

Personal.—Dr. Arthur Pfeiffer sustained severe bruises in a collision between automobiles in Newport, February 11.——Dr. Byron Clyde Terwillegar has returned after serving for more than a year in the British service.

Base Hospital Officers.—The medical division of the proposed base hospital unit for Cincinnati has selected Dr. Joseph Ransohoff as director; Dr. Frank E. Fee, assistant in surgery; Dr. Roger S. Morris, assistant in medicine, and Dr. Paul G. Woolley, assistant in laboratory work.

PENNSYLVANIA

Personal.—Dr. B. Swayne Putts, Erie, suffered severe electrical burns, February 8.——Dr. John M. Gelwix, Chambersburg, has been appointed surgeon to the Cumberland Valley Railroad.——Dr. Edward W. Ryan, Scranton, who has been for two years and a half in charge of the relief work in Serbia, under the American Red Cross, has returned home for an extended visit.——Dr. William C. Reese, Wilkes-Barre, has been appointed chief surgeon of the Associated Coal Companies of Northeastern Pennsylvania.

Philadelphia

Officers Elected.—Philadelphia Obstetrical Society: president, Dr. Frank C. Hammond; vice president, Dr. F. Hurst Maier; secretary, Dr. Edward A. Schumann, and treasurer, Dr. William E. Parke.

Personal.—Dr. William M. Welch was the guest of honor at the tenth annual banquet of the Aesculapian Club, February 6.——Dr. Alfred Gordon delivered an address before the Medico-Legal Society of New York, February 21, on "The Relation of Legislative Acts to the Problem of Drug Addiction."——Lieut.-Col. Conrad E. Koerper, and Lieut. Royal H. McCutcheon, M. C., N. G., Pa., have resigned.

Blockley Pavilion Dedicated.—The new glass enclosed pavilion for tuberculous patients at the Philadelphia General Hospital was dedicated, February 15. Dr. Wilmer Krusen, director of health and charities, was in charge of the ceremonies. The dedicatory address was delivered by Judge Patterson. Other speakers include the Rev. Francis X. Wastl, Catholic chaplain of the hospital, Dr. Albert P. Francine, Mrs. Thomas Robins, secretary of the Women's Advisory Board, and E. J. Cattell, city statistician.

University Alumni Smoker.—The annual smoker of the Philadelphia Alumni Association of the Medical School of the University of Pennsylvania was held, February 17. Dr. B. Franklin Stahl, who has been secretary of the association for twenty-five years, was elected president, the occasion being marked by the presentation to him of a grandfather's clock bearing the university seal. Other officers elected were: honorary vice president, Provost Smith; vice presidents, Drs. William S. Wray, Everett P. Barnard and Seth A. Brumm; secretary, Stephen E. Tracy; treasurer, Morris B. Miller, and recording secretary, Floyd E. Keene.

SOUTH CAROLINA

Health Surveys.—The York County Medical Association has adopted resolutions asking the legislature to appropriate $2,000 for a health survey of York County.——The Orangeburg County Medical Society adopted similar resolutions and asked a like appropriation.

District Society Meetings.—At the fourteenth semiannual meeting of the Second District Medical Association, held in Barnwell, January 30, a resolution was adopted endorsing a state-wide law for the enforcement of prohibition.——The First District Medical Association has elected the following officers: president, Dr. J. Sumner Rhame, Charleston; vice president, Dr. John B. Johnston, St. George (reelected), and secretary-treasurer, Dr. Ernest C. Baynard, Charleston.

WISCONSIN

Pasteurized Milk Demanded.—An ordinance sanctioned by the health board of Kenosha, January 31, provides for the pasteurization of all milk used in the city.

County Sanatoriums.—The County Board of LaCrosse County has voted to bond the county for $50,000 to establish a forty-bed county tuberculosis sanatorium near Onalaska. The county board of Waukesha County has appropriated $16,000 for a site for a county tuberculosis sanatorium.

Valley Physicians Elect Officers.—At the annual meeting of the Fox River Valley Medical Society, held at Green Bay, February 7, the following officers were elected: president, Dr. Stephen E. Gavin, Fond du Lac; vice presidents, Drs. James P. Lenfesty, DePere, and Manly J. Sandborn, Appleton, and secretary-treasurer, Dr. Richard H. Sweetman, Green Bay. Green Bay was selected as the next meeting place.

Personal.—Dr. John W. Coon, formerly head of the Municipal Tuberculosis Sanatorium, Chicago, has been appointed medical director of the River Pines Sanatorium, Stevens Point.——Dr. Julius E. Block, Dundee, has sailed for England, where he will be on duty with the British troops in France.——Dr. Curtis A. Evans has been named as director of the new Red Cross Base Hospital, Milwaukee, and Dr. Joseph P. McMahon, adjutant.

CANADA

Senior Medical Student Killed in Battle.—Capt. James Knowles Bertram, Montreal, aged 25, a senior student at McGill University, who enlisted in November, 1914, as adjutant of the Twentieth Canadian Battalion, and was advanced to officer in charge of the intelligence department, First Brigade, headquarters staff, was killed in action on the Somme, Sept. 22, 1916.

Hospital News.—More ample accommodation will shortly be available for convalescent soldiers in Canada, according to the director of the military hospitals commission, Mr. S. A. Armstrong. Buildings are being prepared in many cities and upward of 3,000 more beds will soon be ready.——The old agricultural college building, Winnipeg, Man., has been taken over by the government, and will be used as a hospital and convalescent home for returned soldiers. Six hundred beds will be available by April 15. Reeducation work will also be undertaken.

Personal.—Capt. J. Bryce McMurrich, M.D., Toronto, who has been home for a short leave of absence, has returned to England.——Lieut.-Col. Thomas B. Richardson, Toronto, late commanding office, Toronto Military Base Hospital, has been appointed A. D. M. S., Sudbury, Ont.——Lieut.-Col. James C. Connell, dean of Queen's Medical College, Kingston, Ont., has been in Ottawa at the request of the militia department to give advice with regard to changing the eye test for Canadian soldiers.——Gen. Carleton Jones has been appointed Canadian Medical Commissioner, and is returning to Canada for two months to coordinate the services to meet the requirements of the front.——Dr. William Dixon, after a year's service with the R. A. M. C., has returned to Hamilton, Ont.

GENERAL

State Medical Boards Elect.—At the annual meeting of the Federation of State Medical Boards of the United States, held in Chicago, February 6, Dr. David A. Strickler, Denver, was elected president; Dr. Walter L. Bierring, Des Moines, Iowa, secretary-treasurer, and Dr. Conrad H. Suttner, Walla Walla, Wash., a member of the executive committee.

Medical College Officials Elect.—At the twenty-seventh annual meeting of the Association of American Medical Colleges, held in Chicago, February 6, Dr. William S. Carter, Galveston, was elected president; Dr. Edward H. Bradford, Boston, vice president, and Dr. Fred C. Zapffe, Chicago, reelected secretary-treasurer. Chicago was selected as the next place of meeting.

Opportunity for Young Medical Men in Public Health Service.—According to a statement just issued by Surgeon-General Rupert Blue, young medical men between the ages of 23 and 32 will be given an opportunity each month to demonstrate their fitness for admission to the grade of assistant surgeon in the U. S. Public Health Service. There are several vacancies in this corps. Application for permission to take the examination should be made to the Surgeon-General, U. S. Public Health Service, Washington, D. C.

Bequests and Donations.—The following bequests and donations have recently been announced:

To Dr. Judson Daland, Philadelphia, for medical research, $5,000, by the will of Elizabeth Swift.

Methodist Hospital, Indianapolis, a donation of $1,000, by William N. Bowers, Culver, in memory of Mrs. Bowers.

St. John's Hospital, Brooklyn, $10,000, and St. Mary's Hospital, $5,000, by the will of Mrs. Anna Walsh.

Toronto General Hospital and National Sanatorium Association, Toronto, for the endowment of a cot in each of these institutions, $4,000, by the will of Mrs. Elizabeth Cockburn, Toronto.

Luzerne County (Pa.) Medical Society, a gift of $10,000 for an addition to the library of the society and the purchase of books, by John Wells Hollenback.

Personal.—Dr. Joseph F. Borgoff, Butte, Mont., has been elected vice president of the West Coast Medical Association.——Dr. Bowman C. Crowell, professor of pathology and bacteriology in the University of the Philippines, Manila, has been appointed director of the Graduate School of Tropical Medicine and Public Health in that institution.——Among the Americans who accompanied Ambassador Gerard from Berlin are reported the following physicians: Drs. Albert H. Roler, Evanston, Ill.; Henry Harms, Christian B. Luginbuhl, Chicago; Charles L. Furbush, Philadelphia; Walter A. Haldy, Cleveland, and John R. McDill, Milwaukee.——Dr. Earl M. Rice, Portland, Ore., was surgeon of the British-India steamer *Mantola,* which was torpedoed southwest of the Fastnet, Ireland, September 8. Dr. Rice has arrived safely in London.——Dr. Milo A. Jewett, formerly of Danvers, Mass., who was recently United States consul at Kehl, Germany, has been recalled from his post.

Mental Hygiene Committee Meeting.—At the ninth annual meeting of the National Committee for Mental Hygiene, held February 7, in New York, it was announced that during the past year over $30,000 had been contributed for general expenses by four donors, one of whom had also pledged $100,000 toward an endowment fund. The Rockefeller Foundation had contributed $34,000 for special purposes such as surveys of conditions among the insane and feebleminded. These surveys have been completed in California, Colorado, Connecticut, Georgia, Louisiana, Pennsylvania, South Carolina, Tennessee, Texas and Wisconsin, and are now in progress in Chicago and New York. Sixteen state societies for mental hygiene have been organized. The initial issue of the quarterly organ, the *Journal of Mental Hygiene,* appeared in January. The following officers were elected: president, Dr. Lewellys F. Barker, Baltimore; vice persidents, Prof. Charles W. Eliot, Boston, and Dr. William H. Welch, Baltimore; treasurer, Mr. Otto T. Bannard; medical director, Dr. Thomas W. Salmon, New York; associate medical director, Dr. Frankwood E. Williams, Boston, and secretary, Mr. Clifford W. Beers.

FOREIGN

New Hospital in Panama.—The new Panama Private Hospital of fifty beds is now open.

National Red Cross Established.—The president of the Republic of Panama has issued a decree establishing the National Red Cross of Panama.

New Course at University.—The University of the Philippines, Manila, has instituted a course which leads in one year to the degree of Doctor of Tropical Medicine and in two years to that of Doctor of Public Health.

Medical Practice in Grenada.—There is a reported scarcity of physicians in the island of Grenada, British West Indies, due to the European War. As a result, the ordinance regulating the practice of medicine and dentistry has been amended, whereby graduates of medical schools in the United States recognized by the Grenada Medical Board and who are legally entitled to practice medicine in the United States are eligible for registration.

Deaths in the Profession Abroad.—**J. M. Alvarez,** professor of hygiene at the University of Cordoba, Argentina, senator of the realm and governor of the Province of Cordoba, aged 57.——**K. Pelman,** professor of psychiatry at the University of Bonn and until recently chief of the psychiatric clinic, aged 78.——**H. Schulthess** of Zurich, whose works on heart diseases, the sphygmometer and photography of the pulse have carried his name far and wide, aged 54. His work on heart disease in the Swiss army was based on over a million separate examinations, on 21,000 men with pathologic hearts. His latest work, embodying the results of intensive research for many years, was reviewed in The Journal, Aug. 5, 1916, p. 473.

Death of Oswaldo Cruz.—The cable brings word of the death of the physician to whom Brazil is chiefly indebted for its rapid emancipation from yellow fever as soon as the American Commission had blazed the way. In less than three years, as chief of the public health service, he stamped out yellow fever in Rio de Janeiro, and in 1911 accomplished the same task in Para, the central seat of the rubber industry on the Amazon. For some years he has been at the head of the University Institute of Pathology and Bacteriology, named in his honor, formerly the Institut de Manguinhos. Cruz has personified in South America the new era of preventive medicine, and honors have been heaped on him at home and abroad. His modest summary of his work at Rio was published in the *Brazil Medico,* 1909, **23,** 482.

LONDON LETTER

London, Jan. 29, 1917.

Food Regulation: A New Loaf

It has been explained in a previous letter that in order to increase the supply of food the production of the ordinary white loaf is prohibited and the millers are compelled to extract a higher percentage of flour from wheat than formerly. By a further regulation the new loaf is modified. All flour milled from wheat must be straight-run, and the miller is required to obtain a certain percentage called the prescribed percentage. The percentage varies with the different qualities of wheat used, and the average percentage is 76. The miller, however, is not allowed to stop short at the prescribed percentage, but is required to obtain five points beyond this. These further five points may be obtained either by milling the wheat to a higher percentage or by adding flour ground from rice, barley, maize and oats, or any mixture of those grains or in both these ways. In addition, the miller has the option of adding a further five points obtained in the same way. The effect of this option is practically that a sack of 280 pounds of flour may contain, in addition to any compulsory admixture, about 17 pounds of flour ground from rice, barley, maize or oats.

Tuberculosis and the Panel System

The working of the panel system is attended with a certain amount of friction between physicians and the authorities. An example is the great question of the treatment of tuberculosis. It is calculated that about 150,000 persons are annually disabled by the disease in England and 50,000 die from it. The London Insurance Committee has issued a report explaining why the campaign against the disease does not make more progress. The reasons are: (1) the unwillingness of the insured presons to report themselves to their physicians; (2) the inability of the physician in many cases to make a diagnosis, and (3) the omission on the physician's part to utilize the services of the tuberculosis officer as a consultant. It is alleged that the old methods of club practice have been preserved and subsidized. In fact, there is now a premium on inefficiency, because the more people a physician undertakes to attend, that is, the quicker he undertakes the work, the more money he stands to make out of it. He is also able to sell the care of his patient to any other physician who wants to buy. In this bargain special qualifications go for nothing. It also seems that some panel physicians resent the idea of consulting with state specialists.

Influenza in London

Although the mortality from influenza in London remains far above the average, a considerable decline is recorded in the registrar-general's latest return. Last week the deaths numbered 77, compared with 98, 86 and 81, respectively, in the three preceding weeks. The death-rate from all causes also fell, being 19.6 per thousand of the population, against 23.7 in the last week of December.

PARIS LETTER

Paris, Jan. 25, 1917.

The War

ECONOMY IN SANITARY SERVICE

M. Justin Godart, undersecretary of state of the military health service, is making every effort to economize in the sanitary service. He has asked the directors of the health service to utilize their personnel when not otherwise engaged: (1) for the care of civilians; (2) for hygienic propaganda (conferences on the evil effects of alcohol, tuberculosis, etc.), and (3) for conservation of the race (care of infants and mothers, tuberculosis dispensaries, etc.). In their spare time the members of the service should also be occupied with: (1) sanitation and improvement of public hospitals and infirmaries; (2) assisting the mayors of these districts in municipal hygienic work, in the cultivation of abandoned farms, etc.; (3) agricultural work under instructions of the prefects, and (4) furthering in every possible way national or local interests. The undersecretary recommends the formation of squads consisting of the older men and tradesmen, which will make all repairs and do the necessary cleaning. Finally, it is recommended to avoid all waste in making dressings.

WAR AND THE DECREASE IN BIRTHS

M. Honnorat, deputy of the department of the Lower Alps, has ready for publication the demographic statistics of France for 1915. The data at hand are as follows:

Years	Births	Deaths
1913 (77 departments)	604,454	588,809
1914 (77 departments)	594,222	647,549
1915 (76 departments)	382,466	644,301

Therefore, in the departments which can be accounted for, registry shows: in 1913, an excess of 15,645 births; in 1914, an excess of 53,327 deaths, and in 1915, an excess of 261,835 deaths.

The figures for 1915 are incomplete. They do not represent correctly the births and deaths in the invaded departments in the war zone, where almost all the deaths of combatants are registered. However, considering only the seventy-six noninvaded departments, the war lost to France in 1915 one third of its births. It has cost her, for this year only, 200,000 children, equivalent to five army corps.

Aural Complications in Aviators During Flights

Dr. Lacroix read an interesting paper before the Académie de médecine in which he showed that the function of equilibration is not disturbed during normal flights, while audition is always affected. Normal flight in an aeroplane does not provoke vertigo. It causes, among other troubles, constant acoustic reactions owing to the intermittent buzzing in the ear and deafness, caused by the wind and variations in pressure against the tympanum. The healthy ear does not seem to be affected permanently by these conditions, and this emphasizes the importance of aural integrity on the part of the aviator. His certificate of physical aptitude should not be issued by one physician, but by a medical commission consisting of specialists in diseases of the heart, neurology, ophthalmology, etc.

The Legacy of Dr. Tripier

Dr. Raymond Tripier of the Faculté de médecine de Lyon, whose death was recently announced in The Journal (Dec. 30, 1916, p. 2026), bequeathed to the University of Lyon 200,000 francs for the encouragement of special work in operative medicine and pathologic anatomy. He also bequeathed to the city of Lyons the sum of 200,000 francs, the annual interest of which will permit the acquisition of a work of art every five years.

BERLIN LETTER

Berlin, Nov. 14, 1916.

War Neuroses

For the past three decades, since the enactment of the German accident insurance law, there has existed a controversy in regard to the acceptance of Oppenheim's conception of the clinical course of a traumatic neurosis. It seemed for a time as though Oppenheim's views had been rejected entirely, but recent experiences, gained as the result of the war, have again brought his views to the fore, and they have been made the subject of much discussion in periodicals and at meetings. The subject was discussed rather extensively at the recent meeting of the German Society of Neurologists, held in Munich the latter part of September. Oppenheim, Nonne and Gaupp opened the discussion. Oppenheim maintained his former attitude that a neurosis following a trauma must be considered as a traumatic neurosis. The trauma, which might have been psychic or mechanical in its action, would in either case produce the same functional disturbances of the central nervous system. A psychic trauma would not necessarily produce only psychic symptoms. The so-called "fright neurosis" and "commotion neurosis" are both traumatic neuroses. A peripheral trauma not having any psychic effect at all may nevertheless produce a typical neurosis. Psychic processes, on the other hand, may cause a fixation of these neuroses. A "free interval" does not interfere with the actuality of a physical trauma. Hyperthermia and hyperthyroidism are encountered in these traumatic neuroses; likewise specific vasomotor-trophic-secretory disturbances, which cannot be referred to hysteria, inactivation or compression. Akinesia amnestica may be due to hysteria. In its typical development, however, it is not a hysterical picture any more than is a reflex neurosis which bears a relationship to an arthrogenic muscle atrophy. The fact that these patients may be healed by strong mental impulses and peripheral irritations (Kaufmann's method, etc.) does not conflict with the possibility of these cases being traumatic neuroses. Disturbances of innervation are seen in organic and functional paralysis. These spasmodic neuroses resemble hysteria, but are not identical. Torticollis is in the same class. Oppenheim admitted that the spread of hysteria among wounded soldiers was underestimated by him. Traumatic neuroses also occur among prisoners, although less frequently. The traumatic neuroses of the neurasthenic and hysterical type are curable. They are influenced favorably by psychotherapy.

NONNE'S VIEWS

Nonne's views are opposed to those of Oppenheim. He does not regard the traumatic neuroses as a separate clinical entity. The syndrome described under the term "traumatic neuroses" is easily accounted for by the well known neuroses; hence the symptoms should not be ascribed to the trauma, that is, the direct effect of the trauma, but rather to the psychic state of the individual himself and his environment at the time the trauma was sustained. These disturbances are really a reaction on the part of the individual to the new conditions created by the trauma. A somatic trauma is not essential to the development of the neurosis, nor need there be any organic changes of any kind which might serve as a basis for the development of such a neurosis. Practically, Oppenheim's views should be discounted, because naturally they would influence, unfavorably, professional and public opinion, to the detriment of the economic interests of the state as well as the recovery of the individual. The war has shown that individuals possessed of a very stable nervous system may develop symptoms of neurasthenia, but the basis for such a neurasthenia is undoubtedly fatigue. This view has been confirmed by actual clinical experience. The various types of monosymptomatic and oligosymptomatic hysteria (Charcot's classification) occur. The borderline between certain forms of hysteria and fright neurosis is not very distinct. In many cases of war neurosis the nature and operation of the trauma play a greater rôle than the personality of the patient. Local contractures, akinesia amnestica, reflex paralysis and myotonoclonia trepidans (pseudospastic paresis with tremor) frequently occur among these patients as an expression of hysteria. The psychogenesis may be traced in many cases, and cannot be excluded.

The clinical course of these cases of hysteria does not differ from that of the ordinary case of hysteria. Mechanical disturbances of the peripheral nerves and a consequent irritation of the cerebral and spinal centers cannot be determined definitely. Cures by suggestive therapeusis are opposed to such a view. Partial functional paralyses of organically paralyzed nerves are to be regarded in part as functional fixations of a mild healed organic paralysis. The alcoholic form of hysteria plays only a minor rôle. The shell explosion neuroses are purely functional. Long continued loss of consciousness does not militate against this conception. Even after the lapse of many months these patients may be cured by suggestion, particularly hypnotic suggestion, and in the hypnotic state the symptoms may be reproduced accurately. Acute and chronic psychic traumas may cause these cases, without any existing organic changes in the central nervous system. The pretraumatic state does play a rôle in the etiology of these cases. It is noteworthy that the same clinical picture is often seen following infectious diseases and other acute internal disturbances.

PROGNOSIS

The prognosis of these war neuroses does not differ from that of the neuroses seen in civil life. The therapy is the same for both conditions, psychotherapy being most effective. Hypnotic suggestion is of great value. Much remains to be done in clearing up the prophylaxis as well as the prevention of recurrences of these neuroses.

GAUPP'S VIEWS

Gaupp, like Nonne, was opposed to Oppenheim. He does not believe in the existence of a special or particular war neurosis or a traumatic neurosis. The German is less susceptible to these conditions than the Slav or Roumanian. There is some difference in susceptibility among the various peoples of Germany. The symptomatology is practically the same everywhere, as is also the etiology, namely, fatigue and exhaustion of the nervous system, physical and psychic disturbances, neurasthenia, general reduction of body resistance, exhaustion of individual organs, heart, vasomotor and gastric neurosis, etc. Infection, alcoholism and nicotinism have an etiologic significance, and the degree of individual resistance, psychic as well as physical, determines the severity of the case. The existence of pathognomonic symptoms, such as headache, dizziness, insomnia, tachycardia, increased reflexes and mental depression, is denied. Acute psychic or physical trauma does not produce neurasthenia in a well man, but a man who is exhausted will easily fall a victim. The similarity in the clinical picture of the fright neuroses is noteworthy, especially when they follow severe acute shock of any kind (mine explosions, shell explosions, shell wounds and bullet scalp wounds), and after subacute psychic disturbances (mustering in, drilling, called to the front, initial experience in the trenches, command to attack, and seeing severely wounded or dead friends or comrades). The effect of a mechanical shock, such as a shell explosion, is often overestimated. The explosion usually is not an unexpected one, and therefore the psychic effect cannot be as great as it often is said to be. A warning of an impending explosion is given by the sound made by the traveling missile, and the soldier frequently can seek timely shelter. A state of fear-thought and a resulting loss of consciousness usually precede the occurrence of the explosion. The unconsciousness is often a psychic manifestation rather than a mechanical cerebral commotion. The majority of the clinical pictures are purely psychogenic. There may be a temporary fright neurotic complex which disappears rapidly (tremor, weakness of the legs, difficulty of speech, laughing, weeping and apathy). The difference between a fright neurosis and hysteria is wholly a matter of definition. Akinesia amnestica, reflex paralysis and myotonoclonia trepidans are psychogenic disturbances. In hysteria all grades of paralysis occur. Victims of war neuroses usually are not taken from among the wounded, contrary to Oppenheim's statement. They seldom occur among prisoners even when they have been shocked severely. Prisoners are actuated by one great desire: to remain well so that when they are exchanged they may return home in good health.

The symptoms of acute psychogenic disturbances are manifold, and preexisting disturbances are frequently made worse. The symptoms are not improved by errors in diagnosis and wrong treatment with orthopedic apparatus. The so-called "commotion neurosis" is not a neurosis at all, but an organic cerebral disease. The clinical symptoms of mild cases frequently cannot be distinguished from neurasthenia and hysteria. Imbecility, sclerosis, beginning dementia praecox and similar mental states frequently pave the way for psychogenic disturbances. The question of simulation or malingering cannot be discussed at this time. Perhaps we are not paying enough attention to this phase. The prognosis of all these war neuroses depends largely on the previous personality of the individual. Many forms of therapy are applicable.

THE DISCUSSION

The majority of those participating in the discussion agreed with Nonne and Gaupp without in any way influencing Oppenheim in his beliefs. He is convinced that there is an increase in the number of cases of hysteria among the wounded, and he insists that this clinical entity be considered in the granting of pensions. On the other hand, he does not believe that all war neuroses are of psychogenic origin. The war does more than make a fleeting impression on body and mind. The nervous system is severely affected, and perhaps permanently. He sounded a note of warning, asking every one not to look lightly on these war neuroses, and to guard against making a diagnosis of hysteria or neurasthenia, or even simulation. Furthermore, granting that there are individuals who do simulate, it must be borne in mind that even they may be ill.

Marriages

Hannibal Claude Fortune, M.D., Rochester, Ill., to Mrs. Claude Beatrix Fortune of Pleasant Hill, Ill., at St. Louis, February 5.

Walter Frederick Wessels, M.D., Los Angeles, to Miss Theodocia Longenecker of Chicago, Dec. 20, 1916.

Henry Ulric Woolsey, M.D., Hillsboro, Tex., to Miss Etta Mae Carroll of Penelope, Tex., February 1.

James Allen Rutledge, M.D., Woodville, Okla., to Miss Aline Colby of Ada, Okla., January 3.

Benjamin W. Ralston, M.D., Lindsay, Okla., to Miss Sue Koontz of Okemah, Okla., January 1.

David W. Jones, M.D., Baltimore, to Miss J. Williams, at Baltimore, February 4.

Deaths

Henry Dwight Holton, M.D., Brattleboro, Vt.; New York University, New York, 1860; aged 78; a Fellow of the American Medical Association, and third vice president in 1881; one of the most noted sanitarians of New England; died at his home, February 12. He was born in Rockingham, Vt., and after his graduation in medicine entered the army as surgeon of the Twelfth Vermont Infantry, U. S. V. In 1873 he was made professor of materia medica and therapeutics in the University of Vermont and served in this capacity until 1886. From 1873 to 1878 he was medical examiner to the Vermont Asylum for the Insane. In 1896 he was made a member of the Vermont State Board of Health and a year later was elected secretary and executive officer of the board, holding this position until his death. In 1884 he was elected a member of the Vermont senate and in 1888 of the house of representatives. He was president of the Connecticut River Valley Medical Society in 1869, of the Vermont State Medical Society in 1873, of the American Conference on Tuberculosis in 1901 and of the American Public Health Association in 1902. He had been for twenty-five years a member and thirteen years chairman of the Brattleboro school board.

Joseph Ford Thompson, M.D., Washington, D. C.; University of Maryland, Baltimore, 1857; aged 79; a Fellow of the American Medical Association and of the American Surgical Association; professor of anatomy and professor of surgery in Columbia Medical College; professor of surgery and later emeritus professor of surgery in George Washington University; surgeon to the Providence, Emergency, Children's Garfield Memorial, and George Washington University hospitals, Washington, and the Columbia Hospital for Women; acting assistant surgeon, United States Army, during the Civil War; died at George Washington University Hospital, February 1.

Julian Howard Allen, M.D., Spartanburg, S. C.; University of Tennessee, Nashville, 1888; aged 47; a Fellow of the American Medical Association, and president of the Spartanburg County Medical Society in 1906; surgeon to the Charleston and West Carolina Railroad, and Carolina, Clinchfield and Chicago Railway; surgeon to the Spartanburg County Almshouse and Jail; visiting physician to the Spartanburg Hospital; president of the city board of health; died at his home, January 23, from endocarditis following tonsillitis.

Harry Wilbur Stoner, M.D., Baltimore; University of Maryland, Baltimore, 1907; aged 44; formerly a Fellow of the American Medical Association; first assistant bacteriologist for the state board of health; associate professor of bacteriology in his alma mater; in charge of the laboratories of the Maryland General, and Presbyterian Eye, Ear and Throat hospitals; died at his home, February 4, from pneumonia.

Thomas Hunt Stucky, M.D., Louisville, Ky.; Hospital College of Medicine, Louisville, 1880; aged 58; formerly a Fellow of the American Medical Association; president of the Mississippi Valley Medical Association in 1897; formerly president of the Louisville Association Baseball Club and of the Louisville National League Club; died in a sanatorium in Louisville, February 17.

Michel Thomas Lanaux, M.D., New Orleans; Tulane University, New Orleans, 1906; aged 33; a Fellow of the American Medical Association, and formerly vice president and secretary of the Orleans Parish Medical Society; died in the Presbyterian Hospital, New Orleans, January 12, from septicemia, due to an infected wound of the hand.

Harley G. Ristine, M.D., Fort Dodge, Ia.; Rush Medical College, 1869; aged 78; a Fellow of the American Medical Association; local surgeon for the Illinois Central and Minneapolis and St. Louis railroads; a veteran of the Civil War, and for forty years a resident and practitioner of Fort Dodge; died at his home, January 30.

Frank Ellsworth Allard, M.D., Boston; Boston University Medical School, 1892; aged 55; formerly president of the American Association of Medical Examiners; a member of the faculty in his alma mater; medical director of the Boston Mutual Life Insurance Company; died at his home, in Wellesley, February 4.

Willard Hall Rogers, M.D., New York City; Jefferson Medical College, 1876; aged 66; a Fellow of the American Medical Association; a member of the New York Academy of Medicine, and inventor of the water electrode; died at his home, February 9, from arteriosclerosis.

Frank Albert Ford, M.D., Altoona, Pa.; University of Pennsylvania, Philadelphia, 1897; aged 40; a Fellow of the American Medical Association; formerly president of the Blair County and Fifteenth Censorial District medical societies; a specialist on diseases of the eye; died at his home, February 10.

George Willis Robinson, M.D., Shreveport, La.; University of Pennsylvania, Philadelphia, 1895; aged 53; a member of the Louisiana State Medical Association; for three years house surgeon of the Manhattan Eye, Ear, Nose and Throat Hospital, New York City; died at his home, February 4, from pneumonia.

Arthur Elmore Smylie, M.D., Brooklyn, N. Y.; College of Physicians and Surgeons in the City of New York, 1883; aged 54; for thirty-four years a member of the staff and president of the Eastern District Hospital; died in that institution, February 5, after an operation for carcinoma of the stomach.

William S. McPherson, M.D., Thurmont, Md.; University of Maryland, Baltimore, 1848; aged 92; said to have been the oldest living alumnus of the University of Maryland; died at his home, in Auburn, four miles south of Thurmont, January 15, from senile debility.

Wilbur C. Hammond, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1894; a Fellow of the American Medical Association and Obstetrical Society of Philadelphia; died at his home, February 4, from septicemia due to infection received while operating.

Jasper Glenn Ernest, M.D., Gasport, N. Y.; Niagra University, Buffalo, N. Y., 1894; aged 46; a Fellow of the American Medical Association; coroner of Niagara County in 1912; died in the Buffalo General Hospital, Dec. 5, 1916, from ulcer of the pylorus.

Benjamin Franklin Strong, M.D., Chautauqua, Kan.; Rush Medical College, 1896; aged 55; formerly a member of the Kansas Medical Society; for four years county physician of Elk County, Kan.; died at his home, February 5, from nephritis.

Francis Chaffee, M.D., Towanda, Pa.; College of Physicians and Surgeons, Baltimore, 1880; aged 68; a member of the Medical Society of the State of Pennsylvania; died at the Packer Hospital, Sayre, Pa., about January 28, from gangrene.

Arthur S. Townsend, M.D., Bennettsville, S. C., Medical College of the State of South Carolina, Charleston, 1887; aged 53; a member of the South Carolina Medical Association; died at his home, Nov. 13, 1916, from angina pectoris.

Constantine Henry Martin, M.D., Allentown, Pa.; Bellevue Hospital Medical College, 1866; New York Homeopathic Medical College, 1868; aged 71; a veteran of the Civil War; died at his home, February 5, from cerebral hemorrhage.

Charles Stafford Ames, M.D., Ada, Ohio; Hahnemann Medical College, Chicago, 1884; aged 56; died in the Fort Wayne Hospital, February 1, from brain injuries following the overturning of his automobile, January 6.

William Shepard Seamans, M.D., New York City; College of Physicians and Surgeons in the city of New York, 1881; senior medical examiner of the Equitable Life Assurance Society; died at his home, February 6.

John Calvin Nesbit, M.D., South Burgettstown, Pa.; Columbus, Ohio, Medical College, 1881; aged 67; a Fellow of the American Medical Association; died at his home, February 3, from cerebral hemorrhage.

Charles E. Martin, M.D., Caruthersville, Mo.; St. Louis College of Physicians and Surgeons, 1898; aged 47; a member of the Missouri State Medical Association; died at his home, February 1, from cerebral hemorrhage.

Eugene George Campana, M.D., Butte, Mont.; College of Physicians and Surgeons, Chicago, 1904; aged 32; formerly a member of the Medical Association of Montana; died at his home, February 8, from heart disease.

Manford M. Hixson, M.D., Delphos, Ohio; Medical College of Ohio, Cincinnati, 1876; aged 67; formerly a Fellow of the American Medical Association; died in his office, February 1, from acute dilatation of the heart.

Thomas Nathaniel Jacob, M.D., Dalbys, Va.; Medical College of Virginia, Richmond, 1899; aged 46; formerly a Fellow of the American Medical Association; died at his home, Dec. 5, 1916, from angina pectoris.

Bradford LeBaron Baylies, M.D., Brooklyn, N. Y.; College of Physicians and Surgeons in the City of New York, 1852; aged 87; died at his home, February 9, from bronchopneumonia.

John Milton Elliott, M.D., Peoria, Ill.; Kansas City, Mo., Medical College, 1890; aged 86; a veteran of the Civil War; died in the Deaconess Hospital, Peoria, February 1, from senile debility.

Rosh Leaman, M.D., Philadelphia; Jefferson Medical College, 1882; aged 62; a Fellow of the American Medical Association; died at the home of his brother in Philadelphia, January 25.

Mary Frances Monaghan, M.D., Waltham, Mass.; Tufts College Medical School, Boston, 1912; aged 35; also a graduate in pharmacy; died at her home, February 7, from heart disease.

Thomas J. McCain, M.D., Waldron, Ind.; Medical College of Indiana, Indianapolis, 1880; aged 72; a veteran of the Civil War; died at his home, January 22, from angina pectoris.

Charles Ruxton Ellison, M.D., New York; Bellevue Hospital Medical College, 1873; aged 67; formerly a Fellow of the American Medical Association; died at his home, January 31.

Isaac Cole Miller, M.D., Cincinnati; Miami Medical College, Cincinnati, 1874; aged 64; a member of the Ohio State Medical Society; also an attorney; died at his home, January 28.

William Henry Craig, M.D., West Schuyler, N. Y.; New York University, New York, 1875; aged 69; died in a hospital in Utica, N. Y., January 18, from cerebral hemorrhage.

William H. Faulds, M.D., Kingston, Pa.; University of Pennsylvania, Philadelphia, 1876; aged 71; a Fellow of the American Medical Association; died at his home, February 7.

Thomas W. Bartlett, M.D., Sioux City, Iowa; Chicago Homeopathic Medical College, 1878; aged 63; died, January 26, in Los Angeles, where he had gone in quest of health.

Andrew John Crighton, M.D., East Hartford, Conn.; College of Physicians and Surgeons, Baltimore, 1891; aged 52; died at his home, Nov. 28, 1916, from chronic nephritis.

Alonzo W. Vincent, M.D., Valparaiso, Ind.; Bennett Medical College, Chicago, 1872; aged 76; died at the home of his daughter, in Gary, Ind., Nov. 28, 1916, from pneumonia.

Benjamin Rush Ridgely, M.D., Warren, Md.; University of Maryland, Baltimore, 1847; aged 93; died at the home of his son in Baltimore, February 2, from pneumonia.

Charles Robert Stanhope, M.D., Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1905; aged 36; died at his home, February 7, from tuberculosis.

Caroline M. Osborn Koenig, M.D., Buffalo, N. Y.; University of Buffalo, N. Y., 1904; died in Hahnemann Hospital, Rochester, N. Y., January 28, from pneumonia.

Robert Stevenson Denney, M.D., Aurora, Ill.; Rush Medical College, 1909; aged 33; a Fellow of the American Medical Association; died at his home, February 12.

Robert Cauch, M.D., Carpinteria, Calif.; Hahnemann Medical College, Chicago, 1877; aged 85; died in St. Francis' Hospital, Santa Barbara, January 24.

John R. DeVore, M.D., Suwanee, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1900; aged 40; died in a hospital in Atlanta, January 24.

John C. Rutter, M.D., Bloomsburg, Pa.; Hahnemann Medical College, Philadelphia, 1855; aged 90; died at his home, January 30, from influenza.

John South, Jr., M.D., Hoquiam, Wash.; University of Minnesota, Minneapolis, 1889; aged 66; also a druggist; died at his home, January 26.

William P. DeLaperriere, M.D., Hoschton, Ga.; Medical College of Georgia, Augusta, 1876; aged 61; died at Miami, Fla., January 29.

Frank Fanning, San Antonio, Texas (license, Seventeenth Judicial District Board, Texas, 1899); aged 62; died at his home, January 13.

Charles Henry Gibbs, M.D., Charlotte Court House, Va.; New York University, New York, 1880; aged 64; died at his home, January 20.

John Richardson Dodge, M.D., Hudson, Mich.; University of Michigan, Ann Arbor, 1869; aged 68; died at his home, January 26.

John McPeck, M.D., St. Albans, Vt.; University of Vermont, Burlington, 1882; was found dead in his home, January 10.

Alexander C. Anderson, M.D., Petaluma, Calif.; Harvard Medical School, 1864; aged 74; died at his home, January 17.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

BINIODOL

Report of the Council on Pharmacy and Chemistry

In accordance with the usages of the Council the report which appears below along with the reports of the clinical investigation by Drs. Cole and Keidel upon which the recommendations of the referee were based were sent to the manufacturer for comment. The reply of the manufacturer contained no evidence which justified the Council in modifying the action already taken. Publication of the report was therefore authorized. W. A. PUCKNER, Secretary.

Biniodol was submitted to the Council by the manufacturer, Charles C. Yarbrough, Memphis, Tenn. The manufacturer claims the product is a solution of 1 per cent. of red mercuric iodid and 2.75 per cent. of guaiacol in bland vegetable oil. It is marketed with the implication that it is new and superior to other oil solutions of mercuric iodid. For instance:

> ". . . it is a straight solution of this mercurial compound, as no alkaline iodide or other chemical is used to bring about the solution." . . . "It is probably the first and only one-percent oil solution of straight mercury binodide made in America. . . ."
>
> [The manufacturer, in a letter addressed to the secretary of the Council, explains: "By *straight* solution, I mean that the solution of the red mercuric iodid is effected without the aid of any alkaline iodid or other chemicals. . . . Biniodol was first offered early in 1912 . . ."]
>
> "Biniodol is, therefore, superior and much to be preferred to other mercurials used for like purposes. It is highly active therapeutically, producing the desired effects, usually without the inevitable disadvantages of other mercurials. It rarely causes salivation, diarrhea, or other symptoms of mercurial intolerance, even when pushed to full therapeutic effect and when given for a considerable period of time. Nor does it produce anemia."

The Chemical Laboratory of the American Medical Association found that Biniodol contained 1 per cent. of mercuric iodid and 2.5 per cent. of guaiacol; hence the composition is essentially as claimed. It is not true, however, that Biniodol is the "first and only one-percent solution of straight mercury biniodide made in America." As shown in THE JOURNAL A. M. A., Dec. 9, 1914, p. 2247, formulas by Lemaire and Dunning for making a "straight" solution of mercuric iodid were published in this country in 1909 and 1910, respectively. Moreover, a 1 per cent. solution of mercuric iodid in oil is on the market and is described in New and Nonofficial Remedies.

To determine whether or not Biniodol is "superior and much to be preferred to other mercurials used for like purposes," the Council secured the cooperation of the Department of Dermatology and Syphilology of the Western Reserve University cooperating with the Cleveland City Hospital, and of the Johns Hopkins Hospital.[1] Each received three samples, labeled respectively, 1, 2 and 3: 1 contained Biniodol; 2, a 1 per cent. solution of mercuric iodid in oil; 3, a solution made up according to the formula of Biniodol, namely, 1 per cent. of mercuric iodid and 2.5 per cent. of guaiacol in oil. All the solutions were sterile. The investigators were not informed which preparation was designated by the respective numbers, but they were asked to use the preparations when intramuscular injections of a 1 per cent. oily solution of mercuric iodid were indicated, and to note what differences, if any, were observed following the use of the different solutions regarding pain, discomfort, induration and any other evidences of effects of the medicaments.

The Cleveland investigator reports that the patients were more or less confused in their replies to inquiries and gave rather indefinite and conflicting answers. After carefully tabulating the replies, however, the following summary resulted:

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[1] The reports of the investigators will be published in full in the annual Reports of the Council on Pharmacy and Chemistry, and in a reprint. The latter will be sent to any address on request accompanied with a stamped addressed envelope.

1 was worse than 2 or 3 in 6 cases.
2 was worse than 1 or 3 in 5 cases.
3 was worse than 2 or 1 in 1 case.

The report from Johns Hopkins records a series of 117 injections followed by the estimated reactions recorded below:

1. Severe, 13; mild, 14; none, 4; unrecorded, 8=39
2. Severe, 5; mild, 15; none, 16; unrecorded, 5=41
3. Severe, 7; mild, 25; none, 3; unrecorded, 2=37

That is, when recorded in percentages:

1. (Biniodol) severe, 33.3; mild, 35.9; none, 10.3; unrecorded, 20.5.
2. (Without guaiacol) severe, 12.2; mild, 36.8; none, 39.0; unrecorded, 12.2.
3. (With guaiacol) severe, 18.9; mild, 67.5; none, 8.1; unrecorded, 5.5.

The manufacturer of Biniodol supplied the names of several physicians who have used that preparation in their practice. Correspondence with these elicited the following statements:

One had used Biniodol in forty-eight cases and states that "only a few patients complain of pain at all and then only of a general soreness in the muscle." This physician reports a limited experience with the use of another manufacturer's "mercury biniodide oil solution" (apparently six cases), but severe pain following the injections made it necessary to abandon that preparation.

Another of these physicians named by the manufacturer, without reference to any series of cases, reports that "Biniodol is superior to any [oily solution of mercury biniodid] that I have tried."

A third physician has "used it [Biniodol] a few times" and is "convinced that it has no special action or virtue" over "any red mercuric iodide in oil."

This evidence, in its most favorable estimate, shows Biniodol to be a good 1 per cent. solution of mercuric iodid in oil, but fails to justify attributing to the preparation any unique characteristics. The preparations made in the laboratory were as satisfactory, or better than the Biniodol, and the presence or absence of the guaiacol was of no consequence.

Biniodol conflicts with Rule 6, since claims of superior therapeutic efficiency made for it are not established; and with Rules 8 and 10, since it is an unessential modification of an established nonproprietary article marketed under a proprietary name.

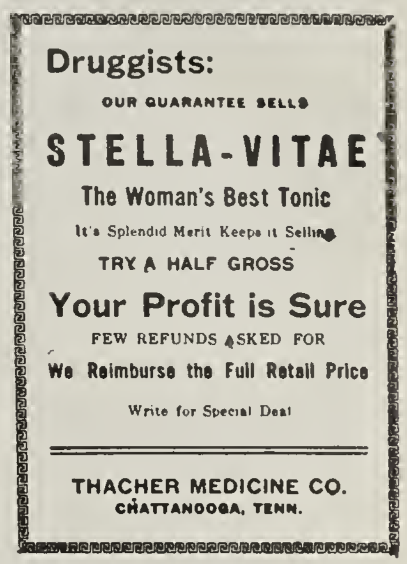
In view of the foregoing, the referee recommends that Biniodol be not accepted for New and Nonofficial Remedies, and that this report, including the clinical investigations of Drs. Cole and Keidel, be authorized for publication.

MORE MISBRANDED NOSTRUMS

Mecca Compound.—Mecca Compound was an ointment sold by A. D. Foster, E. W. Peterson, Sr., E. W. Peterson, Jr., and E. W. Raymond, who did business as the Foster-Dack Co., Chicago. It was analyzed in the Bureau of Chemistry, which reported that the stuff had a soft paraffin base containing carbolic acid, camphor, borates, zinc compound, a sodium soap and a trace of perfume. It was sold as a remedy for erysipelas, for the cure of gangrene or blood poison, cancers and bronchitis, a preventive of diphtheria, a remedy for pleurisy and pneumonia, for the cure of scarlet fever, as a remedy for smallpox, for the cure of appendicitis in its early stages, for the cure of lockjaw, goiter, measles and tuberculosis. These claims were declared false and fraudulent and applied knowingly, recklessly and wantonly. A plea of guilty was entered and the defendants were fined $50 and costs.—[*Notice of Judgment No. 4383.*]

The-Best Cough Remedy.—Davies, Rose & Co. (Ltd.), Boston, sold a mixture under the name "The-Best Cough Remedy" which the government chemists reported was a syrup, smelling and tasting of spearmint, and containing alcohol, chloroform and morphin. The claims made for it were such as to create in the minds of the purchasers the belief that the stuff was an effective remedy for incipient consumption, asthma, influenza, as well as being effective for the relief of consumptive patients in advanced stages of the disease. These claims the government charged were false and fraudulent. The company entered a plea of *nolo contendere* and was fined $50.—[*Notice of Judgment No. 4381.*]

Stella-Vitæ.—"Star of Life" was put on the market by the Thacher Medicine Company, Chattanooga, Tenn., and sold as a cure for "female weakness"; of course, it contained alcohol —20 per cent. The claims made were such as to create in the minds of the purchasers the belief that it was an effective remedy for all female weaknesses and diseases; was a cure for leukorrhea and would correct all irregularities peculiar to women. The government declared these claims false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. The company pleaded guilty and was fined $75 and costs.—[*Notice of Judgment No. 4389.*]



Druggists:
OUR GUARANTEE SELLS
STELLA-VITAE
The Woman's Best Tonic
It's Splendid Merit Keeps it Selling
TRY A HALF GROSS
Your Profit is Sure
FEW REFUNDS ASKED FOR
We Reimburse the Full Retail Price
Write for Special Deal

THACHER MEDICINE CO.
CHATTANOOGA, TENN.

Vegetable Pulmonary Balsam.—Cutler Bros. & Co., Boston, sold this preparation under the claim that it was a remedy for consumption and pulmonary affections of every kind. Government chemists reported that the stuff was a sugar syrup, flavored with spearmint and sassafras and containing alcohol and opium. The therapeutic claims were declared false and fraudulent and made knowingly, recklessly and wantonly. The firm pleaded *nolo contendere* and was fined $100.—[*Notice of Judgment No. 4380.*]

Correspondence

The Young Doctor and Health Insurance

To the Editor:—In The Journal, January 27, under Current Comment, in discussing compulsory health insurance, you suggest that you would welcome "constructive discussion of health insurance." Having read Dr. Lambert's excellent paper in the same issue, I take the liberty of writing you to present a point of view which may be different from those taken by many men in the medical profession.

As director for the Appointments Bureau of the Harvard Medical School, I am often called on to advise young men entering the practice of medicine and to aid them, as far as possible, in getting a start. What chance has the young graduate of a modern medical school and hospital, trained in our best knowledge of diagnosis and treatment, to practice in a way satisfactory to himself and to the community? The medical school has turned out an alert, resourceful, intelligent, trained physician. His ideals are high, his courage good, his pocketbook empty. What opportunity does the average community offer to such a man? A very few of the better men are taken in as assistants to older men at small salaries. The Appointments Bureau seldom has a call for such assistants. What does general practice offer such young men? A fierce financial competition in medium and large cities, while the rural districts offer hard work and niggardly pay. If he has large talents to offer, he is more feared and less welcome by his older competitors. Lately a few small salaried fellowships have been offered by the Boston Dispensary. Five Harvard Alumni teaching fellowships of $500 each are eagerly sought. Aside from these few small aids, what can the young practitioner hope for?

The public and many of the medical profession still believe that for small fees, one and two dollars an office call and three dollars a house call, a man could do a family practice which would pay him a living, including automobile, etc. If he attempts this, he finds that careful, exact diagnosis is impossible in the time available. Free consultation with his colleagues, as he is accustomed to in the hospitals (group medicine), is out of the question. except in rare cases. His returns, certainly from families making below $1,200 a year, are entirely inadequate to meet expenses necessary to do the thorough work he is trained to do and which would satisfy his professional ambition. He is forced to spend less time and care on each case and to try to increase the number of cases in every way possible. Does this produce good medicine or promote an interest in preventive medicine?

Professional ambition is opposed by financial necessity and financial competition. All measures of preventive medicine tend to reduce financial returns. The choice lies between conscientious work with slow starvation, or lowering standards of service and adopting all possible business-getting methods. The economic basis of the practice of medicine is wrong. The old system is not suited to the modern medical requirements. It is organized for pathologic medicine, not preventive medicine.

What can be done to remedy this conflict between professional ambition and financial compensation? Our experience at the Appointments Bureau leads us to advise young men to seek salaried positions, such as those of public health officers. In such positions, the doctor's professional interest is in accord with the interest of the public and largely independent of his financial returns. He can afford to be ethical. Would it not be possible to promote this principle in health insurance? Might not the way be prepared for the young man to enter the practice of medicine on a satisfactory basis, both professionally and financially? Does not health insurance offer an opportunity to develop group medicine on a salary or equally satisfactory basis, to the great advantage of the medical profession? Will such a method answer the chief misgiving in regard to health insurance felt by medical men, namely, Will the public get the best service? Cannot we older men guide this new medical organization so as to give opportunity to the young men to work on a salaried group-medicine basis? Cannot a system be provided for admitting young men, assimilating them, promoting them, and finally retiring them at least from active service at a reasonably early age? After from five to ten years of service, they might be established in more paying private practice and willingly release this work to younger men.

Does any one doubt that the public and even the medical profession would benefit by welcoming and using these young, ambitious, well trained doctors with high ideals into the organization of health insurance?

A. B. Emmons 2d, M.D., Boston

The Bacteriologic Phase of Chronic Convulsive Toxemia (Epilepsy) of Intestinal Origin

To the Editor:—As a necessary supplement to reports previously contributed by me to The Journal, March 27, 1915, Jan. 29, 1916, and May 20, 1916, relative to the causal relationship of constipation to epilepsy, or, more properly, chronic convulsive toxemia, I beg leave to make the following statement:

1. The recognition of the relationship of constipation to epilepsy was forced on me by purely accidental experience involving several cases in which recovery from epilepsy had followed the successful and permanent relief of the constipation by surgical means. Then I began seeing many patients with epilepsy, all of whom were constipated and toxic. The constipation, as now shown by nearly 3,000 Roentgen-ray plates in my possession, was uniformly associated with mechanical conditions of the intestinal tract that interfered with and retarded the fecal current. The relief that I was and am able to give these patients, so far as the epilepsy is concerned, is relative to the degree to which I can restore and maintain normal bowel action.

2. But I was and am seeing many cases in which these same visceral states are not associated with epilepsy. I was early impressed that to explain this variation in result seemed logically to require the existence of an independent and determining factor. What was it? There were several theories to choose from. That of heredity was defective, because less than 2 per cent. of my own cases gave a history of even presumptive heredity. Nobody has claimed that it is present in more than a minority of cases and nobody has explained why it capriciously asserts itself, if at all, at all ages from infancy to old age. The theory of gross lesions of the brain would not do because they are not always found in epileptics; they are as often found in nonepileptics, and, when found in either class, are recognizable as secondary or terminal, and not causal conditions. The theory of cerebral traumatism, whether parturient or later, and that of perturbation of function in the ductless glands, were equally open to logical objection—based chiefly on the inconstant relation of these conditions to the epilepsy. The only conditions that I found constantly present in my cases were constipation with resulting toxemia. It seemed rational, therefore, that the variation in clinical manifestation must be determined by corresponding variation in the general toxic factors obviously present in all cases. The toxins present in these cases like all toxins were derived from intestinal bacteria and if there were variations in the toxins, such variation was doubtless due to corresponding variation in the organisms from which they were derived. In other words, it seemed logical from these known premises that the special phenomena of epilepsy might be accounted for by the incidence of a special organism in the intestinal flora, which organism or its toxin, like that of tetanus, or both, absorbed into the blood, would cause the convulsive phenomena.

3. With these impressions in mind I directed my bacteriologic service to make a systematic examination of the blood in all convulsive cases which were presented for diagnosis. The result of this routine was that after several months I was furnished the data embraced in my report submitted to the Cincinnati Society for Medical Research. The organism there described was sent in the form of photographs, slides and cultures, whenever requested, to various institutions and independent investigators with the request that each take up the investigation *de novo* with reference to confirming or disproving the findings which I had published. Several investigators complied with my request, some with positive and others with negative findings. At the same time my own bacteriologic service went over its own work in a very painstaking way. As a result I have just had submitted to me the protocols of 578 observations, of which 491 were negative and 114 were positive. In a final series of thirty-six consecutive cases at the Sterling Hospital, all were negative. The report concludes with the statement that "with a revised technic and modified surroundings, it has not been possible to confirm the observations formerly submitted to you." In view of this finding, I feel it my duty at once to request that so much, but only so much, of my previous contributions as relate to the identity of a presumably specific organism and to the existence of an actual bacteremia in these cases may be considered as withdrawn. I make this request with my apologies for what now seems to have been premature publication, and for which I alone was responsible.

4. In justice to the importance of this investigation, now in the hands of the profession, I must urge that the foregoing may not be construed as closing the subject of the bacteriology of chronic convulsive toxemia. There are already too many important facts reported by too many competent observers working at too many different angles to justify an abandonment of the task. There are other findings in the blood reported to me in a private way that need to be followed out with care by investigators having the work in hand. While this is true, it is of great importance that the study shall not be restricted to the bacteriology of the blood in these cases. Three important reports have reached me relative to bacterial findings in the spinal fluid of epileptics. One letter just at hand from one of the largest institutions for epileptics in America reports the presence of an organism with identical morphology in each instance found in the spinal fluid in sixteen cases of epilepsy. I am now convinced that the subject cannot be said to have been exhausted until the intestinal

flora of these cases shall have been studied and the power of each of its constituent organisms or of its toxin to produce convulsions shall have been determined by ample experimentation. It is now apparent to me that no less investigation can determine whether or not any intestinal organism, either directly or through its toxins, or both, is the determining factor in causing the convulsions in the cases under consideration. No less an obligation rests on large institutions equipped for research purposes. The stimulation of such investigation has been the leading motive of my various tentative publications, as shown notably in that of May 20, 1916, when I stated that "I feel that it is important to place findings, as far as they have gone, and conclusions, as far as they have been reached, before the profession, that they may at least serve as the basis of further investigations, especially by those with large clinical and laboratory facilities at their disposal."

In the meantime, the earnestness of the appeal for relief and the success so far realized make it necessary that, in conformity with my own practice, these cases shall continue to be treated as cases of *general* convulsive toxemia of intestinal origin. Charles A. L. Reed, M.D., Cincinnati.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COLLOIDS — MENDELEJEFF'S PERIODIC LAW — MARSH'S TEST — WATER PURIFICATION — QUARANTINE — SEWAGE DISPOSAL

To the Editor:—Kindly give me a few lines in your valuable journal for the following information:

1. What are colloids? How do they behave in the process of dialysis?
2. What is Mendelejeff's periodic law?
3. Explain Marsh's test for arsenic.
4. What is the best measure for purification of a city water supply obtained from a sewage-polluted river?
5. How long should patients afflicted with the following diseases be quarantined? Yellow fever, measles, diphtheria, smallpox, whooping cough, chickenpox, typhus, plague and scarlet fever.
6. Discuss proper means of sewage disposal so that other towns on the stream are safe.

Please omit my name. T. E. A.

Answer.—1. The colloidal condition may be defined as the condition in which an insoluble substance, as far as ordinary observation and the common methods for separation (filtration, sedimentation, etc.) are concerned, *appears to be present in actual solution,* whereas *in reality* it is present as a suspension of finely divided particles. An extremely finely divided solid suspended in liquid, or an emulsified liquid suspended in another liquid, are the most common types of such mixtures. For convenience colloids are divided into two classes, suspensoids and emulsoids. The colloidal solutions of metals are typical suspensoids, being easily precipitated by the action of salts, and they do not gel. Emulsoids, of which, protein colloids, starch and gelatin are types, have the property of forming semisolid or solid gels. A colloid may be either a crystalline or noncrystalline body, the original properties of which are often changed in becoming colloidal.

2. According to Mendelejeff's scheme, the elements are arranged in arbitrary sequence of their atomic weights, and in series, depending on a periodic recurrence of specific properties. The periodic law, therefore, may be stated thus: "The properties of elements are periodic functions of their atomic weights."

3. Marsh's test depends on the formation of hydrogen arsenid (arsine H_3As) from soluble arsenic compounds by the action of "nascent" hydrogen. On burning a stream of hydrogen carrying a small amount of hydrogen arsenid, the latter is broken down, and the arsenic may be deposited on a cold dish. Details of the method of carrying out the test may be found in almost any book on chemistry.

4. Either mechanical or sand filtration, and perhaps treatment by the hypochlorite method, should prove effective. The details cannot be discussed here, but may be obtained from publications on the subject, such as one referred to under 6.

5. The period of quarantine for infectious diseases is a matter depending largely on local laws and ordinances, and varies in different places. In the case of the insect-borne diseases, the period of quarantine is usually the period of incubation of the disease. This, according to government quarantine regulations, for yellow fever is six days, typhus fever, twelve days, plague, seven days. The period of quarantine for measles is given by Osler as four weeks. For diphtheria no time is given, but the convalescent should show two negative cultures. This rule is being adopted by many health boards. For smallpox the period of incubation is fourteen days. It is usually asserted that smallpox convalescents should not be discharged until complete desquamation. No period is given for whooping cough or for chickenpox, and would depend on local laws. The period usually given for scarlet fever is from six to eight weeks.

6. From "Preventive Medicine and Hygiene," M. J. Rosenau, Appleton & Co., New York, 1916, p. 955 et seq., we abstract the following information regarding the treatment of sewage: "By appropriate processes sewage can be artificially purified so that the decomposable organic matter is removed or oxidized and the bacteria removed or killed. Complete purification is not attempted as being too difficult and expensive, but the degree of purification is adjusted to the needs of the particular situation. Methods of sewage treatment are: (1) separation of the suspended matter from liquid sewage; (2) destruction of putrescible organic matter in liquid sewage and by oxidation and bacterial action; (3) transmission of sludge to the condition of stability and inertness by bacterial action without oxidation; (4) destruction or removal of bacteria from the liquid effluent. This is done by various processes, such as screens, detritus tanks, plain settling tanks, septic tanks, digestion tanks, chemical precipitation tanks and roughing filters. Purification processes include surface irrigation, broad irrigation, intermittent filtration contact beds and trickling filters. In addition there are finishing processes and methods of sludge disposal. A recent form of tank disposal is the activated sludge method that combines forced aeration with bacterial action." As will be seen, the subject is a very broad one, and space could not be given to a full discussion of it in this department. The bacterial content of the effluent from disposal plants of the types mentioned above varies greatly. A table is given by Rosenau showing this. Safety in the use of water from streams into which the sewage effluent is discharged would depend on proper purification, as mentioned in No. 4. Pennsylvania has a law prohibiting the discharge of all sewage effluents or factory wastes into any stream. This applies also to the sewage from single houses in town or country; but, according to Rosenau, experience has demonstrated that polluted waters are being constantly purified by means of filtration methods so that they are reliably wholesome.

TREATMENT OF CHILBLAINS

To the Editor:—What is the best treatment for chilblains? What can be done when localized swellings occur and the patient suffers considerable pain? Is there any prophylactic treatment?

The books recommend internal treatment of calcium lactate and local applications of tincture of iodin, but I have obtained no success with those measures. J. W. O'Neill, M.D., Albertville, Minn.

Answer.—Prophylactic measures may be taken against chilblains before the advent of cold weather, or between exacerbations. The patient should be instructed to wear warm, loose woolen stockings and warm shoes. The feet should be bathed in warm water daily, and after the bath should be rubbed briskly, quickly dried, and a bland powder dusted on. Solution of potassium arsenite (Fowler's solution) in small doses is said to be prophylactic.

When the chilblains have developed, more active treatment should be employed. If the patient's general health is below normal, tonics, particularly strychnin and arsenic, are indicated. When the condition is very acute, it is well to use soothing lotions, as a calamine lotion, freely for a time. In the less acute cases, the greatest improvement is usually obtained with the use of stimulating applications, but the large number of these which have been recommended shows that no one of them is successful in all instances. Ichthyol, either in the form of a 25 per cent. ointment, or used in lotion form, one part to two or three parts of water, is perhaps most commonly recommended. Rubbing with oil of turpentine, pure or diluted, with camphorated soap linament or with phenolated oil, is sometimes employed. In the stubborn cases, the use of the galvanic current has at times produced a favorable effect, the positive pole being applied to the affected part, the negative pole to a neighboring region, near the truncal nerve.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

Colorado: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Idaho: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

Maine: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Minnesota: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

Massachusetts: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Missouri: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

Montana: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

Porto Rico: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

Rhode Island: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

Wisconsin June Report

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports the oral, practical and written examination held at Milwaukee, June 27-29, 1916. The total number of subjects examined in was 17; total number of questions asked, 98; percentage required to pass, 75. The total number of candidates examined was 65, of whom 64 passed, including 2 osteopaths, and 1 osteopath failed. Two candidates were granted reregistration licenses by examination. Twenty-eight candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Chicago Coll. of Medicine and Surgery	(1914)	74.6, 77.7
Rush Medical College	(1916)	81
University of Illinois (1914) 84.8; (1915) 85.5;	(1916)	84.7, 86.1, 86.3, 88.2, 89.7.
University of Louisville	(1916)	79.7
Harvard University	(1915)	89.2
Detroit College of Medicine	(1900)	78.8
University of Michigan, Medical School	(1916)	86.6
Jefferson Medical College of Philadelphia	(1916)	86.6
Marquette University	(1916)	77, 78.2, 78.6, 79.1, 79.6, 79.6, 80, 80.2, 80.5, 80.6, 80.6, 81, 81.5, 81.5, 81.5, 81.7, 82, 82.3, 82.6, 82.7, 83*, 83.5, 83.6, 83.7, 84, 84.2, 84.2, 84.3, 84.5, 84.6, 84.8, 85.1, 85.1, 85.3, 85.5, 85.5, 85.7, 86, 86.1, 86.5, 86.6, 86.6, 87.5, 87.6, 88.2.
Milwaukee Medical College	(1912)	77.3
University of Toronto	(1910)	84.3

* Official information indicates that this candidate has not graduated.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Atlanta College of Physicians and Surgeons	(1911)	Georgia
Bennett College of Eclectic Medicine and Surgery	(1900)	Illinois
Bennett Medical College	(1915)	Illinois
	(1911)	Tennessee
Chicago College of Medicine and Surgery	(1911)	Illinois
Chicago Homeopathic Medical College	(1902)	Minnesota
Chicago Medical College	(1886)	Minnesota
Coll. of Phys. and Surgs., Chicagō (1905) Arkansas;	(1912)	Illinois
Illinois Medical College	(1903)	Illinois
Northwestern University	(1914)	Illinois
Rush Med. Coll. (1913) Missouri; (1913) (1914)	(1915)	Illinois
University of Illinois (1914)	(1915)	Illinois
Indiana University	(1908)	Indiana
College of Physicians and Surgeons, Baltimore	(1912)	Maryland
Johns Hopkins University	(1900)	New York
University of Minnesota	(1903)	Minnesota
Central Medical College of St. Joseph	(1900)	Idaho
St. Louis University	(1915)	Missouri
Fordham University	(1914)	Illinois
Starling-Ohio Medical College	(1911)	Ohio
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1909)	Minnesota
Vanderbilt University	(1915)	Kentucky
University of Heidelberg, Germany	(1899)*	Tennessee

*Graduation not verified.

Missouri Reciprocity Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports that the following candidates were licensed through reciprocity from July 1 to Dec. 31, 1916.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Hahnemann Med. Coll. and Hosp. of Chicago	(1909)	Tennessee
Rush Medical College (1900) Iowa; (1914)	(1916)	Illinois
University of Illinois	(1913)	Illinois
Kansas Medical College	(1913)	Kansas
University of Kansas	(1915, 2)	Kansas
Louisville Medical College	(1905)	Indiana
University of Louisville	(1915)	Kentucky
Johns Hopkins University	(1914)	Maryland
Harvard University	(1911)	Illinois
University Med. Coll. of Kansas City	(1913)	Kansas
John A. Creighton Medical College (1912)	(1914)	Nebraska
Cincinnati Coll. of Medicine and Surgery	(1895)	Ohio
Eclectic Medical College, Cincinnati	(1895)	Kansas
Toledo Medical College	(1900)	Ohio
Meharry Medical College (1903) (1910)	(1912)	Tennessce
Memphis Hospital Medical College	(1912)	Tennessee
University of Tennessee	(1915)	Tennessee

Connecticut November Report

Dr. Charles A. Tuttle, secretary of the Medical Examining Board of the State of Connecticut, reports the oral, practical and written examination held at New Haven, Nov. 14-15, 1916. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 23, of whom 16 passed and 7 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Yale University (1913) 78.5;	(1916)	88.7
Tulane University of Louisiana	(1911)	81.9
College of Physicians and Surgeons, Baltimore	(1914)	78.5, 84.6, 88.6
Harvard University (1911) 84.7; (1912) 86.6;	(1916)	82.1, 83.4
Columbia University, Coll. of Physicians and Surgeons	(1915)	79.6
Jefferson Medical College of Philadelphia	(1914)	76.3
Medico-Chirurgical College of Philadelphia (1912) 88.9;	(1916)	76.6
University of Vermont	(1914)	80.5
University of Toronto	(1908)	76.8
FAILED		
Bennett Medical College	(1914)	62
College of Phys. and Surgs., Baltimore	(1914)	69.4
Eastern University*	(1913)	55.2
Harvard University	(1915)	69.3
University of Michigan, Med. School	(1906)	71.4
Long Island College Hospital	(1916)	70.8
Jefferson Medical College of Philadelphia	(1912)	70.6

* Officially reported as not recognized by the Maryland State Board of Medical Examiners.

Book Notices

Mechanisms of Character Formation. An Introduction to Psychoanalysis. By William A. White, M.D. Cloth. Price, $1.75. Pp. 342. New York: The Macmillan Company, 1916.

This is an outline of the tenets of Freud and his followers. The subject is treated with reason and logic and without polemic. Whether or not one is convinced that the psychology of Freud is a sound psychology, one must concede that Dr. White has approached the subject in the proper way. In a chapter on genetic approach, he shows that consciousness and conduct should be studied in connection with their development, with what has gone before, in the individual and in the race. The theme is carried further in a study of the relation of the foreconscious and the unconscious to actions of the individual. In describing the conflict, the author says, "The opposing forces . . . are the conscious and the unconscious," that is, the conflict is between the instinctive tendency as determined by the race and individual histories, and the demands of actual present situations. After an interesting account of symbolism, the author passes to dream mechanisms and the family romance, the latter, of course, including the so-called Oedipus and Electra complexes. These chapters are distinctively freudian. Chapters on the will to power, which may be said to be that inherent force which drives us to acquire new things and powers, contain a further exposition of the "libido," which is treated in a broad and fundamental way. The chapter on extroversion and introversion is quite technical, and is an attempt to classify men on the basis of the relation of their libido to environment—things and persons. A chapter which is somewhat of a step aside considers Adler's ideas on organ inferiority. The matter is interesting and suggestive, but some of it rather far fetched. A chapter on the resolution of the conflict takes us back into the strictly freudian. The general practitioner will have a hard time in trying to understand all of this treatise, and we fear that even psychologists, alienists and neurologists who as yet are uninitiated into freudian circles may find more than a little that is not exactly clear. None the less, this is one of the best presentations of the subject to date. It shows moderation, even, we suspect, considerable self-restraint. No one interested in the psyche, in the neuroses or psychoses can read it without interest and profit. The wealth of illustrative facts from biology, ethnology, philology, chemistry, archeology and other departments of learning adds to the interest, and the author's handling of the libido and sex matters is such as to render nugatory one of the most frequent protests against the freudian philosophy.

BACK INJURIES AND THEIR SIGNIFICANCE UNDER THE WORKMEN'S COMPENSATION AND OTHER ACTS. By Archibald McKendric, F.R.C.S.E., Surgeon in Charge of Surgical X-Ray Department, Royal Infirmary, Edinburgh. Cloth. Price, $1.25 net. Pp. 173, with illustrations. New York: William Wood & Co., 1916.

The author justly states that back injúries have a bad reputation. "The workman looks upon them with apprehension, the insurance company with doubt, the medical examiner with suspicion, the lawyer with uncertainty, and the court with as open a mind as is possible under the circumstances. . . . This little book is offered to the medical and legal profession as an honest effort to throw some light into the existing darkness." Since the introduction of workmen's compensation laws, the number of cases of injury to the back which appear for adjudication has almost equaled that of the so-called traumatic neuroses in personal injury courts. These cases are by no means all frauds, yet the difficulty of determining the presence of positive objective evidence of injury is often so great, and it must be said the methods of detecting them frequently so little understood, that many of the cases are incorrectly diagnosed, at times to the disadvantage of the person injured and at other times to the disadvantage of the employer. Any expressed opinion concerning a case of this kind, not based on a careful examination, with a full knowledge of the methods of diagnosis, is of no value. The author treats the subject clearly and shows not only that he has given it much thought and study, but also that he has had a large experience in this class of cases. Every physician who expects to handle such cases should read this book.

SURGICAL AND GYNECOLOGICAL NURSING. By Edward Mason Parker, M.D., F.A.C.S., Surgeon to Providence Hospital, Washington, and Scott Dudley Breckinridge, M.D., F.A.C.S., Gynecologist to Providence Hospital. Cloth. Price, $2.50 net. Pp. 425, with 134 illustrations. Philadelphia: J. B. Lippincott Company, 1916.

A work on nursing by two medical men, a surgeon and a gynecologist, is somewhat unusual, not that such men should not know about nursing, but for the reason that works on this subject have been written mostly by teachers of nurses instead of teachers of surgery. As a result we find, as might have been expected, that the authors go more extensively into the medical aspects of the subject than is customary in works of this character. Considerable space is devoted to pathologic subjects, such as infection, bacteria, the reaction of the cells of the body to invading cells, carriers of disease organisms, tissue changes in inflammation, phagocytosis and cell degeneration. While it will be granted as a general proposition that one cannot have too much knowledge, yet it must be admitted that, when writing on the subject of nursing, one can go too deeply into subjects belonging to medicine at the risk of transforming what might have been a very good nurse into a very poor doctor. Parts 3, 4 and 5, on minor technic in surgical nursing, the patient and the operation, are particularly commendable for the amount and character of the detailed information which they contain. The chapter on the nurse as an observer is one of the best in the book, and should be learned by heart by every nurse. Part 6, on supplementary chapters, which closes the work, is really a brief discourse on first aid.

A HANDBOOK OF INFANT FEEDING. By Lawrence T. Royster, M.D., Attending Physician, Bonney Home for Girls, Norfolk, Vt. Cloth, Price, $1.25. Pp. 144, with five illustrations. St. Louis: C. V. Mosby Company, 1916.

This describes the method of feeding with different percentages of food elements. The author adheres closely to his subject, and has based his text mainly on his successful experience in infant feeding.

Medicolegal

Malpractice and the Statute of Limitations

(Hurlburt vs. Gillett (N. Y.), 161 N. Y. Supp. 994)

The Supreme Court of New York, Special Term, Kings County, says that, prior to 1900, actions against physicians and surgeons, based on their negligence, which resulted in bodily injury, were within the three-year statute of limitations of New York State. By Chapter 117 of the laws of 1900, Section 384 of the code of civil procedure was amended by adding the word "malpractice" as an actionable case to the enumeration of actions to recover damages which had to be commenced within two years. But, in adding the word "malpractice," the legislature did not undertake to define the term. Just what professions were intended to be benefited is left to conjecture, save so far as judicial discussion and consideration had sanctioned a general use of the word. It is said in 23 Cyc. 121 that, as applied to physicians and surgeons, malpractice means negligent acts committed by a physician in treating his patient, or the unskilful treatment by a physician or surgeon, in consequence of which the patient is injured. And again: "Malpractice, in its ordinary sense, is the negligent performance by a physician or surgeon of the duties which are devolved and incumbent on him on account of his contractual relations with his patient" (30 Cyc. 1546). Prior to the legislation of 1900, referred to above, the term "malpractice" was applied by the Court of Appeals of New York in a number of cases as characterizing negligence on the part of physicians and surgeons. With this eminent recognition and application of the word "malpractice" to the negligent and unskilful conduct of physicians and surgeons, there should be no judicial difficulty in holding that the legislative addition of "malpractice" as one of the causes for which an action for damages could be maintained only if commenced within two years was intended to cover actions for negligence on the part of physicians and surgeons which resulted in bodily injury or hurt to a patient.

Fees Which Physicians May Charge

(Succession of Percival (La.), 72 So. R. 467)

The Supreme Court of Louisiana, in holding that a physician should be allowed $1,500 for services as charged, holds that a physician has the right, in the absence of a custom of his own, to charge for his visits, by day or night, at least the fee sanctioned by the custom of the community in which he lives; nor is he obliged, in so doing, to rate himself below the class to which, in his opinion, he properly belongs; and, in such case, the burden rests on the patient, who refuses to pay, to show a better reason for such refusal than that the physician is comparatively fresh from the seats of learning. It may happen that the knowledge of the schools goes beyond that on which reputations have been founded, and that the later graduate, bringing, with his diploma, the latest discoveries, is more competent to deal with a particular case than the earlier, with the experience of a past generation.

Workmen's Compensation Act Allows Nothing for Malpractice

(Ruth vs. Witherspoon-Englar Co. (Kan.), 157 Pac. R. 403)

The Supreme Court of Kansas reverses a judgment obtained by the plaintiff, who, while at work for the defendant, had his leg broken between the hip and the knee, the court holding that the plaintiff's judgment here could not be increased by the fact that through the incompetent or negligent handling of the case by physicians a disability which would otherwise have been merely temporary was rendered permanent. The court says that, even if circumstances had been shown sufficient to charge the defendant with responsibility for the fault of the physicians, the rule would not be altered; for liability under the compensation act cannot be made to depend on the degree of care exercised. A part of the loss occasioned by an accidental injury to a workman is cast on the employer, not as reparation for wrongdoing, but on the theory that it should be treated as a part of the ordinary expense of operation. So much of an employee's incapacity as is the direct result of unskilful medical treatment does not arise "out of and in the course of his employment" within the meaning of that phrase as used in the statute. For that part of his injury his remedy is against the persons answerable therefor under the general law of negligence, whether or not his employer be of the number. In other words, in an action under the workmen's compensation act of Kansas, a recovery can be had only on the basis of disability to labor resulting from the injury received in the course of employment, without the intervention of an independent cause, the separate consequences of which admit of definite ascertainment. It cannot be augmented by the fact that the disabling effects of the injury are increased or prolonged by incompetent or negligent surgical treatment, even where the employer is responsible therefor.

Society Proceedings

COMING MEETINGS

Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
California State Medical Society, San Diego, April 17-19.
Louisiana State Medical Society, Alexandria, April 17-19.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
North Carolina State Medical Society, Asheville, April 17.
Tennessee State Medical Association, Nashville, April 3-5.

ANNUAL CONGRESS ON MEDICAL EDUCATION, PUBLIC HEALTH AND MEDICAL LICENSURE

THIRTEENTH ANNUAL CONFERENCE OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Held in Chicago, Feb. 5, 1917

(Concluded from page 575)

Practical Examinations by State Licensing Boards

Dr. Walter P. Bowers, Boston: Besides ascertaining the moral character and the training of the applicant, it is the task of a state medical board to determine his fitness for licensure. This is done either by the board's own procedures or on credentials from some other examining board. No high grade medical school today depends wholly on written work and educators have become convinced that examinations also must be conducted partly along practical lines. Experience shows also that the requirement of the practical work has led some medical schools to do more efficient teaching. State boards must not fall behind the trend of modern medicine. Educators will never criticize fair, practical exercises conducted by well qualified examiners.

A circular letter, sent to all licensing boards of the United States, brought forty-six replies setting forth the following facts:

Fifteen boards have to a certain extent adopted practical tests in their examinations. Two (Maryland and Indiana) report that practical work has been tried and given up because of the time and expense required and because its scope was limited. It was stated that when a man was asked to map out the heart, to show the location of internal organs, or demonstrate an operation for empyema, he would usually look up at the ceiling and recite from memory; but on being told to demonstrate, not recite, he would fall down completely.

One examination subject before the Massachusetts board demonstrated that the average applicant obtained only about 5 per cent. better ratings in written than in practical work. At one of the early examinations, however, three patients having strictly normal heart action were used in the practical test in clinical diagnosis. In their examination of these patients by applicants almost every disease in the category was mentioned and scarcely any applicant declared the findings normal. Results at more recent examinations have been much improved.

Minnesota's Practical Examinations

Dr. Annah Hurd, Member of the Minnesota State Board of Medical Examiners, Minneapolis: Practical examinations were introduced in Minnesota about eight years ago. The effect was so satisfactory that they have been gradually elaborated and improved so far as means and opportunity would permit. In clinical diagnosis, the applicant is given one hospital patient with a large number of physical findings and is allowed about one and a half hours to examine the patient. Laboratory tests must be made also if the nature of the disease requires them; and a written record of the case is required. An oral examination is then given covering the case in hand and similar conditions, the applicant being questioned on the differential diagnosis. Two such cases would be a fair test for each applicant. This method obtains a better insight into the process of reasoning by which the applicant arrives at his final conclusions. It allows of a far better estimation of his knowledge and skill than reams of written words.

The board desires to make a closer personal supervision during the examinations in bedside diagnosis. With our present lack of attendants, it is necessary to pass from one candidate to another, leaving the applicant alone a part of the time.

Next in importance is the clinical laboratory examination. It now consists of a very simple urinalysis, namely, noting color, reaction, specific gravity; applying two tests for albumin, heat and nitric acid; two tests for sugar, and a microscopic examination of sediment for casts, pus, blood and crystals. To this should be added tests for indican, and estimation of total solids, urea, albumin and sugar.

Examinations should be made as nearly similar as possible to the real tests of actual practice, so we may know when we grant a license to practice medicine that the applicant is able to use practical methods of diagnosis for the benefit of his patients.

DISCUSSION

Dr. W. J. Means, Columbus, Ohio: The problem of determining the fitness of persons to practice the healing art is perplexing because of several disconcerting factors confronting the licensing boards. Among these are: (1) The attitude of practitioners of the various cults who seek the right to use their methods without meeting the educational requirements of scientific medicine; (2) inadequate facilities for conducting laboratory and clinical tests for large numbers of applicants, and (3) the lack of sympathy on the part of the public toward restrictive measures against persons whom they may want to employ.

A number of the licensing boards have inaugurated limited practical examinations, but in no instance are they given due weight as determining factors as compared with the written tests. The Ohio board inaugurated practical tests several years ago and has gradually increased their severity, but I am informed that the proportionate value to the written test is only about 25 per cent.

The examination of the National Board of Medical Examiners as reported recently made laboratory and clinical tests of equal importance with the written examination—a move in the right direction. It might be radical to advocate that a higher value—66⅔ per cent.—be given to the practical tests. Tests should be made on the following basis:

1. Examinations should be comprehensive so as to furnish a satisfactory estimate of the applicant's knowledge of medicine and of his training in the methods of clinical diagnosis. 2. No license to practice the healing art by any method should be granted until the applicant has demonstrated by written, oral, laboratory and clinical tests his knowledge and training in anatomy, physiologic chemistry, physiology, pathology, bacteriology, physical diagnosis, surgery, medicine, obstetrics and hygiene. Granting the force of the contention that drugless practitioners should not be examined in the clinical branches along lines they do not practice, they can make no logical objection to an examination of equal severity in scientific subjects, physical diagnosis, clinical pathology and hygiene.

Dr. Herbert Harlan, Baltimore: Several years ago the Maryland board required a written examination, but we had the word "written" stricken out, so that we could try practical examinations. The following year we had about 160 applicants for the June examination and decided that practical examinations were impracticable with the number of applicants we had in Baltimore.

Dr. John M. Dodson, Chicago: Last year I went to Minnesota to see the practical examination. While it is not ideal, and is not so comprehensive as the one that they give in England, it is a great improvement on the methods now in vogue in most states. Just so soon as the other state boards adopt a plan of that sort, just so soon will it be easier to interest the medical student in his course of instruction in the training of his eye and his ear and his other faculties rather than interesting him in book cramming.

Dr. Calvin L. Johnstonbaugh, Bethlehem, Pa.: Four years as an examiner in the subjects of diagnosis, symptomatology and toxicology show that medical colleges are not teaching these subjects as they ought to be taught. They are not teaching young men to differentiate one disease from another, or to tell the poisonous effects of drugs.

Dr. George H. Matson, Columbus, Ohio: When we inaugurated practical examinations in Ohio, we had chemical, bacteriologic and pathologic examinations only, but since then we have added other subjects.

Dr. Charles H. Cook, Natick, Mass.: Any medical student can put on paper what should be found in a sample of urine in a case of chronic nephritis, but when it comes to a practical examination it is different. One applicant was given a specimen of urine taken from a nephritic, and after his examination the answer was, "Glycosuria, and a fine specimen, too."

The National Board of Medical Examiners

Dr. Isadore Dyer, New Orleans: The first examination of the National Board of Medical Examiners was quite satisfactory from the several objectives for which the board has been created. It has demonstrated (*a*) that there are men willing to undertake a severe test of proficiency with a view to certification by a body qualified by experience and training to conduct an examination based on high standards; (*b*) the value of practical examinations; (*c*) the possibility of providing material for clinical and laboratory test; (*d*) the value of its test in providing the best of material for the federal services. Among the five candidates who passed the national board's examination, the one who had applied for admission to the Army Medical Corps was admitted without further mental examination.

The national board has learned that an examination, covering six days, is a large tax on the candidates and on the examiners, as well. Further experience may modify the scope and character of the tests, but for the present no change in the plan is likely.

The coordination of the Army and Navy Medical Schools and the Public Health Service, in their laboratories and with their teaching personnel, materially lessened the labors of the members of the board. The large service rendered by the staffs of the several government and other hospitals in Washington, in bringing clinical material to one central place for examination, made it possible to pick the best of a multitude of patients. As the examinations recur, these facilities will make for more and more systematic arrangement of material.

The Problem of Medical Cults

Dr. David A. Strickler, President of the Federation of State Medical Boards, Denver: No school of healing can attain any definite standing unless there is some basic element of truth underlying it, and nothing so elevates it in the eyes of the public as an evident persecution on the part of the medical profession. The wonderful results attained by highly scientific work within the medical ranks are too largely offset in the minds of the public by the vindictive spirit shown by the average member of the profession against any person or thing introduced to medicine with any suggestion of irregularity. A tolerant attitude, with a readiness to look for and to assimilate the good irrespective of its origin, will do more to eliminate sectarian medicine than all the legislative acts past or contemplated. In Colorado it is not the function of the state either to support or to interfere with any theory of treatment, no question on treatment has ever been permitted, and it has been the constant effort of the medical profession to establish the following principles: 1. The law regulating the practice of medicine is for the benefit of the public and not of physicians. 2. No person shall be allowed to practice the healing art in any of its divisions without first obtaining a license from the examining board. 3. The license to practice medicine shall be based on educational qualifications and not on sectarian views. 4. The same educational standards shall be applied to all persons desiring to exercise the same privileges, regardless of the method of healing employed.

Two years ago a compromise with the chiropractor was forced on us which provided for the issuance of a limited license to practice chiropractic, which is defined and limited to "the treatment of disease or morbid conditions of human beings by palpation, nerve-tracing, and adjustment of vertebrae by hand." To practice medicine in any other manner was made a misdemeanor subject to the penalty of practicing medicine without a license. The requirements for this license are: 1. Two years' continuous active practice of chiropractic in Colorado. 2. Six months' practice in the state, together with a diploma from a chiropractic college which required an actual attendance of not less than 400 hours of instruction of the individual applicant. 3. Applicants from out of the state and all others in the future shall present satisfactory evidence of graduation from a chiropractic school requiring personal attendance of not less than two years, of not less than 1,000 hours of instruction in each year.

I am strongly of the opinion that (*a*) the state is not concerned in the relative value of different methods of treatment but (*b*) must make sure that the individual has had a training in the basic sciences underlying medicine, so that he is qualified to recognize disease before he is permitted to undertake its treatment. (*c*) This knowledge should be ascertained by a single examining board in an impartial manner without sectarian bias. (*d*) Before taking an examination on medical subjects the applicant should possess adequate preliminary educational qualifications, as determined by persons of academic training who are not physicians. (*e*) No educational institution organized to grant degrees should be permitted to operate in the state without showing adquate funds, facilities and standards to justify such operation as measured by established educational standards and determined by educators.

DISCUSSION

Mr. H. E. Kelly, formerly attorney for the Colorado State Board of Medical Examiners, Chicago: I think there is a general misapprehension that the law at any particular time ought to represent the highest view and the highest form of truth. The law never can be that, but always lags behind truth as ascertained at any particular time. The race has always developed great minds, far ahead of the general knowledge and information of the race as a whole. These men have ascertained truth far ahead of the appreciation of it by the people as a whole who make the law, and the peoples' representatives cannot rise above them. Laws must be sustained by the people as a whole. The people look at things with all the error and inconsistency of the public mind. The law looks toward the benefit of the public as a whole. Proceeding from that point of view, we ought to obtain the enactment of laws which prescribe certain minimum standards for every healer, for every sort and condition. All persons who heal or attempt to heal disease for pay and have offices are doing it as a business, whether they do it in the name of some church or not, and that business under the law may be regulated. In attempting to regulate healing as a business, all ought to be put on the same footing. If we could establish certain minimum requirements, and have them apply to everybody who heals, we should take a long step forward in looking after the public health, and that is the only object with which law is concerned.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

February, XIII, No. 2

1 *Experimental Studies of Intestinal Flora. W. R. Sisson, Baltimore.—p. 117.
2 Hematology of Infectious Diarrhea. C. J. Bloom, New Orleans.—p. 128.
3 *Specific Diagnosis of Tuberculous Meningitis. M. Kasahara, Kyoto, Japan.—p. 141.
4 Diabetes Mellitus in Children, Report of Two Cases. P. C. Jeans, St. Louis.—p. 145.
5 Syphilitic Disease of Thymus in Infants and Mode of Origin of Dubois Abscesses. J. Oliver, San Francisco.—p. 158.
6 Congenital Atresia of Right Auriculoventricular Orifice with Complete Absence of Tricuspid Valves. J. H. Hess, Chicago.—p. 167.
7 Anatomy, Physiology and Pathology of Childhood. J. B. Holmes, Baltimore.—p. 174.

1. **Experimental Studies of Intestinal Flora.**—These experiments were carried out by Sisson with the purpose of ascertaining the effect of various foods commonly used in infant feeding on the bacterial flora of the intestinal tract. Feeding puppies cow's milk mixtures with high percentage of sucrose or lactose did not cause characteristic changes in the intestinal flora at any level, even when a diarrhea was produced. Starvation, of twenty-four hours rendered a relative amicrobism of the small intestine.

3. **Diagnosis of Tuberculous Meningitis.**—The diagnosis of tuberculous meningitis by the focal reaction of tuberculin, which Kasahara says is simple but specific in nature, is made by him as follows: After taking out a certain quantity of cerebrospinal fluid by lumbar puncture for cytologic examination, an intradural injection of diluted tuberculin (Koch's old tuberculin) is made. After six, twelve or twenty-four hours cytologic examination is again made of the fluid, which is obtained by lumbar puncture, and a comparison is made of the cell count before and after the intradural injection. The dose of tuberculin injected into the spinal canal is from 0.01 to 0.002 mg., with which a satisfactory result can be obtained. In the preparation of the tuberculin it is well to dilute it with physiologic salt solution (from 0.5 to 1 c.c.). Among specific reactions, the most conspicuous thing is an increase in the cell count of the cerebrospinal fluid, especially that of the red cells.

American Journal of Insanity, Baltimore

January, LXXIII, No. 3

8 Psychiatric Family Studies. A. Myerson, Taunton, Mass.—p. 355.
9 Consanguinity Among Patients at Newberry State Hospital, Newberry, Michigan. M. P. Kemp, Newberry, Mich.—p. 487.
10 State Charities Laws with Suggestion for Standard Type to Cover Needs of Present Day Management and also Mental Hygiene Movement Looking to Prevention. S. D. Wilgus, Rockford, Ill.—p. 499.
11 Brain Atrophy with and without Widening of Sulci. A. E. Taft, Boston.—p. 519.
12 Korsakoff Syndrome (Toxemic Cerebropathy) in Pregnancy. C. E. Riggs, St. Paul, Minn.—p. 525.
13 Results Produced in Dementia Praecox or So-Called Endogenous Dementia by Infusion of Sodium Chlorid Solution. N. Ishida, Japan.—p. 540.

American Journal of Orthopedic Surgery, Boston

February, XV, No. 2

14 Osteochondritis Dessicans; Report of Cases. E. G. Brackett, Boston, and C. L. Hall, Washington.—p. 79.
15 *Bone and Joint Lesions; Study of Six Cases. C. F. Eikenbary, Spokane, Wash.—p. 95.
16 Scoliosis. E. G. Abbott, Portland, Me.—p. 108.
17 Experimental Tuberculosis of Muscle. L. W. Ely and J. F. Cowan, San Francisco.—p. 134.
18 Use of Radium in Mobilizing Joints Having Fibrous Ankylosis Following Tuberculous Arthritis. J. J. Nutt, New York.—p. 137.

15. **Bone and Joint Lesions.**—One of the cases cited by Eikenbary was sent in with a diagnosis of tuberculosis of the right knee following trauma. This patient died within two months' time of multiple small round cell sarcomas. Another case diagnosed as knee joint tuberculosis proved to be a small round cell sarcoma of the tibia. A third patient complained of a great deal of pain in the lumbar region and to a lesser extent down both thighs, with marked weakness in both legs and thighs, not amounting to a paralysis. The trouble began about six months previously. She had been treated for that indefinite disease, "sciatica." A history of a previous carcinoma of the breast, removed by paste, the age of the patient (55), the rapid progress of the disease, the marked wasting and flabby condition of the muscles, the extensive bone destruction without abscess formation, the confining of the destructive process to a single vertebra, led Eikenbary to make a diagnosis of secondary carcinoma of the third lumbar vertebra.

Boston Medical and Surgical Journal

February 1, CLXXVI, No. 5

19 Division of Ureter in Pelvic Operations; Report of Cases. W. P. Graves, Boston.—p. 149.
20 *Fractures of External Condyle of Humerus in Childhood, with Rotation of Condylar Fragment. J. S. Stone, Boston.—p. 151.
21 Median Patella Incision for Knee Arthrotomy. E. G. Brackett, Boston.—p. 153.
22 *Management of Operative Cases Presenting Urinary Back Pressure. A. L. Chute, Boston.—p. 155.
23 *Acute and Subacute Perforations of Stomach and Duodenum at Massachusetts General Hospital. E. P. Richardson, Boston.—p. 158.
24 Appendicitis. T. W. Harmer, Boston.—p. 165.
25 Laboratory Aid in Diagnosis of Scarlet Fever. D. M. Lewis, New Haven, Conn.—p. 170.
26 Cancer Occurring in Acid Parts of Body. A. L. Benedict, Buffalo.—p. 172.
27 Improved Venipuncture Needle. G. G. Fernald, Concord.—p. 173.

20. **Fractures of External Condyle of Humerus; with Rotation of Fragment.**—Stone advises that open reduction be done in these cases within the first few hours or else after a sufficient interval for the swelling and ecchymosis to have subsided. The treatment demanded is open incision, exposure of the fragment, removal of the clot and any fibrous tissue which may occupy the space from which the fragment came, and then with a blunt dissector the prying of the fragment into place in its normal position.

22. **Operative Cases Presenting Urinary Back Pressure.**—It is Chute's firm belief that the mortality in conditions attended with urinary back pressure, especially in prostatectomy, depends on the condition of the kidneys more than on the technic of the operation; that much can be done by careful preparation and after-care to determine the postoperative result in these cases. Chute makes it a rule in the care of prostatics with a considerable residual and consequent urinary back pressure, to open the bladder under local novocain anesthesia. This is done to rid the kidneys of the embarrassment of urinary back pressure and to minimize, so far as possible, the chances of renal infection from an infected bladder. The enucleation of the prostate, which is done at a later date, is always carried out under spinal anesthesia in the bad cases.

23. **Acute and Subacute Perforations of Stomach and Duodenum.**—Of ninety perforations in eighty-nine patients treated by operation, thirty-two died, a general mortality of 35.5 per cent. Including fourteen patients dying without operation, the total mortality of the cases admitted is 44.2 per cent. Eight patients, all of whom recovered, showed a more or less local abscess at the time of perforation. Forty-eight duodenal and thirty-four gastric, showed a diffuse peritonitis at the time of operation. Of the duodenal cases, fifteen patients died, a mortality of 31 per cent.; of the gastric, seventeen died, a mortality of 50 per cent. From 1896 through 1905, inclusive, the gastric cases were eleven in number, of which seven patients died and four recovered, a mortality of 64 per cent. The duodenal cases were seven in number, of which five patients died and two recovered, a mortality of 77 per cent. From 1906 to 1915, inclusive, there were twenty-three gastric cases, of which ten patients died and thirteen recovered, a mortality of 43.5 per cent. The number of duodenal cases was forty-one, of which ten patients died and thirty-one recovered, a mortality of 24.4 per cent. The principal cause of death was peritonitis.

Bulletin of Johns Hopkins Hospital, Baltimore

January, XXVIII, No. 311

28 *Relation of Tonsillar and Nasopharyngeal Infections to General Systemic Disorders. S. J. Crowe, S. S. Watkins and A. S. Rothholz, Baltimore.—p. 1.
29 Legend of Salerno. How Constantine the African Brought Art of Medicine to Christians. C. Singer, England.—p. 64.

28. **Relation of Tonsillar and Nasopharyngeal Infections to General Disorders.**—This report is based on the study of 1,000 tonsillectomies. A histologic examination of the tonsils and adenoids removed at operation was made in every case. One hundred and thirty-nine were from colored patients, and of these eleven, or 7.9 per cent., were tuberculous. There were 861 white patients, and of these thirty-five, or 4 per cent., were tuberculous. Ninety-one patients had an infectious type of arthritis. Of this number the authors have been able to follow up and note the ultimate result of the joint condition in thirty-one. In twenty-four the joints are normal. Four cases are classified as improved because the patients are now able to walk without pain. Two are not improved, and one is in worse condition than at the time of the operation. In four cases of myalgia the trouble had entirely disappeared. Only two of nine cases of rheumatoid arthritis are improved. Five are much worse. The conclusion drawn from this group of cases is that only in very exceptional circumstances should any one subject a patient with "rheumatoid arthritis" to an operation for the removal of the tonsils. Removal of the tonsils and adenoids in cases of rheumatic fever eliminates one of the portals of infection. Four of twenty-five cases have had a recurrence. Removal of the tonsils and adenoids is not a very satisfactory therapeutic or prophylactic measure in chorea. Of the twenty-three cases of Sydenham's chorea in which the tonsils and adenoids were removed, eight have had a recurrence. A chronic enlargement of the deep cervical glands at the angle of the jaw, together with the past history of the patient, was the indication for tonsillectomy in 541 of the 1,000 cases. In twenty-one of 366 cases reexamined, the glands, subsequent to the operation, gradually assumed the characteristics of a tuberculous infection. In thirty-six additional cases the glands did not subside, and are treated as incipient tuberculous glands.

Bulletin of Lying-In Hospital of City of New York

January, XI, No. 1

30 *Fetal Infection as Cause of Stillbirth and Sundry Obstetric Theories. J. B. De Lee, Chicago.—p. 1.
31 *Posture in Obstetrics. J. W. Markoe, New York.—p. 11.
32 *Acidosis as Factor in Toxemias of Pregnancy. J. R. Losee and D. D. Van Slyke, New York.—p. 26.
33 Conservative Treatment of Eclampsia. G. W. Kosmak, New York. —p. 33.
34 Ureteral Fistula Following Labor. Left Ureter Transplanted into Bladder. J. W. Markoe, New York.—p. 41.
35 Source of Danger in Elective Cesarean Section Before Labor and with Undilated Cervix. J. A. Harrar, New York.—p. 46.
36 *Conservative Treatment of Eclampsia. R. McPherson, New York. —p. 48.
37 *Is Operation of Cesarean Section Indicated in Delivery of Breech Presentation? R. McPherson, New York.—p. 50.
38 *Case of Bilateral Congenital Glaucoma. C. E. McDonald and M. K. Smith, New York.—p. 53.
39 *Parallel Study of Blood Pressure, Urine and Edema in Pregnancy. M. Rosensohn, New York.—p. 55.
40 Case of Intussusception in Four Day Old Infant. K. B. Steele, New York.—p. 56.
41 Report of Work Done in Babies' Class from Oct. 1, 1915, to Sept. 30, 1916. E. L. Coolidge, New York.—p. 58.
42 Medical Statistics of Lying-In Hospital from Oct. 1, 1915, to Sept. 30, 1916. R. McPherson, New York.—p. 60.

30. **Fetal Infection.**—The following problem is suggested by De Lee: May not pregnancy develop the affinities of the bacteria normally present in the body, or that are casual guests, so that they attack the various vulnerable organs, including the fetus? That the obstetrician must be prepared to accept the theory of special affinities of bacteria De Lee is convinced. Two years ago he saw several cases of pemphigus simplex, and at the same time and within the four months succeeding there was a small epidemic of breast abscesses, fifteen in the mothers and babies. A simple *Staphylococcus albus* was all that was found and injection of the culture into rabbits did not produce in them the customary fatal septicemia.

31. See THE JOURNAL, Oct. 7, 1916, p. 1066.

32. **Acidosis in Toxemias of Pregnancy.**—The authors are convinced that the toxemias of pregnancy can be attributed neither to failure in diaminization of the amino-acids, nor to the moderate degree of acidosis observed. The nature of the toxin or toxins therefore remains unknown. The nature of the functional disturbances which cause the abnormal nitrogen metabolism observed also still awaits a satisfactorily conclusive explanation. Nevertheless, the constancy of the low urea ratios in the urine in eclampsia, and of high ammonia in pernicious vomiting, lends decided support to the opinion of Ewing and Wolf, that the nitrogen distribution of the urine, considered "in connection with all the data in the case," should assist in diagnosing the toxemias of pregnancy, and in differentiating them from conditions such as nephritis and transitory gastric disorders. The only eclamptic urines which showed more than 70 per cent. of urea nitrogen were those obtained one or more days postpartum. The ammonia was often higher than the average in normal individuals, but the abnormality is less striking than that of the urea. All the cases of pernicious vomiting showed strikingly high ammonia percentages. In five cases of nontoxic pregnancy the nitrogen ratios were normal.

36. **Conservative Treatment of Eclampsia.**—Of thirty-five cases of convulsive toxemia, thirty-three mothers were discharged well, fifteen children were born alive and were discharged well, fourteen children were stillborn and six children died within a few hours after birth. This leaves a mortality in the series of 8.6 per cent. and a stillbirth mortality of 40 per cent. All of these cases were true convulsive toxemias, having had one or more convulsions before admission, and all were treated in approximately the same way. Immediately on entrance to the hospital, the patient's blood pressure is taken, a catheterized specimen of urine obtained and she is put into an isolation room which is darkened and as much quiet as possible obtained. She is then given by hypodermatic injection ½ grain morphin sulphate, her stomach is washed out, 2 ounces of castor oil is poured down the tube at the end of the lavage and she is given a colonic irrigation of 5 gallons of 5 per cent. glucose solution. If the blood pressure is over 175 systolic, phlebotomy is done and a sufficient quantity of blood is extracted to bring the pressure down to 150. The patient is now kept quiet and ¼ grain morphin administered every hour until the respirations drop to eight per minute. At this time convulsions have usually ceased, the patient will have fallen into labor, and, as has happened in practically all the cases, will deliver herself in a short time. Of the cases included, twenty-three were spontaneous deliveries, nine were delivered by low forceps, two by version and breech extraction, one breech presentation and delivery. All the patients in whom a fetal heart was heard on admission were delivered of living children, and in none of these were there any signs whatever of the morphin which had been administered to the mother.

37. Also published in the *American Journal of Obstetrics and Diseases of Women and Children*, November, 1916.

38. **Bilateral Congenital Glaucoma.**—This is said to be the only case appearing thus far in the records of about 100,000 confinements in the service of the Lying-In Hospital.

39. **Study of Blood Pressure, Urine and Edema in Pregnancy.**—Rosensohn concludes from his study that the edema seen in pregnancy does not necessarily imply the existence of nephritis. It is apparently independent of the blood pressure. The average systolic pressure in primiparae in the later months of pregnancy is slightly below normal. The existence of hypertension does not necessarily imply the development of toxemia.

California State Journal of Medicine, San Francisco

February, XV, No. 2

43 Social Insurance. M. R. Gibbons, San Francisco.—p. 45.
44 Operative Treatment of Vertebral Tuberculosis. E. Jones, Los Angeles.—p. 50.
45 Physician's Responsibility to Life Insurance. P. K. Brown, San Francisco.—p. 51.
46 Use of Pure Phenol in Selected Cases of Chronic Middle Ear Suppuration. G. W. Walker, Stockton.—p. 54.
47 Roentgenographic Diagnosis of Hydronephrosis. M. Krotoszyner, San Francisco.—p. 58.

Georgia Medical Association Journal, Augusta

January, VI, No. 9

48 *Acute Torsion of Ovary in Young Girls; Report of Two Cases. H. S. Munroe, Columbus.—p. 169.
49 Chronic Affections of Knee. F. G. Hodgson, Atlanta.—p. 171.
50 Acute Dilatation of Stomach; Report of Two Cases. J. T. Rogers, Savannah.—p. 174.
51 Migraine. J. G. Dean, Dawson.—p. 176.
52 Nervous Manifestations in Bright's Disease. L. M. Gaines, Atlanta. —p. 180.
53 Pituitary Extract. J. W. Palmer, Ailey.—p. 185.
54 New Dietetic Treatment as Indicated from Simple Culture of Stools in Infectious Diarrhea of Infancy and Early Childhood. W. A. Mulherin, Augusta.—p. 189.

48. Abstracted in The Journal, May 6, 1916, p. 1491.

Journal of Cancer Research, Baltimore

January, II, No. 1

55 *Primary Spontaneous Sarcoma in Mice. M. Slye, H. F. Holmes and H. G. Wells, Chicago.—p. 1.
56 Spontaneous Tumors of Rat. F. D. Bullock and G. L. Rohdenburg, New York—p. 39.
57 Some Diagnostic Reactions for Malignant Tumors. A. F. Coca, New York.—p. 61.
58 Case of Epithelioma Developing in Skin Ulcer in Pellagra. K. M. Lynch, Charleston, S. C.—p. 77.
59 *Identification of Cells in Myelomas by Means of Indol-Phenol Blue Synthesis. J. Forman and J. H. Warren, Cincinnati. —p. 79.
60 *Palliative Treatment of Inoperable Carcinoma of Cervix by Means of Radium. R. T. Frank, New York.—p. 85.
61 Spontaneous Epithelioma of Fowl. A. I. Baird, New York. —p. 103.

55. **Primary Spontaneous Sarcoma in Mice.**—In a series of 12,000 necropsies on the bodies of mice there were found eighty-seven mice with neoplasms meeting all the criteria of sarcoma. These do not include lymphosarcomas, mediastinal tumors or tumors of the testicle, suprarenal, ovaries and kidneys, of "mesothelioma" character. Spindle-cell sarcomas constitute over half the tumors, there being forty-seven of all types, not including three oval-cell sarcomas, three perivascular sarcomas and two alveolar sarcomas. There were twelve osteoid sarcomas and ten polymorphous cell and ten round cell sarcomas. Metastasis was observed in twenty-three cases, or 26.4 per cent., the osteoid sarcomas leading with 75 per cent. metastasis occurred in only 13 per cent. of the spindle-cell sarcomas. Lungs, liver and lymph nodes showed most of the metastases. In all respects these sarcomas of mice correspond with the sarcomas of men, although the authors found no examples of melanosarcoma, multiple myelomas, or myeloid sarcoma. In at least eleven cases the sarcomas definitely arose at the site of previous injuries. In a few instances there seemed to be two distinct primary sarcomas in the same mouse, and there were three instances in which the growths suggested a mixture of sarcomatous and carcinomatous elements. About half the sarcomas arose in the subcutaneous tissues, apparently from the mammary gland in most cases; and next in frequency from the osseous tissues. Two cases of sarcoma of the uterus were observed, the only uterine tumors of any kind observed in all the necropsies. Twenty of the sarcoma mice also had other independent tumors, lung tumors being most numerous. Two mammary gland tumors closely resembled in structure the embryonal adenosarcoma of the kidney of man. The influence of inheritance on sarcoma incidence was marked.

59. **Identification of Cells in Myelomas.**—The specimen on which the study made by Forman and Warren is based consists of a tumor involving the lumbar vertebrae. In its growth it has replaced the bodies of these vertebrae, leaving only a shell of bone. The blood examination made on the patient about two weeks before his death, showed that there was not a leukemic state present in the blood at that time. The indol-phenol blue synthesis depends on the fact that alpha naphthol and dimethylparaphenylendiamin combined with two atoms of oxygen forms indol-phenol blue. A very large majority of the tumor cells give the oxydase reaction. These cells are definitely placed in the myeloid group.

60. **Radium in Inoperable Carcinoma of Cervix.**—In every case so far treated by Frank a distinct amelioration of pain was observed within two weeks after the second radiation. Coincidentally, the bleeding diminished or disappeared, and the foul discharge became odorless and serous in character. In the earlier cases treated, because of insufficient filtration, very annoying rectal and vesical tenesmus was complained of, usually most marked on the third and tenth day after the beginning of the treatment. Severer rectal tenesmus developed in these cases as late as the third month. Since the practice of distending the vagina with gauze has been adopted, these unpleasant symptoms have either not appeared or have been very mild in character. The minimum quantity or radium substance needed is 50 gm. "Borderline" cases or operable cases, Frank says, should be submitted to operation after a short preliminary course of radiation. Good primary results may then be expected from simple total hysterectomy. Patients operated on should be subjected to postoperative, prophylactic radiation, beginning not later than four weeks after operation. Whether the final results will prove that radium can give a permanent cure of cancer Frank believes is a mooted question. Judging from the limited penetrating power of the rays and the variation of resistance of different cancers, it seems probable that numerous disappointments will occur, and that in many cases positive harm will be done by enthusiasts who refuse to submit operable cancers to surgical operation.

Journal of Infectious Diseases, Chicago

February, XX, No. 2

62 *Virulence of Diphtheria Bacilli from Diphtheria Patients and Diptheria Carriers. G. H. Weaver, Chicago.—p. 125.
63 *Alleged Detoxicating Power of Thyroid. H. R. Basinger, Chicago. —p. 131.
64 Epidemic of Acute Diarrhea Approaching in Some Cases Mild Dysentery. W. Sadler and R. F. Kelso, Quebec, Canada.— p. 140.
65 Passive Transference of Nonspecific Antibodies. P. K. Olitsky and B. S. Denzer, New York.—p. 145.
66 Comparative Study of Bacillus Anthracis-Symptomatici and Allied Organisms with Respect to Gas-Production. L. C. Todd, Detroit. —p. 150.
67 Transmission of Pneumonic and Septicemic Plague Among Marmots. F. Eberson and W. L. Teh, Japan.—p. 170.
68 Plague Poisons and Virulence. F. Eberson, Harbin, Manchuria. —p. 180.
69 *Effect of Various Chemical Substances on Hemolytic Reaction. N. P. Sherwood, Lawrence, Kans.—p. 185.
70 *Blood Culture Studies on Typhus Exanthematicus in Serbia, Bulgaria and Russia. G. Baehr and H. Plotz, New York.—p. 201.
71 Leukopenia and Leukocytosis in Rabbits. C. W. Wells, Chicago. —p. 219.

62. **Virulence of Diphtheria Bacilli.**—Diphtheria bacilli from patients with diphtheria and from carriers who have been in contact with such patients, Weaver found, are practically always virulent. The bacilli in such cases usually remain virulent up to the time of disappearance, even though a long time has elapsed. Weaver urges that carriers should be kept in isolation until the bacilli have been gotten rid of, or until the strains cultivated have been proved to be nonvirulent, and that cultures from the nose, as well as from the throat, should be made in all suspected cases.

63. **Detoxicating Power of Thyroid.**—Basinger found that the thyroid has no detoxicating properties that can be demonstrated by the injection of diphtheria and tetanus toxin directly into the thyroid.

69. **Effect of Chemical Substances on Hemolysis.**—In general, Sherwood says, the zone of concentrations fixing complement very nearly approximates, and in many cases coincides with, the weakest dilutions producing hemolysis, and may extend down to include a few concentrations which are unable to produce hemolysis. This suggests the possibility that the power of various organic compounds to deflect or fix complement may be a factor favoring infection or maintaining a chronic infection. Further, that some organic compounds might occasionally play some rôle in either inhibiting or intensifying the anaphylactic shock, since complement seems to be involved in this reaction.

70. **Bacteriology of Typhus in Balkans.**—The bacteriologic studies carried out by Baehr and Plotz in the Balkans and Russia on sixty-four individuals with typhus confirmed the observation previously made in New York, that *B. typhi-exanthematici* is present in the blood during the febrile period of the disease. Up to date, therefore, this organism has been found in pure culture in the blood of typhus patients in the United States, Mexico, Serbia, Bulgaria, Austria and Russia.

Journal of Medical Research, Boston

January, XXXV, No. 3

72 *Crystalline Hyalin. E. W. Goodpasture, Boston.—p. 259.
73 *Presence in Blood of Bacteria of Secondary Infection in Pulmonary Tuberculosis. F. Hall and S. C. Harvey.—p. 265.
74 *Isolation of Bacteria of Secondary Infection from Sputum in Pulmonary Tuberculosis. S. C. Harvey.—p. 279.
75 *Effect on Jejunal Mucosa of Exposure to Gastric Juice. F. C. Mann, Rochester, Minn.—p. 289.
76 Path of Involvement in Ascending Infection of Urinary Tract. D. N. Eisendrath and O. T. Schultz, Chicago.—p. 295.
77 Adenoma Formation in Stomach of Rabbits by Feeding with Lanolin. Y. Kon, Tokyo, Japan.—p. 337.
78 Production of Kidney Lesions with Staphylococcus Aureus Toxins. R. H. Major, Rosedale, Kan.—p. 349.
79 Studies on Paratyphoid Enteritidis Group. Some Cultural Characteristics and Their Relation to Host Origin. C. Krumwiede, Jr., J. S. Pratt and L. A. Kohn, New York.—p. 357.
80 Reaction of Cerebrospinal Fluid in Psychoses. P. G. Weston, Warren, Pa.—p. 367.
81 Studies on Staphylococcus Pyogenes Aureus, Albus and Citreus and on Micrococcus Tetragenus and M. Catarrhalis. I. C. Walker and J. Adkinson, Boston.—p. 373.
82 *Studies of Diphtheroid Organism Isolated from Sputum of Patients with Bronchial Asthma. I. C. Walker and J. Adkinson, Boston. —p. 391.
83 Studies on Paratyphoid Enteriditis, Typhoid, Dysentery and Colon Groups. H. Weiss and J. L. Rice, New York.—p. 403.
84 Aortic Aneurysms in Dogs; Report of Six Cases. S. R. Haythorn, Pittsburgh and A. H. Ryan, Boston.—p. 411.
85 Classification of Parasitic Amebae of Man. C. F. Craig, El Paso, Texas.—p. 425.
86 Comparative Study of Bacterium Pullorum (Rettger) and Bacterium Sanguinarium (Moore). L. F. Rettger and S. A. Koser, New Haven, Conn.—p. 443.
87 Argyrophilic Granules of Sympathetic Nervous System. A. Myerson, Taunton, Mass.—p. 459.
88 Fate of Micrococcus Aureus Introduced into Blood Stream of Dogs. C. J. Bartlett and Y. Ozaki, New Haven, Conn.—p. 465.
89 *Sensitization of Patients with Bronchial Asthma to Bacterial Proteins as Demonstrated by Skin Reactions and Methods Employed in Preparation of these Proteins. I. C. Walker, Boston.— p. 487.
90 Sensitization of Patients with Bronchial Asthma to Different Proteins Found in Dandruff of Horse and in Hair of Cat and Dog and to Serums of These Animals. I. C. Walker, Boston.— p. 497.
91 Sensitization of Patients with Bronchial Asthma to Different Proteins in Wheat and to Whole Protein of Wheat, Corn, Rice, Barley, Rye and Oat. I. C. Walker, Boston.—p. 509.

72. **Crystalline Hyalin.**—Epithelial hyalin, plasma cell, prostatic and crystalline nuclear hyalin are regarded by Goodpasture as a definite and perhaps identical chemical substance. He believes that the view that its presence signifies degeneration is probably correct.

73. **Presence of Secondary Bacteria in Tuberculosis.**—Hall and Harvey's results show that severe pulmonary tuberculosis, even with secondary infection, is rarely accompanied by a bacteriemia. Using the same technic, they were unable to confirm the positive findings of previous writers.

74. **Isolation of Secondary Bacteria from Sputum in Tuberculosis.**—In order to obviate the difficulties usually encountered in attempting to isolate organisms from the sputum the following procedures were adopted by Harvey: First, the mouth and nasopharynx are implanted with a nonpathogenic bacterium, the presence of which in the sputum, after washing, indicates that mouth contamination has not been removed. Second, the sputum mass is washed in a continuous stream of sterile salt solution until nothing is left but a small portion of the fibrin mesh which can hardly have origin from anything but an ulcerated or inflamed mucosa. Third, a portion of the fibrin mesh, which is cultured, is also stained for acid-fast bacilli, the presence of which identifies it as a derivative of the tuberculous process. The *Streptococcus nonhemolyticus* is the most frequent pyogenic organism found in association with pulmonary tuberculosis.

75. **Effect on Jejunal Mucosa of Gastric Juice.**—The results of the investigation reported by Mann are based on fourteen experiments. The specimens were obtained after operation. He says that when an isolated portion of the jejunum is transposed into the wall of the stomach the following changes may be noted: There may be slight thickening of both mucosa and muscularis. The mucus-producing cells may be increased in both number and size. There may be an active cell proliferation. In several of the experiments no change in the transposed mucosa was noticed. Ulceration of the mucosa occurred in one experiment, and in this case a more absorbable suture was found in the base of the ulcer. The gastric juice is probably not the primary cause of gastrojejunal ulcer. The function of the transplant as tested by its power to absorb fat was practically normal.

82. **Diphtheroid Organism in Sputum of Asthma Patients.**—A bacteriologic examination of the sputum was made by Walker and Adkinson in forty-five cases of bronchial asthma. In thirty instances apparently the same type of diphtheroid organism was isolated. This type is extremely polymorphous in its growth and much care is required at times to differentiate between it and other organisms, such as those belonging to the staphylococcus, streptococcus and pneumococcus groups. In the litmus sugar serum waters this type of diphtheroid organism coagulated regularly all of the sugars which were tried (dextrose, levulose, saccharose, dextrin, lactose, galactose, maltose, inulin, salicin, and raffinose and litmus milk). Mannite was unchanged by one half of the strains but was coagulated by the other half.

89. **Sensitization of Asthma Patients to Bacterial Proteins.**—The bacterial proteins were tested by Walker on 100 individuals, of whom seventy had typical attacks of paroxysmal bronchial asthma throughout the year, fourteen had seasonal attacks of paroxysmal bronchial asthma, six had either cardiac or renal disease, but had paroxysmal attacks, simulating bronchial asthma, seven probably had true bronchial asthma though their attacks were not typical, and three had very questionable attacks of bronchial asthma. The proteins were prepared only from the bacteria usually found in the respiratory tract; the *S. pyogenes-aureus, albus* and *citreus*, the *M. tetragenus* and *catarrhalis*, the *S. viridans-hemolyticus* and *nonhemolyticus*, and a type of diphtheroid bacillus usually found in the sputum of asthmatic patients were used. Ninety-two patients were tested with the protein from *S. pyogenes-albus:* six gave a positive reaction, eight gave a questionable one and seventy-eight gave no reaction at all. Sixty-eight patients were tested with the protein from *S. pyogenes-citreus:* two were positive, one was questionable, and sixty-five were negative. Eighty-one patients were tested with the protein from each of the two types of micrococcus. One patient gave a positive reaction to the protein from *M. tetragenus* and two patients to the protein from *M. catarrhalis.*

Of the patients tested with the streptococcus group, one gave a positive reaction to *S. hemolyticus*, but no positive reactions were obtained with the protein from *S. viridans* or from *S. nonhemolyticus.* Fifty-five patients were tested with the protein from an unidentified type of diphtheroid organism and sixty-eight from an identified type of diphtheroid organism; the latter type was usually found in the sputum of asthmatic patients. One patient reacted positively to each type of organism; three patients reacted questionably to each type of organism; fifty-one patients were negative to the unidentified type of diphtheroid organism and sixty-four were negative to the identified type of diphtheroid organism. An alcohol-ether preparation of bacterial proteins gave the most satisfactory results of any used.

Kentucky Medical Journal, Bowling Green

February, XV, No. 2

92 Diagnostic Points General Practitioner Should Know About the Ear. S. Cohn, Fulton.—p. 55.
93 Diagnostic Points General Practitioner Should Know About the Throat. H. G. Reynolds, Paducah.—p. 57.
94 Diagnostic Points General Practitioner Should Know About the Nose. G. C. Hall, Louisville.—p. 58.
95 *Tuberculosis; Its Relation to Life Insurance. W. R. Thompson, Mount Sterling.—p. 66.
96 Relation of Discharging Ear to Life Insurance. A. O. Pfingst, Louisville.—p. 68.
97 Rational Management of Typhoid. S. W. Crowe, Centertown. —p. 75.

95. Abstracted in The Journal, Dec. 2, 1916, p. 1692.

Maine Medical Association Journal, Portland

January, VII, No. 6

98 Eclampsia and Misfit Labor; Their Modern Management. S. P. Warren, Portland.—p. 173.
99 Medical Inertia and Vacation. J. A. Spalding, Portland.—p. 189.

Medical Record, New York

February 3, XCI, No. 5

100 Roentgenologic Diagnosis of Cerebral Lesions. C. W. Perkins, New York.—p. 177.
101 Case of Myatonia Congenita. M. Neustaedter, New York.—p. 181.
102 Wounds Caused by Modern Projectiles. B. F. Morowitz, New York.—p. 183.
103 Oral Infection and Its Relation to Arthritis. H. A. Goldberg, New York.—p. 185.
104 Modern Diagnosis and Treatment of Syphilis. F. W. Smith, New York.—p. 186.
105 Bacteriologic and Experimental Researches on Etiology of Sprue. H. Dold, Shanghai, China.—p. 191.
106 Epilepsy. L. Grimberg, New York.—p. 193.
107 Proctitis; Its Widespread Prevalence Not Recognized. A. L. Sherman, West Orange, N. J.—p. 196.

Military Surgeon, Washington, D. C.

February, XL, No. 2

108 *Most Practicable Plan for Organization, Training and Utilization of Medical Officers of Medical Reserve Corps of United States Army and Navy, and of Medical Officers of Officers' Reserve Corps of United States Army, in Peace and War. M. Ashford.—p. 123.
109 Field Maneuvers of Divisional Sanitary Troops, Leon Springs, Texas, November, 1916. R. C. Turck.—p. 156.
110 Effect of Marching on Rates for Nonefficiency of Newly Raised Troops. E. L. Munson.—p. 171.
111 Sanitation of Public Buildings. J. R. Hurley.—p. 183.
112 Recruiting for Military Service. F. T. Woodbury.—p. 195.
113 Demography in so Far as it Relates to Vital Statistics of Armies. W. P. Chamberlain.—p. 204.

108. **Organization of Medical Reserve Officers.**—It is specifically proposed by Ashford that the government make for the present an optional offer to all medical schools recognized as reputable by the American Medical Association. This offer is to be a choice of compulsory or optional course in sanitary tactics for their student body. Under this offer any medical schools which so elect may establish a course in sanitary tactics for their student body under the direct patronage of the government. The faculty of the individual school shall itself elect whether this course is compulsory for attainment of a medical degree or purely an optional one. If the medical school shall elect to make this course a prerequisite for the award of a diploma, the government will put this school in Class 1. If the medical school shall elect to make this course optional, the government will place this school in Class 2. The training of physicians, who, after graduation, voluntarily elect to continue their affiliation with the Medical Reserve Corps of army or navy, should be systematic, tend toward organization as well as education, and lead to classification of all available physicians according to their special abilities and special line of professional endeavor. The course proposed here is a four-year correspondence course to be conducted by the surgeon-general of the branch of reserve activity elected, and also in annual summer maneuver camps for a period of not less than fifteen days. At the termination of the second year of the correspondence course those who have complied with foregoing requirements and whose papers in the correspondence course average up to a standard set by the surgeon-general, will be invited to take an examination in the subjects which they have studied. The successful candidates will be awarded a certificate of eligibility for appointment as captain in the medical section of the Officers' Reserve Corps of the army, or as passed assistant surgeons of the Medical Reserve Corps of the navy. At the termination of the fourth year of the correspondence course and the fourth annual instruction camp or cruise, medical reserve officers holding the eligibility certificate for captain will be invited to participate in an examination in sanitary tactics, and, if found qualified, will be awarded certificates of eligibility for appointment to the grade of major in the reserve corps of the army, or surgeon in the reserve corps of the navy.

The medical reserve officer who desires advanced study in sanitary tactics, will be able to gratify his taste by applying to the surgeon-general of his service for authority to take the postgraduate correspondence course. This will be a one-year course for graduates of the foregoing courses, and will be purely voluntary. It will consist chiefly of problems in sanitary tactics, map and visibility problems. Participants who successfully complete this course will be given credit on their efficiency records. These thoughts are amplified fully by Ashford in his paper.

Modern Hospital, St. Louis

February, VIII, No. 2

114 New Building for Hospital for Deformities and Joint Diseases. M. Craiger and M. G. Heidelberg, New York.—p. 83.
115 Solving Problem of High Cost of Living in Hospital. J. W. Fowler, Louisville, Ky.—p. 90.
116 Gelatin and Jelly Powders. J. P. Street, New Haven, Conn.—p. 93.
117 Work of Detroit Receiving Hospital. J. Dretzka, Detroit.—p. 96.
118 New Reception Building of Hospital for Insane, Brockville, Ont. J. C. Mitchell, Brockville, Ont.—p. 97.
119 Hospital Survey of Community. J. J. Weber, New York.—p. 99.
120 Small Community Hospital that Meets a Need. S. A. Lutgen, Wayne, Nebr.—p. 101.
121 Sociologic Aspect of Treatment of Alcoholism. C. B. Towns, New York.—p. 103.
122 Emergency Hospitals for Industrial Plants. L. L. Watters, New York.—p. 107.
123 Small Community Hospital—Organization. J. A. Hornsby, Chicago.—p. 110.
124 What the Chaplain Should Contribute to Team Work. F. W. Tracy, Rochester, Minn.—p. 122.

New Orleans Medical and Surgical Journal

February, LXIX, No. 8

125 Military Surgery from Personal Experiences in Present European War. K. W. Ney, New Orleans.—p. 546.
126 *Diagnosis of "Three-Days Fever" (Pappataci Fever). G. C. Shattuck, Boston.—p. 559.
127 Epidemic of Dengue in Porto Rico, 1915. W. W. King, Porto Rico.—p. 564.
128 Clinical Types of Dengue in Porto Rico Epidemic of 1915. W. W. King, Porto Rico.—p. 572.

126. **Diagnosis of Three-Day Fever.**—The duration of the pappataci or sand-fly fever varies from one to five, and perhaps to seven days; there is usually a leukopenia with decrease of the polymorphonuclear cells, and the pulse rate seldom exceeds 80, even with temperatures of 103. The onset is sudden, with chilliness, nausea, headache, heaviness and discomfort about the eyes, lumbar pain and stiffness of the muscles of the legs, and somnolence. On the next day there is fever of 101 or 102. The face is flushed, the conjunctiva injected, the tongue coated, and there is stiffness and pain in the back and calves of the legs, and no rash. The patient complains of frontal headache and is mentally depressed. The leukopenia is slight. The diagnosis of pappataci depends on presence of the usual signs and symptoms, the existence of other cases, the occurrence in summer in a region where the sand-fly is found, and the exclusion of other diseases by examination of blood films, negative serum reactions and sterile blood cultures.

New York Medical Journal

February 3, CV, No. 5

129 Diagnosis and Treatment of Gastric and Duodenal Ulcer. M. Einhorn, New York.—p. 193.
130 Ultraviolet Rays in Skin Diseases. F. Wise, New York.—p. 196.
131 Roentgen Ray in Diagnosis of Pulmonary Tuberculosis. J. Daland, Philadelphia.—p. 199.
132 Blindness Relieved by New Method of Treatment; Report of Case. W. H. Bates, New York.—p. 200.
133 Stones in Urinary Tract. E. G. Ballenger and O. F. Elder, Atlanta, Ga.—p. 203.
134 Syphilis of Genito-Urinary Organs. S. W. Schapira and J. Wittenberg, New York.—p. 206.
135 Orthopedic Treatment of Infantile Paralysis. S. Kleinberg, New York.—p. 207.
136 Undifferentiated Excitement. J. A. Jackson and M. Abramovitz, Philadelphia.—p. 211.
137 Studies of Eye Ground Changes in Cerebral Spastic Paralysis. J. A. Kearney, New York.—p. 214.
138 Therapeutics of Olive Oil. E. J. Asnis, Philadelphia.—p. 215.

Ohio State Medical Journal, Columbus

February, XIII, No. 2

139 Obstructions of Ureter. H. L. Sanford, Cleveland.—p. 79.
140 Obstructions to Urinary Flow in Bladder. H. A. Baldwin, Columbus.—p. 81.
141 Diagnosis of Conditions Interfering with Urinary Flow Anterior to Prostate. C. M. Harpster, Toledo.—p. 84.
142 *Roentgen Ray Treatment of Acne. Résumé of Fourteen Years Experience. W. I. Le Fevre, Cleveland.—p. 87.
143 Control of Diphtheria. R. G. Perkins, Cleveland.—p. 89.
144 Epilepsy. G. G. Kineon, Gallipolis.—p. 91.

142. **Roentgen-Ray Treatment of Acne.**—During the past fourteen years several hundred cases of acne have been treated by Le Fevre. The majority of these patients have been cured. Practically all were improved, while a few have not responded well. Le Fevre feels that the results justify the care, the time and the expense required for this method of treatment, and heartily recommends it as the method of choice in the treatment of acne.

Public Health Journal, Toronto

January, VIII, No. 1

145 Principles Involved in Notification of Tuberculosis. P. H. Bryce, Ottawa.—p. 1.
146 Sanitation of Railway Cars. T. R. Crowder, Chicago.—p. 6.
147 Causation of Dental Decay. T. E. Constant.—p. 27.
148 War and Incidence of Insanity. W. Graham.—p. 30.

Rhode Island Medical Journal, Providence

February, I, No. 2

149 Obstetric Writers of the United States. H. G. Partridge, Providence.—p. 29.
150 Prevention of Disease. L. F. C. Garvin, Lonsdale.—p. 33.
151 Modern Roenten Ray Therapy. I. Gerber, Providence.—p. 36.

Southwestern Medicine, Las Cruces, N. M.

January, I, No. 1

152 Alkalinization; Its Uses and Index. H. A. Miller, Clovis.—p. 10.
153 Roentgenology in Diagnosis of Chest Diseases. W. W. Watkins, Phoenix, Ariz.—p. 14.
154 Diagnosis of Gastro-Intestinal Lesions by Means of Roentgen Ray. W. B. Bowman, Los Angeles.—p. 21.
155 Some Theories and Few Facts about Headache. G. Werley, El Paso, Texas.—p. 29.
156 Headache in Diagnosis of Brain Tumor and Abscess. H. Crouse, El Paso, Texas.—p. 34.
157 Spinal Puncture in Relation to Headache. M. B. Wesson, El Paso, Texas.—p. 39.
158 Headache in Eye, Ear, Nose and Throat Work. E. R. Carpenter, El Paso, Texas.—p. 44.
159 Pioneer Practice in Southwest. H. Thompson, El Paso, Texas. —p. 46.
160 Retroversion; Its Clinical Pathology. A. C. Carlson, Jerome, Ariz.—p. 49.
161 Treatment of Pleurisy with Effusion. A. G. Shortle, Albuquerque. —p. 53.
162 Gunshot Wound of Abdomen. J. Vance, El Paso, Texas.—p. 57.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Journal of Tropical Medicine and Hygiene, London

January 15, XX, No. 2

1 Occurrence of Trichonocardiasis in Natives of Gold Coast. A. Ingram and J. W. S. Macfie.—p. 13.

Medical Journal of Australia, Sydney

December 23, 1916, II, No. 26

2 Mosquito and Insect Borne Disease. J. C. Verco.—p. 533.
3 Case of Atrophy of Choroid in Boy of Fifteen. L. G. Davidson. —p. 540.

Sei-I-Kwai Medical Journal, Tokyo

January, XXXVI, No. 1

4 Investigation of Diabetes Mellitus Among Japanese. S. Iwai. —p. 1.

Archives de Médecine des Enfants, Paris

December, 1916, XIX, No. 12, pp. 617-685

5 *Eczema in Children. J. Comby.—p. 617.
6 Infant Welfare Work in Brazil. (La division de protection du premier age du département sanitaire de l'état de Sao-Paulo.) C. Ferreira.—p. 626.
7 The Regional Tuberculin Skin Reaction. S. Pisani.—p. 632.
8 *Recurring Phlebitis in Domain of Inferior Vena Cava. A. Roux. —p. 636.
9 Acute Encephalitis or Serous Meningitis in an Infant. A. Roux. —p. 640.
10 Cerebrospinal Meningitis in an Infant. A. Roux.—p. 642.
11 Cerebrospinal Meningitis and Disinfection. J. Comby.—p. 644.

5. **Eczema in Children.**—Comby insists that eczema must be regarded not as an infectious disease but as a pure dyscrasia. Infection may become installed as a complication, and this is very frequent in children. It is not a factor in the pathogenesis but it may influence the prognosis unfavorably. In most children the eczema subsides before long, but the possibility must be borne in mind of some arthritic manifestation taking its place, such as asthma. In many cases, however, the eczema does not have this basis of a diathesis and it subsides radically in time under proper dieting. Even the arthritic type, persisting or recurring through months and years, may heal completely in time. The diet of the woman nursing an infant with eczema should be regulated as if the woman herself had eczema, avoiding alcohol, salted meats, acids and condiments. The diet should be vegetarian, drinking copiously of water, and the infant feedings should be spaced farther apart, at three hour intervals, with outdoor life, change of scene, change to the country or the mountains. Marfan has witnessed the subsidence of eczema in nurslings kept out of doors, at a moderate or high altitude. Comby has seen a change to the country or the seashore have the same effect, but strong winds should be avoided, and wind-blown sand particles. The bottle-fed infant should be given less fat in its milk, putting it on skimmed milk or buttermilk, or even on condensed or desiccated milk. The only way is to try first one and then the other, as it is impossible to tell which will be best for the individual child. Baths should be omitted, but the child must be kept scrupulously clean, with tepid douches, but not putting the child in the water as this macerates the epidermis, congests the skin and aggravates infantile eczema. Salves and moist dressings should also be avoided with the erythrodermia of young infants. Dry dressings (talcum powder) have an excellent influence on the acute dermatitis of young infants. Under the profuse and repeated powderings the oozing dries up, the redness subsides, and the epidermis heals over. Measures should be taken to prevent scratching; the best means for this, perhaps, is to fasten on the arms a rolled up sheet of cardboard. In this paper tube the child can move its arms freely but cannot bend them. If a salve is needed, one made with equal parts of starch, zinc oxid, petrolatum and lanolin may prove useful. It can be covered with gauze with openings cut in it for eyes, nose and mouth. This can be renewed once or twice a day. Crusts and scabs are best removed with sprays of boiled water, wet compresses or starch poultices. After this the zinc oxid salve can be applied. With chronic eczema of older children, a course of mineral waters at some spa may be advised, or Vichy water at home or arsenical treatment. No tea, coffee, wine or other stimulants. Some children do better without eggs, but they are useful if borne well. The dread of alimentary anaphylaxis should not deter from these useful foods; it is not as frequent or as important as some maintain. Moussous and Rocaz have reported good results from thyroid treatment in small doses.

8. **Recurring Phlebitis.**—Roux relates the case of a girl of 12 who on three occasions has had phlebitis in the domain of the inferior vena cava during some acute infectious disease, varicella, scarlet fever, and mild typhoid. With the latter the inferior vena cava was affected and also the portal vein system, and there were two attacks of nephritis. The condition of the veins is still precarious, and any intercurrent infection is liable to bring a return of the trouble which seems to be dormant at present.

Le Nourrisson, Paris

November, 1916, IV, No. 6, pp. 321-396

12 Infant Welfare Work in a French Province. (25 années, 1889-1913, de protection des enfants du premier age dans le département de l'Oise.) Delobel.—p. 321.
13 *Treatment of Tuberculosis in Young Infants; Prophylaxis and Prevention of Generalization of the Infection. Combe (Lausanne).—p. 347.
14 Loss of Important Elements in Condensed Milk. (Enseignements à tirer de l'analyse d'un lait condensé.) M. François.—p. 371.

13. **Tuberculosis in Young Infants.**—Combe reiterates the vital importance of preventing the infection of infants during the first eighteen months of life, saying that infection between the twelfth and eighteenth months practically condemns the child to death within six or eight months. After the eighteenth month, tuberculous infection induces merely glandular disease, local and closed, against which the child is admirably armed. It is armed against this to such a degree that only some intercurrent disease or deplorable conditions as to hygiene entail generalization of the tuberculous infec-

tion and death. The nursling must be protected, he reaffirms, against both bovine and human tubercle bacilli. Cow's milk must be boiled or pasteurized. This protects against bovine infection, but to protect against infection from some tuberculous member of the family requires much time, much money —for antiseptics are expensive—and much space, so that the child can be isolated in a well ventilated, sunny room. A single moment's forgetfulness, and the whole edifice of asepsis crumbles; the child is infected. Besides this, the isolation of the child seems so hard and cruel to the family that it is seldom strictly carried out, but unless the young child is kept away from the bacilli-sower and from the articles contaminated with his bacilli the child's doom is sealed. The milk of a tuberculous mother contains more or less toxins, even aside from the danger from direct contact and the poor quality of such milk. The physician has to appreciate these dangers before he can summon up courage to insist that the consumptive mother must not suckle her babe. She must never hug it, never caress it, never take it on her lap, and must restrict all contact with it to the strictly necessary, and never touch it without having first disinfected her hands with soap and some antiseptic solution. She must sterilize her mouth several times a day with an antiseptic solution, and always hold a handkerchief before her mouth as she speaks, sings, coughs or sneezes, when she is in the room where the child is kept, whether or not it is in the room at the time. All dishes and articles should be boiled after using, and the table and body linen thrown into boiling water every day and be further sterilized by ironing with a very hot iron. All dusting in the room should be done with a cloth slightly moistened with turpentine, the walls and floors washed with an antiseptic solution. The infant should creep and play only on a freshly laundered sheet in a railed space, both indoors and out, and it should be given only sand and little stones to play with, all carefully boiled and dried in the sun. All its playthings, rubber nipples, etc., should be boiled each time before being given to the child.

These measures are all theoretically possible and have been carried out in numerous instances, but as a rule the only safe way is to remove the child from its mother immediately after birth or remove the consumptive from the family circle. In France, Germany, Switzerland and elsewhere provision has now been made for institutions where infants exposed to danger of this kind at home can find shelter and safety.

In discussing means to augment the resisting powers Combe describes how he gives sunbaths to very young infants, graduating the heliotherapy to their size and strength. He also gives exposures to the actinic rays filtered through a sheet of special blue glass, allowing only the useful rays to pass. He begins with five minute exposures, front and rear, the lamp at a distance of over 3 feet. The sittings are gradually lengthened to an hour front and an hour back, the distance 1½ feet. The natural or artificial heliotherapy improves the general condition but does not seem to act directly on the tubercle bacilli or their products. The diet is regulated according to the indications furnished by analysis of the infants' stools. The natural heliotherapy is applied according to Rollier's technic.

Presse Médicale, Paris

January 8, XXV, No. 2, pp. 9-24

15 Tuberculosis in the Origin of Psoriasis. R. Sabouraud.—p. 9.
16 *The Oculocardiac Reflex with Thyroid Insufficiency and Under Thyroid Treatment. Petzetakis.—p. 12.
17 *Marasmic Infants. (Etude des nourrissons atrophiques, hypotrophiques et dystrophiques.) R. Raimondi.—p. 14.

16. **The Oculocardiac Reflex with Thyroid Insufficiency.**—Petzetakis reports that in six persons with myxedema of varying degrees of intensity the reflex phenomena from pressure on the eyeball were enormously intensified over what is observed in normal persons. The hypothyroidism leaves the sympathetic without the normal stimulation from the thyroid. As a consequence, the antagonist nervous system gets the upper hand, and vagotony results. He has induced a similar condition in dogs by nerve sections. Under thyroid treatment in one of his cases the lost balance was restored, and the oculocardiac reflex after a fortnight was about the same as in normal conditions. In two of the cases even light pressure on the eye for only two or three seconds arrested the heart's action for seven, eight, ten and fifteen seconds. Not a sound could be heard from the heart during this interval, even on auscultation. The young man in one case grew pale, stopped breathing and lost consciousness but the pulse gradually resumed its course, and became quite normal by the end of the second minute. It was the general impression that if the compression had been kept up a few seconds longer the syncope would have been definite. In this case, under thyroid treatment compression of the eyeball no longer induced syncope; it merely retarded the pulse to 20 or 25 beats per minute.

17. **Marasmus in Infants.**—Raimondi is chief of the medical staff at the Institut de Puériculture at Paris, and he states that he has been impressed by the way in which some of the infants that have not progressed properly, showing a tendency to atrophy, hypotrophy and dystrophy, seemed to recuperate and grow into normal conditions when they began to be fed at regular intervals. In others, dieting, tonics or organ extracts answered the purpose. The old conception of athrepsia corresponds to the ultimate phase of badly managed marasmus. Improper methods of feeding are responsible for the atrophy in the majority of cases; in others the internal secretions are at fault, and the condition can be corrected only by some organ extract. The infant is not finished when he comes into the world, and the thymus, the hypophysis, the thyroid, the parathyroids or the suprarenals may be functioning inadequately. Giving the corresponding extract will tide the infant over this period of insufficiency. Raimondi declares that the use of organ extracts for infants is not as extensive as it should be. Infants need this treatment on account of the unfinished condition of these glands in them, just as adults need them when these glands are injured from disease or toxic influences. Experimental research has shown that with insufficiency on the part of the thymus, the bones are softer, the nitrogen and calcium content of the urine is larger, exhaustion, ulceration and a tendency to purpura are common, as also loss of flesh and lack of resistance to infections. Much in this experimental picture resembles the marasmus of young infants, and explains the benefit from thymus treatment, especially after ingestion of the total extract of the thymus.

The infants that seem to benefit from thyroid treatment, are small with dry or puffy skin and lids, the face waxy; the child does not seem bright and the skeleton and teeth may be backward in developing, and there may be eczema. An overlarge tongue also suggests a tendency to myxedema. The earlier this thyroid insufficiency is detected and remedied, the greater chance of warding off serious trouble as the child grows older. Thyroid instability is also suggested when babes small at birth do not grow normally, the bones and muscles keep small, the hair and teeth do not develop normally and the children find it difficult to sit up or hold up the head. This arrest in development may follow some infection.

Raimondi discusses further the beginnings of infantilism, for which hypophysis insufficiency may be responsible. The term is usually restricted to the genital organs, but the whole organism may be suffering from the stunting process. In short, he declares, the "endocrinians" along with the dyspepsia cases form the most important group of marasmic infants. The three other groups include those with inherited taints, those suffering from acquired infection, and those procreated under unfavorable conditions of overwork, drunkenness, lead or other chronic poisoning, advanced age, repeated pregnancies or other factors militating against eugenics. He calls this the group of *atrophiques par mauvaise conception* or *évolution fœtale contrariée*.

Berliner klinische Wochenschrift

December 25, 1916, LIII, No. 52, pp. 1381-1404

18 *Importance of Concentration and Temperature for the Biologic Behavior of the Blood Serum. (Bedeutung physikalischer Einflüsse für das biologische Verhalten des Blutserums.) H. Sachs. —p. 1381.
19 The Modern Procedure for Removal of Projectiles in the Tissues. (Steckschüssen.) H. Schmidt.—p. 1385.

20 Nervous and Mental Diseases as Affecting Military Efficiency. (Ueber nervöse und psychische Krankheiten in ihren Beziehungen zum Kriegsdienst.) B. Saaler.—p. 1389.
21 *Rachitis. (Ueber Rachitis. V. Stoffwechselheilung und klinische Heilung.) E. Schloss.—p. 1391.

18. **Importance of Physical Influences for the Biologic Behavior of the Serum.**—Sachs calls attention to the importance of the concentration and the temperature of the serum as affecting complement deviation tests. The complement may become inactivated in a salt-free medium, but can be activated again if the reaction is made either acid or alkaline. He thinks it is beyond question that in many cases the negative findings with the complement-deviation test are due to inactivation of the complement by the lack of salt. Some serums behave differently when cold, but they can be influenced by addition of hydrochloric acid and then behave differently. In both these conditions, the salt-poor medium and the cold, some change in the globulin is evidently responsible for the modified findings. Tests with inulin confirmed the importance of physical factors for the deviation of complement. Inulin rubbed into cold water forms a thick suspension while it is dissolved in tepid water. This difference is enough to affect the deviation of complement. With the solution there is no hemolysis in the biologic test, while hemolysis occurs regularly when the suspension instead of the solution is used. These and further observations related lead to the formulation of certain laws as to the primary action of physical factors on the antibody-laden cells, both in biologic tests and in the living body. Physical changes in the globulin of the serum may prove of far-reaching import, both for pathology and therapy.

21. **Rachitis.**—In this, his fifth article on rachitis, Schloss discusses the clinical cure as contrasted with the cure of the metabolic derangement. His research has apparently demonstrated that in the progressive phase of rachitis, phosphoric acid is evacuated in the feces much more than in normal conditions. Under cod liver oil, as improvement progresses, the evacuation by way of the intestines becomes materially reduced. With spontaneous improvement, on the other hand, the reduction in the output occurs in the evacuation through the urine. He regards this fact as demonstrating that the cod liver oil ensures better utilization of the food, improving absorption, but not influencing the disease process directly. He warns that it takes over three months for the improvement to reach an appreciable stage. The skull is liable to show the improvement first, and craniotabes is thus a convenient and reliable index as to whether the rachitis is stationary or retrogressing. In his hundreds of cases he noted always that whenever a child began to present unmistakable craniotabes, other symptoms of rachitis soon followed, and, he exclaims, "even more important than inducing the retrogression of rachitic symptoms is the prevention of the development of new. And it is in this direction that proper treatment displays the greatest efficacy. Even at the best, it is rarely ideal; complete restitution is only seldom possible. There is usually left some flattening or asymmetry of skull or thorax, and the tendency to exacerbations is greater than generally credited." Those who have rachitic children under observation for many years are astonished at the tenacity of the rachitis and the way in which new manifestations are liable to develop, especially when treatment is suspended. This tenacity of the disposition to rachitis shows the necessity for keeping up treatment, allowing brief pauses. He insists that during the first two, or better yet, first three winters the treatment must be continuous. Only as the child enters its fourth year of life can we feel confident, as a rule, that nothing more will come of it. His analysis of the metabolic findings over long periods sustains these assertions. The individual response to treatment and the tendency to recurrence are both mirrored in the metabolic findings.

Deutsche medizinische Wochenschrift, Berlin

December 14, 1916, XLII, No. 50, pp. 1533-1564

22 Gas Gangrene. (Ueber Gasbrand.) E. Fraenkel.—p. 1533.
23 *Spirochete Articular Disease: Spirochaetosis Arthritica. (Ueber eine bisher unerkannte Spirochäteninfektion.) H. Reiter.—p. 1535.
24 *To Ward Off Danger of Rousing Dormant Infection at Secondary Operations. (Die Berücksichtigung der ruhenden Infektion bei der Operation Kriegsbeschädigter.) M. Katzenstein.—p. 1536.
25 The Eye Findings in Typhus. (Augenbefunde bei Fleckfieber.) A. Gutman.—p. 1538.
26 *Acute Nephritis in Troops on Eastern Front. Rostoski and Pantaenius.—p. 1543. Conclusion.
27 Prompt Restoration of Function after Suture of Severed Radial Nerve Shows that the Severing Was Not Complete. P. Ranschburg.—p. 1546.
28 Isolated Fracture of Tabula Interna with Destruction of Brain Tissue from Grazing Bullet Wound at Back of Neck. J. Volkmann.—p. 1547.
29 *Dysentery. Rodenacker.—p. 1548.
30 Set of Two False Teeth Extracted from Esophagus under Esophagoscopy. I. W. Samson.—p. 1550.
31 Thrush of the Vulva in Young Woman. (Soor der Vulva.) Golliner.—p. 1550.
32 Chair Litter for the Trenches. (Schützengrabentrage.) Kurtzahn. —p. 1551.
33 Pathogenesis of Typhoid. E. Frank.—p. 1551.
34 The Literature on Tuberculosis since the Beginning of the War. (Tuberculoseliteratur im Kriege.) H. Tachau.—p. 1552.

23. **Arthritic Spirochetosis.**—Reiter describes a case of what seemed at first to be acute articular rheumatism with cystitis and conjunctivitis. The temperature was regularly 37 C. in the morning and 39 C. (102.2 F.) at night, with regular night sweats. This condition had kept up for thirteen weeks, and the emaciation and weakness were so extreme the young lieutenant had to be fed by hand. A spirochete was cultivated from the blood which moved about by spiral twisting, thus suggesting the name for it, *Spirochaeta forans.* It does not seem to be pathogenic for guinea-pigs, but mice die the eighth day with profuse sweating. Under salvarsan, slight improvement was noted but the joints were still swollen and painful and there was still some fever at date of writing, November 21. The first signs of trouble were noted in August.

24. **Slumbering Infection as Affecting Secondary Operations.**—Katzenstein emphasizes the way in which infectious germs may be harmlessly encapsulated and lie dormant for months or years, but then something may happen to rouse and release them, and the infection flares up anew. The physicians with the armies have had this happen again and again when they have sought to correct some crippling contracture or deforming healing of fractures following war wounds. One can never be sure that slumbering infection may not be present, compromising the effects of the intervention. Katzenstein reports here that he has systematically studied out three ways to cope with this danger, and has had excellent results with each. These three methods are: (1) Open treatment of the wound, especially after correcting deformingly healed fractures. The bones are held firm with a plaster cast, but he leaves the soft parts quite open, refraining from any attempt to suture until all danger of the infection is past. (2) The use of tissues from the site of former suppuration when any transplanting is to be done. He is convinced that the tissues that have been exposed to infectious processes become able to produce antibodies in time, and thus adapt themselves to their dangerous environment. This local tissue-production of antibodies he regards as the reason why lesions in the mouth or rectum and in the peritoneum heal so quickly, while the brain, joints, etc., which never normally come in contact with infectious germs, are so susceptible to their action. He used adjacent fat or fascia tissue in correcting ankylosis of joints after the healing of infectious wounds. The outcome was decidedly good in his ten knee joints thus treated, seven elbows, four wrists and twenty-one finger joints. He interposed in some of the cases the periosteum left after subperiosteal resection. Even with fractures, the greater resisting powers of the bone from a focus of infection can be utilized by chiseling off a scrap of this bone to serve as the bolt between the ends where such is needed. His third method is to operate in two sittings. First he prepares the ankylosed joint for the operation, opening up the cicatricial tissue and making the resections as needed. Then he closes the wound and waits for three days to see if fever or inflammation follows. If slumbering virulent germs had been aroused there would soon be signs of infection in the depths of the wound. When all is seen to be going well, he proceeds

to complete the intended operation with transplantation of free flaps of fascia, bone or skin. He has done over 1,000 operations at Berlin designed to "uncripple the war cripples," and since he has been using the above methods the results demonstrate that it is thus possible to obviate the danger from slumbering infection.

26. **Nephritis in the Troops.**—Rostoski and Pantaenius here conclude their study of acute nephritis in the troops on the eastern firing line. It has been frequent, but without or with merely slight and brief fever. The mild course and the absence of anuria and of much oliguria are characteristics of this war nephritis. Typhoid bacilli were cultivated from the urine in some cases, showing that typhoid bacilli were evidently responsible for some of the cases at least.

29. **Dysentery.**—Rodenacker emphasizes that dysentery runs its course in two distinct phases, the stage of catarrhal enteritis, and then the stage of ulceration. The first phase is influenced by antidysentery serum; the second stage by local application of silver nitrate. Preventive serotherapy is useful in epidemics, but keeping out flies is indispensable.

Medizinische Klinik, Berlin

December 17, 1916, XII, No. 51, pp. 1329-1354

35 Spiral Fracture of the Humerus in Throwing a Hand Grenade. (Die Spiralfraktur des Humerus beim Handgranatenwurf, eine typische Kriegsverletzung.) H. Küttner.—p. 1329.

36 Chronic Dysentery. (Chronische Ruhr.) Jürgens.—p. 1331.

37 *Arsenic in Treatment of Blood Diseases. (Ueber Arsenkuren bei Blutkrankheiten.) N. v. Jagic.—p. 1334.

38 *Necessity for Keeping Venous Blood in Limb to Prevent Gangrene after Ligation of Artery. (Ueber die künstliche Blutleere von Gliedmassen und unterer Körperhälfte, sowie über die Ursache der Gangrän des Gliedes nach Unterbindung der Arterie allein.) E. Sehrt.—p. 1338.

39 Clinical Diagnosis of Contracted Kidney. F. Munk.—p. 1341. Concluded in No. 52, p. 1360.

40 Ultimate Results of North Sea Sanatorium Treatment of Children. (Die Dauererfolge der Behandlungen von Kindern in Nordseehospizen.) Becker.—p. 1353.

37. **Arsenic in Treatment of Blood Diseases.**—Jagic discusses the various factors involved in the therapeutic action of arsenic. Its main effect is the stimulation of assimilation under small doses; the action on the blood picture is varied and irregular. The improvement in weight and flesh under the arsenic may prove deceptive, as the blood disease itself may not be essentially modified. A stimulating action on the suprarenals is also likely; this would explain much of the favorable changes under its influence. He then reviews in detail his own experience with arsenic in various blood diseases in turn. In chlorosis, arsenic had to be supplemented with iron to accomplish its purpose; when there was a tendency to obesity, arsenic did not seem to be required. With pernicious anemia the arsenic improved the general condition, but the blood picture continued to grow gradually worse. The arsenic seemed to promote regeneration of reds and production of hemoglobin in acquired anemias if some constitutional weakness of the blood-producing organs did not prevent. In the leukemias, arsenic proved effectual only in the myeloid forms and when long kept up, especially when combined with radiotherapy. The outlook is better the smaller the proportion of large ungranulated marrow elements in the blood. The more granulated elements the better the response to both arsenic and the Roentgen rays. In this as well as in pernicious anemia, the remissions seemed to be rendered more durable by arsenic. With lymphogranuloma and lymphosarcoma no effect was apparent in some cases while in others the tumors seemed to grow smaller, especially under the combined arsenic-Roentgen treatment.

Of all the forms in which arsenic can be administered, Jagic prefers von Ziemssen's solution as the best. He gives it subcutaneously. The directions for it are to boil 1 gm. arsenous oxid with 5 c.c. normal solution of sodium hydroxid till dissolved. It is then rinsed into a graduated flask, and diluted to 100 gm. and filtered. It is indispensable to neutralize the solution with hydrochloric acid. To neutralize 1 gm. of the arsenous acid requires 4.75 c.c. of normal hydrochloric-acid solution. In conclusion he gives the chemical analysis of the Ziemssen solution which explains its action. His first dose is 1 mg. arsenic, gradually increasing by 2 mg. to a 12 mg. dose. Each dose is repeated three times, the injections being given three times a week. When less vigorous action is required, the maximum dose is 7 mg. It is convenient to have a set of vials on hand with the proper doses already measured out for the course. For internal use of arsenic he prefers the pill form or an arsenical mineral water (Dürkheimer). In chlorosis he gives pills of arsenous acid and reduced iron or combines Blaud's pills with the Dürkheimer water.

38. **Improved Tourniquet.**—Sehrt presents arguments to show that collaterals develop better after ligation of an artery when the vein is ligated too. Also that the tendency to gangrene is reduced when the venous blood is thus kept in the limb. He states that gangrene developed in 24.4 per cent. of the legs in which the artery was ligated alone but only in 9 per cent. when both artery and vein were ligated. In the arm, there was gangrene in 7.8 per cent. with ligation of the artery alone and 0 per cent. when artery and vein were both ligated. He ascribes the better outcome in the arm to the fact that the arm offers a much more extensive reservoir for the venous blood than the leg. He gives illustrations of a kind of clamp with which it is possible to shut off the blood flow in the femoral or other main artery by compressing this artery, as a projecting part of the clamp compresses the artery alone, while the rest of the limb or abdomen is left practically untouched.

Münchener medizinische Wochenschrift, Munich

December 26, 1916, LXIII, No. 52, pp. 1821-1836

41 *Phototherapy in Gynecology. (Ueber gynäkologische Aktinotherapie.) G. Klein.—p. 1821.

42 Meningitis after Infectious Sore Throat. (Meningitis nach Angina; Trepanation; Heilung.) F. Hahn.—p. 1822.

43 *Arrest of Severe Gastric Hemorrhage by Drinking Extract of Blood Platelets. (Ueber Stillung einer schweren Magenblutung durch Coagulen.) E. v. Meyer.—p. 1823.

44 Necessity for Antitoxin in Nasal Diphtheria. K. Ochsenius.—p. 1823.

45 *Treatment of Kidney Disease. (Klinische und funktionelle Studien über Nephritis. III.) H. Machwitz and M. Rosenberg.—p. 1824. Conclusion.

46 *War Neuroses among War Prisoners in Germany. (Kriegsneurosen und Kriegsgefangene.) F. Lust.—p. 1829.

47 Gas Gangrene Infection More Common in Wet Weather. (Einfluss der Witterung auf die Gasbrandinfektion der Kriegswunden.) R. Franz.—p. 1830.

48 Treatment of Fracture of Upper Arm. (Oberarmbrüchen.) Warsow.—p. 1832.

49 Adaptable Splint for Fractured Arm. (Eine universelle Schiene für Armbrüche, Oberarmbrüche. Verstellbare Beckenstütze.) Stolz.—p. 1834.

50 Field Incinerator. (Zur Hygiene des Stellungskrieges. III. Hygiene der Müllgrube.) K. Hannemann.—p. 1834.

51 *Improvised Atomizer for Applying Tincture of Iodin. F. Golch.—p. 1835.

52 *Simplified Technic for Transplanting Skin. (Mehr Transplantieren!) Bürmann.—p. 1835.

41. **Radiotherapy of Uterine Neoplasms.**—Klein here reports the present findings in women treated at the Munich clinic. The Roentgen rays are combined with radium and radioactive substances and a preparation of radium barium selenate is injected intravenously. The exposures are made about once a month until there are no more clinical evidences of the cancer. Over 18.5 per cent. of the ninety-two patients with inoperable malignant disease of the uterine cervix have had no further sign of trouble during the interval since. It ranges from four months to three years. About 50 per cent. of the thirty-two operative cases are still free from recurrence after an interval of from twelve to eighteen months, although in half of these there had been recurrence from one to three times before. One patient who had had a mammary cancer return three times previously, has been free from recurrence during the five and a half years to date, since the actinotherapy. His numbers are small, he admits, but the subsidence for several years to date of inoperable uterine cancer and the absence of further recurrences in the previously recurring operative cases are features unknown with exclusively operative measures. Even those who have succumbed to their cancer were given a year or more of life and freedom from clinical disease. Smooth and complete healing

was the invariable rule with cancers of the face. A complete cure was realized also in all cases of uterine fibromas and in nearly all of myomas.

43. **Arrest of Gastric Hemorrhage by Drinking Extract of Blood Platelets.**—The hematemesis occurred six hours after a gastro-enterostomy in a young man. It was arrested by ice and morphin but started again later. Meyer gave the man the contents of a tube of Coagulen, which he drank down and the vomiting and bleeding stopped at once and permanently. Meyer warns that this would have no effect if the stomach contained any fluid, as the blood platelet extract acts only by direct contact. Hence if used at all it should be directly after vomiting or as a preventive, while the stomach is still open and empty during the laparotomy.

45. **Treatment of Kidney Disease.**—This communication issues from Umber's service and presents the views and experiences there, which have recently been reviewed in these columns, February 3, p. 406.

46. **War Neuroses Rare in War Prisoners.**—Lust cites Mörchen's report that he found only five cases of war neuroses among the 40,000 war prisoners at the Darmstadt prisoners' camp. The majority reached the camp within three days of having been taken prisoner, and a number came from the Verdun region. There is every reason to assume that they had been subjected to the same kind of mechanical and emotional stress as the German soldiers, and yet the hysteric nervous disturbances so common among the soldiers were found only in one among each 8,000. Lust has also recently reviewed 20,000 war prisoners to select those to exchange, and he too found the war neuroses rare among both military and civilian prisoners of war. He calls attention to this as disproving certain prevailing theories as to the mechanical and psychic causes of war hysteria.

51. **Improvised Spray for Tincture of Iodin.**—Golch introduces a fine glass or metal tube through the stopper of the bottle, slanting it so it nearly hits the wall of the bottle about a third from the bottom. Then, through another glass tube, such as the nozzle of a fountain syringe, held at a right angle to the tip of the first tube, he blows across this tip, and the fluid in the bottle is drawn up and distributed in a fine spray. The fine glass tubes used for vaccine answer admirably for the tube running down into the bottle.

52. **Simplified Skin Grafting.**—Bürmann rinses the skin with salt solution and then goes over the surface with a razor as if for shaving, only with a little harder pressure. Fine scrapings of particles of wet skin thus collect on the razor and form a porridge-like mass which is transferred to the well granulating surface. The latter requires no preparation. The first dressing with boric acid salve is left undisturbed for five or six days. Then the surface is dressed with strong pressure from strips of plaster and this dressing is left for about a week. By this time, the scarcely visible scraps of epithelium have grown to the size of beans and pennies. This compressing plaster bandage is renewed two or three times so that by the end of two and a half or three weeks healing is practically complete.

Wiener klinische Wochenschrift, Vienna

December 28, 1916, XXIX, No. 52, pp. 1643-1666

53 *The Bacillus of Typhus. (Ueber die Morphologie des Fleckfiebererregers.) E. Csernel.—p. 1643.
54 *The Biology of Tumors. (Einfluss mangelhafter Ernährung auf den Zustand bestimmter Neubildungen, hauptsächlich der Tumoren der weiblichen Sexualorgane.) J. v. Jaworski.—p. 1646.
55 War Wounds of the Spinal Cord. (Ueber einen eigenartigen Rumpfhabitus bei Rückenmarkschussverletzungen.) G. Siefler and B. Sabat.—p.. 1648.
56 War Neuroses. G. Mann.—p. 1651.
57 Poisoning from Berries of Atropa Belladonna; Seven Simultaneous Cases; Recovery. J. v. Braitenberg.—p. 1651.
58 The Pernitz Military Sanatorium. A. Baer.—p. 1652.
59 The Hemorrhagic Skin Reaction in Typhus. (Ueber die häm. Hautreaktion bei Fleckfieber.) B. Lipschütz.—p. 1654.

53. **The Typhus Fever Germ.**—Csernel gives five illustrations of the bodies found in typhus blood which seem to be the causal agents of the disease. Their identity with rickettssia seems to be established, but they show two distinct phases. They appear as a bipolar bacillus, the virulent form, and there is a long bacillus, a saprophytic form. In three cases he detected flagella suggesting protozoa, but the circumstances of the cases demonstrate, he declares, that the flagellates must be accidental guests, not the micro-organisms causing the typhus. On the other hand, the biologic tests testify to a bacillary infection.

54. **Biology of Tumors.**—Jaworski reports clinical experiences showing that the lack of proper food has an inhibiting influence on the growth of fibromas and myomas. The tumors retrogressed and the symptoms disappeared when the women, reduced to poverty by the war (Poland), got habitually only about 50 per cent. of the normal requirement of calories. On the other hand, malignant tumors seemed to be whipped up by the lack of proper nourishment. At the Home for Incurables where there have been 584 cancer cases since 1899, the death rate has increased from 67 to 91 per cent. and the proportion of cancer cases has materially increased, while the women with cancer average younger. The destructive influence of inadequate food is shown in the rapidly fatal course of uterine cancer. The semistarved organism, like that of the aged, is unable to oppose adequate resistance to the malignant disease. The data here presented are peculiarly instructive as the semistarvation and emaciation were not due to the neoplasm but were the extraneous conditions of material want.

Zeitschrift für Tuberkulose, Leipzig

December, 1916, XXVI, No. 6, pp. 401-468. Last indexed January 6, p. 72

60 Cresol Preparation for Disinfection of Sputum. M. Schottelius. —p. 401.
61 Combination of Calcium Lactate and Sodium Lactate in Treatment of Tendency to Hemorrhage from the Lungs. (Zur Kalktherapie der Hämoptoe.) Klare.—p. 410.
62 *Tuberculosis during the War from Standpoint of Social Insurance. (Erfahrungen in der Fürsorge für versicherte Lungenkranke.) F. Reche.—p. 413.
63 *Tuberculosis with and without Tubercle Bacilli in the Sputum. ("Offene" und "geschlossene" Tuberkulose.) Effler.—p. 418.
64 Sanatorium for Tuberculous Soldiers. (Die Militärlungenheilstätte Juditten—Ostpr.) Daus.—p. 423.

62. **Welfare Work for the Tuberculous.**—In the course of this study of the measures advisable for tuberculous beneficiaries of the social insurance, Reche comments on the necessity for an exact diagnosis. Too many doctors in dubious cases, he says, decide that the patient has tuberculosis, giving him the benefit of the doubt as to sanatorium treatment. He urges the necessity for special asylums for the advanced cases; these should not be taken into the general sanatoriums. But at the same time, the milder cases should not be excluded from these institutions as otherwise the sick dread them as being only places to die in. The orphans entitled to a pension from the insurance funds can have this support in the form of home care in some healthy country place, and this he advises.

63. **"Open" and "Closed" Tuberculosis.** — Effler protests against the classification of cases of tuberculosis merely by the presence or absence of tubercle bacilli in the sputum. Many regard the case as contagious or noncontagious solely from the sputum findings on one or two or more examinations. Cases are common in which, if the examinations are repeated often enough, bacilli finally appear in the sputum. He cites some cases in which the examinations repeated several times in the course of two or three months, gave positive findings after two or three negative examinations. Gerhard used to tell of a case in which only the fifty-ninth examination gave positive findings. The prevalence of tuberculosis in cadavers suggests almost that there must be still some other mode of contagion than from the sputum alone. It is incredible that this enormous number of infections comes from those alone who have tubercle bacilli in their sputum. In short, Effler declares, any tuberculous person with sputum must be regarded as contagious, whether tubercle bacilli can be found at the moment or not. As for that, he adds, the absence of sputum is only a transient phase, which at any moment may take an unfavorable turn. Tuberculosis must be regarded not as a condition but as a living process, and be managed accordingly.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 28, 1916, XXXVII, No. 104, pp. 1633-1648

65 *Hypertrophy of the Thymus. (Contributo allo studio e alla terapia dell'ipertrofia timica.) A. Gismondi.—p. 1634.

65. **Hypertrophy of the Thymus.**—Gismondi calls attention to the disturbances liable to occur from hypertrophy of the thymus not only from direct compression of the trachea and of the jugular blood vessels but of the veins supplying the brain and arm, thus impeding the circulation in the veins in the thymus which are already suffering from the fact of the hypertrophy. The result is a congestion in the thymus, a kind of erection of the gland, setting up a vicious circle, increasing the mechanical disturbances. The bronchial mucosa is also certain to be congested, and compression of the pulmonary veins interferes with the aeration of the blood. Severe asphyxia may develop suddenly at any moment and possibly prove fatal. The functional and physical symptoms denoting hypertrophy of the thymus are readily recognized if the possibility of the thymus being responsible is thought of. He describes a few typical cases to show that painting with iodin may induce the retrogression of the thymus, especially in young infants without alarming symptoms compelling haste. In older children prompt results can almost be counted on under Roentgen exposures. But he warns that this treatment must not be too violent, as he reports a case in which a mild tendency to rachitis was whipped up into a very severe form by a series of overstrong Roentgen exposures. His experience indicates that a dose of 5 or 6 H units is the extreme limit for a sitting, to a total of 20 units, using an aluminum filter. Franchetti and Pende have reported excellent results from administration of epinephrin in small daily doses. Pende combines it with hypophysis extract, having noticed that the combination of these two preparations seemed to have a special inhibiting influence on hypertrophy of the thymus.

Riforma Medica, Naples

1916, XXXII, No. 36, pp. 977-1004

66 Total Nitrogen, Cholin and Cholesterin in Cerebrospinal Fluid. C. Cantieri.—p. 977. Concluded in No. 37, p. 1009.

67 *Advantages of Rubber Sponge Tissue for Closing Gap in Skull. (Sulla chiusura delle brecce delle ossa craniche.) C. Scandola. —p. 983.

No. 40, pp. 1089-1116

68 Anomalies in Ductless Glands in Pseudo-Hermaphrodite Fetus. (Sulla presenza di cellule simil-gravidiche nell'ipofisi, di formazioni ghiandoliformi nella corteccia surrenale e di altri fatti degni di nota nell' apparato endocrine di un feto pseudoermafrodita.) R. Pellegrini.—p. 1089. Concluded in No. 41, p. 1123.

69 Importance of Rubber Gloves and Razor for Operating on the Wounded. (Piccoli contributi alla chirurgia di guerra.) U. Scinicarielli.—p. 1096.

No. 41, pp. 1117-1144

70 *The Action of the Toxins of Fatigue on the Circulatory Apparatus. L. Ferrannini and S. Fichera.—p. 1117. Concluded in No. 42, p. 1145.

71 Phosphorus Poisoning as Factor in the Severe Effects from Certain Projectiles. (Brevi considerazioni sulla natura di alcune ferite riportate in guerra.) G. Cautiero.—p. 1128.

67. **Rubber Sponge for Closing Gap in Skull.**—Scandola gives illustrations of the findings in a rabbit and a dog that had had a thin strip of rubber sponge tissue implanted in the hole left where the skull had been trephined. The animals were killed after nine and six months and, except for slight loose adhesion to the dura, the implant had not changed its place or given rise to disturbance of any kind, while during life the animals seemed entirely normal. In future he will use sponge tissue with an entirely smooth surface on the side toward the meninges. This, he thinks, will obviate adhesions. In connection with this account of his research he describes the various substances that have been advocated for plugging holes in the skull, and discusses the drawbacks of alien implants. When it is a question exclusively of an alien implant, his experience suggests rubber sponge tissue as eminently adapted for the purpose.

70. **Fatigue Toxins.**—Ferrannini has previously published an account of his research on the action of fatigue toxins on the muscles. He here describes his extensive study of the heart and vessels under similar circumstances. The work was done on frogs, rabbits and dogs. The findings all testify to a lowering of the blood pressure and bradycardia under the influence of the kenotoxins. The findings also suggest that these toxins act almost or entirely exclusively on the smooth fibers of the vessel walls.

Semana Medica, Buenos Aires

1916, XXIII, No. 42, pp. 379-404

72 Ophthalmology at Buenos Aires. (Breves consideraciones sobre el Pabellon Cleto Aguirre.) E. B. Demaria.—p. 379.

73 *The Lymphocytosis in Syphilitic Blood. (La linfocitosis sanguinea en los sifiliticos. Su valor diagnostico y pronostico.) C. P. Mayer and A. C. Gourdy.—p. 386. Concluded in No. 50, p. 628.

74 Proposed Tribunal of Honor in Argentina. (Colegio di medicos. Institucion de etica.) O. L. Bottaro.—p. 395.

75 Serum of Pregnant Woman Accelerates Hemolysis in Complement Deviation Tests; Male Serum Retards It. (Nuevos ensayos de diagnostico biologico del embarazo.) F. A. Deluca.—p. 397.

76 Insufflation of Air in Treatment of Pleurisy with Effusion. (Tratamiento de los derrames pleurales por la insuflacion de aire esterilizado.) A. Cetrangolo.—p. 399.

No. 43, pp. 405-430

77 Chronic Diarrhea of Tropical Regions. (Sobre la llamada diarrea cronica de los paises calidos.) P. J. Garcia.—p. 405.

78 Connection between the Hypophysis and Cholesterin. G. P. Goñalons.—p. 408.

73. **Lymphocytosis in Syphilitic Blood.**—Mayer and Gourdy recall that the Wassermann reaction does not occur exclusively in syphilitics, and that it is by no means infallible. Its findings may sometimes be supplemented by the discovery of lymphocytosis in the blood. When lymphocytosis is discovered and when it becomes more pronounced with or without treatment, even with a negative Wassermann reaction, syphilis should be suspected. They found lymphocytosis pronounced, in some of their long series of cases reported in detail, as early as the second, eighth or twelfth day after infection, often before the Wassermann test elicited a positive response. The lymphocytosis in one case at the eighth day was 49.33 per cent. The highest figure, 64.66 per cent., was in a young man twenty-nine days after the primary sore had first become manifest. No treatment had been given in most of these cases; when it was commenced the numbers of lymphocytes increased. In the first series of fifty-two cases of recent untreated syphilis, the lymphocyte count was within normal range in only nine, and in these there was some concomitant suppuration, probably modifying the blood picture. In some of these cases the lymphocytes within normal range promptly ran up to exceptionally high figures as soon as treatment was instituted. The average of the lymphocytosis in this series was 36.54 per cent. They call attention in particular to the case of a young man whose erosion dated from only two days and the lymphocytes numbered 34 per cent. The Wassermann test was negative. Twelve days later the erosion had become transformed into a typical syphilitic hard chancre with swollen inguinal glands, and specific treatment was instituted. The lymphocytes at this time were 38.66 per cent., but the Wassermann was still negative. Two weeks after this there was lymphocytosis of 40 per cent. and a positive Wassermann reaction. Two weeks later superficial manifestations of syphilis became apparent. Under specific treatment, by the end of six months the Wassermann reaction was faintly positive with lymphocytosis of 42.33 per cent.

This study of the diagnostic importance of lymphocytosis in syphilis is continued through ten numbers of the *Semana*, the differential blood count in nearly 200 cases being given with the brief clinical history, all confirming the practical constancy of lymphocytosis as about the first appreciable general sign that the spirochetes are installed.

Siglo Medico, Madrid

December 16, 1916, LXIII, No. 3288, pp. 801-816

79 Malaria in Spain. E. Luengo.—p. 802. Continuation.

80 Mechanisms Regulating the Metabolism. A. Pi y Suñer.—p. 808. To be continued.

Hospitalstidende, Copenhagen

January 3, LX, No. 1, pp. 1-24

81 Magnesium Sulphate in Treatment of Tetanus. J. Nordentoft. —p. 1.

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CERTAIN ASPECTS OF NATURAL AND ACQUIRED RESISTANCE TO TUBERCULOSIS

AND THEIR BEARING ON PREVENTIVE MEASURES *

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PRINCETON, N. J.

In choosing so shopworn a subject as tuberculosis, I have before me the fact that the progress of scientific theory and practice is dependent less on rapidity than on direction of movement; less on the quantitative accumulation of information than on the proper interpretation and correlation of what is actually in hand. Of the information which has been brought together concerning tuberculosis, much is contradictory; much lacks coordination with other data; not a little has been the product of commercial stimulus. The task before the lecturer is best fulfilled by indicating existing gaps, rectifying misinterpretations, pointing out the inadequate support given by science to many accepted doctrines, rather than by rehearsing what is either well known or accessible in the literature of the subject.

In dealing with so intricate a theme, on which so much has been written and which has been approached experimentally and clinically from so many different angles, I have thought it best to treat the tubercle bacillus biologically, that is, as a living entity with a complex, adaptive organization, and to follow it step by step in its movements through the body.

Before taking up the details of this journey, permit me to refer briefly to the parasitic cycle which I have discussed elsewhere at length and which will form the subject of a forthcoming publication.

THE PARASITE CYCLE

The peculiar, complex life of a parasite of higher animals imposes on it certain definite restrictions, and compels it to move along certain definite routes. Thus each infectious agent must enter the body cavities or the body tissues. It must multiply therein to secure a numerous progeny, which must successfully escape from its host and, lastly, find its way to another host. This complex cycle, comprising four distinct stages, each very different from the others, demands of the parasite the capacity for adapting itself to some portal of entry, and of protecting itself from the antiforeign activities of the host tissues while it produces a progeny to meet the exigencies of the trip to another host. It must have adapted itself to some portal of exit and to some active or passive carrier to another host. These various demands are most thoroughly met by the highly developed protozoan and metazoan parasites. Certain highly specialized bacteria must have developed equally marked capacities for meeting these demands, but they are not so much in evidence, since the minute size of bacteria does not permit us to recognize those morphologic structures which go with functional adaptations to the different phases of the cycle. We must for the time being content ourselves with determining through immunologic reactions the changes undergone by bacteria in their different stages through the body.

Fitting the tubercle bacillus to the various stages of this cycle, we may perhaps obtain a view of its activities at an angle somewhat different from that from which bacteria are usually viewed. We have been in the habit of regarding the pathogenic bacteria as known, fixed quantities and the animal body as the adaptive, variable element. By applying what is known of pathogenic bacteria to the stages of the cycle, we shall see that parasites, including bacteria, must change their behavior from step to step to meet the host conditions at entry and exit and in the active tissues, and that these modifications are due to definitely fixed, highly developed functions of the parasites. The fact that such parasites have survived through eons of time, that they may have survived the original hosts and migrated through a series of such hosts to man and our domestic animals is a sufficient proof that their capacity for adaptation was adequate and that the organisms capable of such prolonged existence are not so simple as we have been inclined to believe.

Beginning with the entry of tubercle bacilli into the body, we are at once confronted by the problem of immunity. The condition in which tubercle bacilli leave the patient is of prime importance to the succeeding infection. This question I must leave, however, until farther on. I would simply make the statement here that the bacilli must have been influenced in some way by the developing resistance of the host from which they came.

THE PRIMARY LESION

The old controversy concerning the production of primary lesions at the portal of entry has not yet been settled and is not likely to be very soon, for no fast and sharp distinctions are possible. Whether an inhaled bacillus will cause lesions in the lung tissue where it is deposited or be carried directly in the lymph current to the associated lymph nodes will depend on the character of the tubercle bacillus, the form in which it entered the air tubes, that is, dried or in droplets of sputum, the age of the person, the condition of the lungs as regards the lymph current, localized pressure on the lungs by the ribs, and so on.

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* The length of this article requires that it be published in two parts. The second section will appear next week.

To these must be added the degree of natural resistance of the individual, any preceding tuberculous infection furnishing some specific resistance, and the existence of abnormal processes in the air tubes and lungs. Baumgarten, Weigert and, of recent writers, von Pirquet are inclined to the view that tubercle bacilli always produce lesions at the portal of entry.

In addition to the human material on which this question has hinged, a more homogeneous material to study this problem is presented by the independent bovine disease. More than twenty years ago, after a careful study of necropsies on many animals in early stages of tuberculosis, I pointed out the predilection of the invading tubercle bacilli for the lymph nodes. Infection of the upper respiratory tract was revealed, rarely by tuberculosis of tonsils or other superficial structures, but chiefly by disease of the associated lymph nodes. Similarly, inhaled bacilli multiplied in dorsal mediastinal and bronchial lymph nodes according to the lobe of the lung in which the bacilli alighted and through which they were transported. Disease of the lungs, however, was not uncommon. Tuberculosis of the intestinal mucosa was very rare, even when bacilli were being discharged from the lungs. The mesenteric lymph nodes were the primary seat of multiplication.

Furthermore, after generalization of the disease had taken place, there was still a predilection shown for the lymph nodes. Bacilli passing into the liver would leave no macroscopic effects, but would cause extensive disease of the portal lymph nodes. Similarly, the infection passing into the kidney would leave as the only sign of its presence tuberculous renal lymph nodes. It will be of interest to quote certain statistics obtained by careful necropsies of apparently healthy cattle which gave positive tuberculin reactions.

In a herd of sixty head, fifty-three were found with lesions, some very slight. Of these fifty-three, twenty-seven were without visible lung lesions, but with thoracic lymph nodes involved. Only one had lung lesions without associated lymph node infection.

In another herd of thirty-four infected animals there were eleven with thoracic nodes involved, but without lung lesions. There were none with lung disease and without disease of the associated lymph nodes.

Of ninety-one head of tuberculous cattle, twenty-five had the thoracic lymph nodes and not the lungs diseased.

Similar figures could be quoted with regard to the involvement of neck and mesenteric lymph nodes without corresponding lesions of mucous membranes. That bacilli had passed through the udder was shown in enlarged and caseous pubic lymph nodes even when no macroscopic lesions of the udder tissue were in evidence.

As stated at the outset, settling down and multiplication of tubercle bacilli may depend on a number of diverse mechanical, pathologic and immunologic factors. A satisfactory clearing up of the question involved is not possible at present, and I shall delay only to call attention to two divergent interpretations:

1. The tubercle bacilli inhaled are probably picked up in the alveoli by phagocytic cells (so-called *Staubzellen*) and carried into the regional lymph nodes as foreign particles, or they may be carried in the lymph as free particles to the same destination. The primary tubercles in the lymph nodes develop in or near the dust or pigment laden zone of the nodes as a result of the multiplication of the bacilli.

2. The tubercle bacilli may multiply and produce only microscopic lesions at or near the portals of entry, as, for example, in the lymphoid tissue of the lung itself. Thence bacilli may be transported to the regional lymph nodes after caseation of the primary focus, and produce macroscopic lesions.

If the second view is accepted, it becomes necessary to explain why such lesions remain so small as to be unnoticed and why the lesions in the lymph nodes become large, knowing as we do that lung tissue is not resistant, but rather the reverse, and that sooner or later in the course of tuberculosis the lungs become involved.

THE INFECTION OF LYMPH NODES

The same problem is presented to us in the infection of mesenteric lymph nodes. Are the bacilli transported directly to them from the intestinal contents, or is there multiplication in some lymph follicle of the mucous membrane? Here also it would become necessary to explain why such microscopic lesions do not continue to enlarge and become visible later on.

Primary lymph node disease occurs quite generally in the young of both man and cattle. The interpretation which I have given heretofore and which still appears valid is that such localizations, subject to the conditions noted above, are a sign of the absence or lack of tissue response to invasion at the point of entry or on the way to the lymph nodes. This response comes later on, either as the result of earlier infection or of a heightened general resistance. It is now called sensitization; but sensitization may be simply an accompanying phenomenon.

The passage of tubercle bacilli through membranes to the regional lymph nodes without leaving any traces of their passage has led certain writers to utilize this phenomenon in their endeavor to prove that pulmonary tuberculosis may be and frequently is of intestinal origin. No one will deny that this is possible, but that it occurs often or regularly is highly improbable. Bacilli which enter the portal circulation directly from the intestines may escape through the liver into the lungs, as occurred in a case of tuberculosis in a fetal calf found by me some years ago. The lymph nodes of liver, kidney and lungs were affected, but not the organs themselves. Such bacilli must run the gantlet of the very efficient liver filter. On the whole, the intestinal origin of pulmonary tuberculosis remains to be demonstrated.

The predilection of tubercle bacilli for lymph nodes, and the occurrence of the earliest lesions there as a result of multiplication is apparently not in harmony with Bartel's theory that lymph nodes are protective, or with Murphy's results, which point to lymphoid cells as inhibitory agents. The conflict, however, may be only apparent, depending on the interpretation. I venture to suggest one such harmonizing interpretation which must, however, await demonstration. This interpretation involves the well known fact that organs and tissues of the same host differ in their behavior toward the same infecting agent. In the case of tuberculosis, the lymph nodes are the first organs to engage the tubercle bacillus. It seems as if they contained some factor absent in the tissues passed through by the invading bacilli. This factor, though apparently unsuccessful in suppressing multiplication, makes a beginning in this direction, whereas the tissues through which the bacillus passes are not yet prepared to do so.

The lymph node disease is only a preliminary stage of the infection. It is like a shot that missed its goal. The process sooner or later comes to a stop, and the usual well known degenerative changes go on. If all cases ended this way, tuberculosis would soon die out. The bacilli must reach some organ or tissue whence they can be shed outward. This occurs when the bacilli multiply in the tissues of the lungs, intestines, liver, kidney and bladder, uterus and tubes, testicles and skin. All these forms of tuberculosis occur, but the predominant type is pulmonary tuberculosis. The bacilli after inhalation settle down, and after multiplication and destruction of lung tissue pass out again. This is the type of disease which has been evolved into a fairly well balanced parasitism.

The bacilli which have been, as it were, marooned in the lymph nodes, in order to gain their final habitat in the body must in some way break away from the lymph nodes and eventually reach the lungs. That this goes on regularly is at present the popular theory, advocated originally by von Behring, and championed by Römer, Much and others. According to them, the infection gained in infancy or childhood reaches the lungs during adolescence or later. There is no denying that this may occur, but there is another possibility not to be lost sight of, and that is reinfection from without, to which I shall return later.

The shedding of the bacilli from the lungs completes the cycle of the bacillus. This cycle tends to fix suitable races and eliminate others. Strains too virulent, which are fatal before lung tissue breaks down, naturally disappear. Those which are of such slight virulence that they remain buried in the lymph nodes also disappear. Only those in between these extremes are likely to be passed on from case to case, thus giving the form of the disease and the virulence a certain stability.

TYPES OF BACILLI

These are the chief biologic facts which underlie the epidemiology. On them is based the development of races of tubercle bacilli. Research has brought to light the fact that there are three distinguishable types of the tubercle bacillus with characters sufficiently fixed to have resisted thus far experimental transformation. These types resemble one another so closely that Koch himself did not in his early monograph regard them as distinct. The extensive studies on variation among bacteria now before us make it probable that there was a common ancestor from which the human, bovine and avian types have sprung through adaptation to special hosts. Another possibility is that these types are plastic habitat varieties, and under certain conditions transformed, one into the other. Many experiments extending over long periods of time have failed to change, for example, the human into the bovine type. Where such transformation has been claimed, the accidental coexistence of the two types in the same subject has not been clearly disproved. There is, however, still room for further experiments, for the subject is of great importance. Though it may have little significance in the daily give and take of infection, transformation, if it goes on, may be a way of reintroducing infection into a purified community of man or animals.

Other races of tubercle bacilli may in time be produced. Thus, in swine the bovine bacillus produces a relatively rapid, generalized disease. Should swine discharge such bacilli and infect other swine and these again fresh subjects, the bovine bacillus thus transmitted from pig to pig might eventually be more or less modified and become a recognizable porcine type. A similar change might take place in those aberrant types which attack monkeys. The establishment of such new types might require long periods of time combined with specially favoring cooperating conditions.

The bearing of such races on the public health must be determined for each in particular. Host relationships of parasites and of infectious agents cannot be predicted. They depend on conditions beyond our present knowledge. These often bind together hosts standing far apart zoologically. Thus the mouse septicemia bacillus, although virulent for mice, is not so for guinea-pigs, but is highly virulent for pigeons. Of birds, the parrot is thus far the only species susceptible to the human type of tubercle bacillus.

In the past twenty years the bovine tubercle bacillus has absorbed much of our attention because the human being is to a certain degree susceptible to it. It tends to produce lymph node disease in the neck and the mesentery. Occasionally generalization results in fatal miliary tuberculosis or in meningeal localization. In general it may be said that this type of tuberculosis is a food disease, and can be stamped out by adequate and relatively simple measures. It does not concern epidemiology, for it does not pass from man to man because of lack of opportunity. In only five out of approximately 800 cases of the pulmonary disease studied was the bovine bacillus found. The entire question of bovine tuberculosis in man should be dealt with apart from the great problem of the genuine human disease.

Concerning the races of the tubercle bacillus with reference to their effect on various hosts, it may be said in general that toward the species to which they are adapted they produce at the start a purely localized disease, in which further progress depends on a variety of contributory agents. Toward species to which they are not specifically adapted their behavior varies. The bovine type is quite regularly more virulent toward other host species than toward cattle. It is also more virulent than the human type toward alien hosts. To this general rule the human subject is an exception, for many cases of cervical lymph node tuberculosis due to bovine bacilli are either stationary or very slowly progressive. The avian bacillus acts very differently from the other two types in that its virulence for mammals generally, including man, is a negligible quantity.

Returning to the human disease, we may accept as the type disease in civilized countries that form of tuberculosis known as phthisis, in which the infecting agent enters and leaves by the same route, which is also the shortest and safest route, and considered as aberrations and deviations all other forms of the disease. By thus standardizing the disease we are put into a position to study more systematically and to evaluate these aberrations and deviations which occur either at the start or later.

HUMAN TUBERCULOSIS

This deviation from the type is the primary lymph node disease. The infection for the time being is locked up. A deviation subsequently from the type is the spreading of the disease by contiguity, by aspiration, by progression along lymph routes, and by invasion of the blood and hence of various organs and tissues. We may here digress a moment to discuss the analogies of the primary focus with that of other more acute infections. A localized primary seat of multiplication of virus is usually not regarded as indicating actual disease until there is evidence that the virus has become disseminated to form new foci. The line to be drawn in practice between these two states is as a matter of course vague, because one state may follow another rapidly. It is well, however, to maintain the theoretical distinction. In tuberculosis the primary focus may not be overstepped; the infection may come to an end there by hygienic treatment, or else there may be a long interval between the development of the primary focus and further dissemination. It would be well if we regarded the primary focus as an infection and the actual disease as begun only when new foci appear.

A theoretical distinction between infection and actual disease opens before us the question as to how often in other infectious diseases a primary focus is developed and checked without being recognized. We are in the habit of assuming that when clinical evidences of disease are absent, no multiplication has taken place. In this, however, we may be in error. Whatever multiplication takes place may be simply below the threshold accuracy of our detecting methods. This distinction between infection and disease will also help to classify those many cases of primary healed or stationary tuberculosis discovered at necropsy. While they are in a sense evidence of the ubiquity of tubercle bacilli, they are hardly to be classed as cases of tuberculosis.

The difference between tuberculosis and more acute infectious diseases may be expressed in a general way by the statement that in tuberculosis the various steps of the disease are drawn out, segregated as it were, and therefore accentuated and made conspicuous. This accounts for the emphasis laid on the primary focus, which stands out distinctly as it is the only expression of the disease for a time. In the acute infections the primary focus is either concealed or else merged with the generalized stage.

TYPE OF DISEASE

Returning to the theme, we may consider further the deviations from the current type of tuberculosis. One of the most important factors in such deviations is dosage of virus. In all experimental infections on animals the dosage is of great influence in determining the course of the disease. Large doses may lead to multiple primary foci. I have seen in cattle primary lymph node tuberculosis of the throat, the thorax and the mesentery, all in the same stage, and to all appearances a result of some one dose of virus. The significance of the size of the infecting dose is now so generally understood that I need not delay here.

The type of disease is further modified by variations in virulence and other characters of tubercle bacilli. That individualized strains exist is known to all students of tuberculosis. Special features of such strains remain conspicuous during years of artificial cultivation. Unfortunately, very little has yet been done in studying systematically the relation between severity and acuteness of tuberculosis and the character of the infecting strains.

The type of disease is further influenced by racial characters of the host, and by individual characters, such as rib pressure, lung ventilation, etc. Certain industries, such as coal mining, have been regarded as in a sense protective. Here again a study of the influence of various kinds of dust should enter. The training and activity of dust cells and other phagocytes by some relatively harmless kind of dust may play some part in the prompt reaction to invading tubercle bacilli.

The type is furthermore influenced by intercurrent diseases, such as measles, pneumonia and whooping cough. Here we must decide between the behavior of normal and acquired resisting forces, the so-called antibodies, and the influence of mere inflammatory and congestive processes in spreading a localized infection.

Finally, severe physical exertion may play a very important part in the dissemination of the virus. Parturition is known to be such a factor. Similarly in cattle, parturition is frequently followed by generalization of a local tuberculosis and speedy decline and death.

The influence of an untoward environment in general has been frequently cited as an aggravating factor. Confinement in dark, damp, ill ventilated rooms, depression of vital activity due to want of suitable food and too low temperature are causes which impress us as adequate and which need some more detailed analytic studies.

RELATION BETWEEN THE TUBERCLE BACILLUS AND THE TISSUES OF THE HOST

We now come to the chief problem of tuberculosis, the behavior of tubercle bacilli within the body. This behavior is governed by the limitations imposed on both host and parasite by the exigencies of the parasitic cycle already referred to. These limitations we may overstep in our experiments to obtain underlying principles. We have not only the natural diseases of human, bovine and avian tuberculosis to study, in which a certain unstable equilibrium between parasite and host has been established by nature, but we may produce experimentally disease by inoculation in host species in which the parasite is always in the ascendency and invariably destroys the host. We may also study the behavior of tubercle bacilli in those animals in which the host invariably predominates and promptly checks the bacilli. In the host of limited susceptibility, bacilli must multiply to supply a numerous progeny for dissemination and yet spare the host for a period at least. What are the conditions favoring and opposing such multiplication? The play between host and parasite is evidently very complex.

Histologic studies show that in tuberculosis of man and animals the tubercle bacilli are encountered within cells of a certain type, known as epithelioid and derived probably from cells of endothelial origin. By using trypan blue as a vital stain, Evans, Bowman and Winternitz have recently endeavored to elucidate more definitely the source of the cells entering into the reaction. They limited their studies to the liver following the injection of the dye and of tubercle bacilli into a radicle of a mesenteric vein. They found that the so-called Kupffer cell forms the center or giant cell of the tubercle.

In man and most animals, the lesions resulting from spontaneous and induced tuberculosis are focal and form the so-called tubercle. In white mice, inoculation of avian bacilli leads to active multiplication within endothelial cells until the latter are filled with bacilli. The infection creeps from place to place by way of blood and lymph stream. Tubercles are not formed.

The conditions operative when tubercle bacilli multiply rapidly or slowly or when they are suppressed and destroyed may reside within the endothelial phagocytes or in the blood and lymph or in both. Researches have not yet thrown any light on this phase. Opie has described the presence of lymphoprotease or leukoprotease or both enzymes in case both kinds of cells are present which give rise to these enzymes.

A prominent earmark of tuberculous tissue is its degradation sooner or later into a peculiar cheesy mass. Caseation has been referred by some to the structure of the tubercle, which, being without a vascular supply, is destined to become necrotic centrally sooner or later. Others have referred the process to the active toxins of tubercle bacilli. It is probable that there are two kinds of necrosis, one due to nutritive disturbances, the other to direct activity of rapidly multiplying tubercle bacilli. Jobling and Petersen find one of the causes of caseation in the tubercle bacilli. The unsaturated fatty acid soaps present act antitryptically and against leukoprotease and thus lead to caseation.

The interpretation of what goes on in tuberculous foci which leads to such diverse sequels as sclerosis, caseation, or continuous extension of the process will depend on the cooperation of immunologic, histologic and biochemical researches on the spontaneous and induced disease of a variety of differently reacting animals. We know definitely that caseation or calcification does not mean the destruction of all tubercle bacilli, for the latter are always discharged after caseation. They and the disease depend for their continued existence on this process of disintegration. Otherwise an escape to another host could not take place. In general, the tubercle is analogous to the abscess. Both processes tend to circumscribe, confine and discharge the micro-organisms outward. Neither pus nor caseous matter is in general free from the specific bacteria which gave rise to it.

Besides the proliferative tendencies of tubercle bacilli leading to the characteristic tubercle and to the more diffuse accumulation of endothelial cells, inflammatory reactions may be produced, especially when large numbers of tubercle bacilli of relatively feeble virulence are injected into animals. In the case of a human type bacillus injected intravenously into calves, I observed a pneumonic condition due to extreme congestion, the presence of masses of fibrin in alveoli, desquamation of alveolar cells, and in some cases an abundance of polymorphonuclear leukocytes. The long standing controversy concerning the proliferative and the exudative tendencies of tubercle bacilli may be harmonized by pointing to variation in the numbers and virulence of tubercle bacilli and, in experimental work, to the presence of attenuated, weakened and dead bacilli in our cultures injected into animals.

The secretory and excretory products resulting from the metabolic activity of tubercle bacilli and the various substances making up their bodies are sufficiently diverse to account for various reactions on the part of host tissues. We have now reached a stage at which the significance of diverse tissue reactions should be the object of investigation rather than of controversy. Without a thorough interpretation of tissue reactions, the serologic reactions may not be properly understood.

THE TUBERCLE

Of the various products of reaction associated with the presence of tubercle bacilli, the tubercle is the most frequently encountered. It suggests the result of activities which on the part of the host confine the spread and check the multiplication of the bacillus, and which on the part of the parasite tend, in the caseation and liquefaction of tissues, to furnish a temporary protection, a vehicle and an exit for the bacilli. The tubercle, owing to its predominance in the mammalian host, may well be regarded as the typical reaction, and all histologic expressions differing from this should be utilized for illuminating, if possible, the typical reaction. In this reaction we note that endothelial-like cells are primarily involved and that polymorphonuclear leukocytes do not appear.

The influence of a humoral factor antedating the formation of the tubercle cannot be predicted. This would naturally depend on the rapidity with which the bacilli are taken into the phagocytic cells, in other words, the time of exposure to destructive bodies in the blood and lymph. Rous has shown experimentally that leukocytes may protect engulfed objects from antibody activities. The extent to which protozoa may use host cells into which they enter actively or are taken in passively had made this interpretation a logical one. Phagocytosis, like any other reaction, may represent in some diseases one as yet unadapted to the self-protective interests of the host. In any case it is necessary to bear in mind that the taking in of parasitic organisms, such as bacteria by the host cells, may lead (*a*) to prompt destruction of the bacteria, (*b*) to a limited multiplication compatible with cell life of the host for a time, or (c) to rapid multiplication of the parasite and destruction of the host cell, resulting in liberation and migration of the parasite to other cells. In any disease associated with passive intracellular sojourn of the parasitic agent, the exact function of the phagocytic cell needs elucidation before we can be sure of the humoral factors. Or perhaps the reverse may be indicated. By measuring the resisting and destructive factors in the fluids of blood and lymph, we may be able to measure with greater promise of success the precise significance of phagocytic processes. The controversies between the adherents of humoral and those of cellular protective mechanisms, as represented, broadly speaking, by the schools headed, respectively, by von Behring and Metchnikoff, which stimulated so much special research for several decades, have done much to define the problems. But by neglecting to restrict their theories and inferences to the micro-organisms actually used in their studies, investigators of that period left the more profound study of specific infections and parasitic diseases open. The marvelous work of the period mentioned will be seen in its true light when it has been sifted and reapplied.

ANTIBODIES

A study of those factors resident in the blood of normal, tuberculous and vaccinated individuals has not as yet developed more than possibly diagnostic uses. To what extent the so-called antibodies may be concerned in active immunity cannot be answered at present. Möllers in 1912 summed up the situation as follows:

Agglutinins and precipitins are inconstant in spontaneous tuberculosis, but they appear in the experimental disease. Opsonins are either slightly reduced or fluctuating. Complement-fixing bodies appear after the injection of living and dead bacilli. The blood of nontuberculous individuals does not contain them, but they have been found in tuberous leprosy. These complement-fixing bodies are encountered in from 6 to 8 per cent. of tuberculous individuals. They may be developed toward various preparations of the bodies of bacilli and only against the one employed.

How these normal and immune antibodies cooperate with or are utilized by phagocytic processes has not been made clear, as shown in the case of opsonins. Here the examination of the blood in vitro indicates that opsonins stimulate polymorphonuclear leukocytes to take up tubercle bacilli. Since the polymorphonuclear leukocytes do not play any recognizable part in the tuberculous process, it is difficult to understand the significance of the opsonic phenomenon. Tests are usually made with bacilli well saprophytized or else ground and suspended. Substances may thereby be set free which react very differently from the intact bacilli, which pass from case to case and which run the gantlet of the immune reactions of a well developed case of disease. Those cases in which polymorphonuclear leukocytes appear in the lesions at some time in the course of the tissue changes should be carefully studied. Unless, however, cultures have been made to determine the presence or absence of pus producers, mere histologic examination is of no avail. But even after cultures have been made, there still remains the residual possibility that uncultivable, ultramicroscopic, secondary invaders have been on hand. Since the polymorphonuclear cell reactions occur chiefly with lesions associated closely with the exterior, such as tuberculosis of the lungs, the genito-urinary tract and the subcutis, the inference that other micro-organisms are the chemotactic agents cannot be denied offhand. For such investigations the experimental animals, especially the larger, more resistant animals in which the disease runs a course similar to that of the human disease, are best adapted, since they can be destroyed at any stage and terminal infections largely anticipated.

RELATION OF LYMPHOID TISSUE

The relation of lymphoid tissue to tuberculosis was briefly mentioned above, but it deserves more consideration. The structure of the tubercle is not only the same in the various organs of the same host, but it is practically the same, with only minor variations, in all mammalian species inoculated with bovine or human types. The avian type is an exception so far as it frequently fails to induce tubercle formation, although the cells involved are of the same type. When lymphoid cells are present, what is their significance? Mantles of lymphocytes are not infrequently found enveloping epithelioid cell groups, but such a combination may be due to the evolution of a tubercle in lymphoid tissue with the proliferation of endothelial elements centrally and the crowding back of the lymphoid cells toward the periphery. This is the usual picture in the early stages of tuberculosis of the lymph nodes. J. B. Murphy and A. W. M. Ellis exposed mice inoculated with bovine bacilli to the Roentgen ray and found that such exposure increased susceptibility. The authors infer therefrom that lymphocytes are important agents in the defensive mechanism against tuberculosis. On the other hand, P. A. Lewis found that in mice, splenectomy increased very materially the survival period after a given dose of bovine tubercle bacilli.

In some investigations on bovovaccination, I reported some years ago as a by-product peculiar lesions associated with the presence of animal parasites in cattle which had received intravenous doses of tubercle bacilli of the human type. Although no macroscopic lesions resulted from such injections in otherwise normal animals, the presence of animal parasites in the tissues seemed to alter the local equilibrium. Filariae probably embedded below the epithelium of the omentum became enveloped in a zone of lymphoid cells, in which were observed occasional foreign-body cells; but nothing characteristic of the tissue reaction of tuberculosis was detected. The type of parasite did not determine the reaction, for an entirely different microscopic form in the lung tissue gave rise to a lymphoma from 4 to 5 mm. in diameter. Ordinarily no such reaction follows the localization of filariae in cattle, nor do we find tumors developing about accidental parasites in the lungs, probably aspirated during the taking of fluids. A tentative explanation of the peculiar cell reaction may be given if only to stimulate the attention of others to such accidental by-products of experiments. The presence of the parasite in some way reduces the resistance of the tissues in its immediate environment, so that the human bacillus can multiply to a limited extent. The reaction to this multiplication is of such a character as to lead to the lymphoid-like tissue described rather than to the usual endothelial cell accumulation. The newly proliferated tissue in turn destroys the life of the animal parasite around which it forms. This event would probably in time be followed by another type of cell reaction, the foreign body giant cell (of which a beginning had already been made in the cases described) as soon as the parasite begins to disintegrate.

I recently described the predominance of lymphoid cells in certain types of experimental tuberculosis. The relative resistance of calves to the bovine type of bacilli was raised by two preceding injections of human bacilli. The final intravenous injection of the bovine type led to a peculiarly modified tissue reaction. The special feature of this reaction to interest us here is the great predominance of lymphoid cells, and the relative rarity of epithelioid and giant cells. This occurred not only in the lungs, but also in the udder. Both this group of cases and those relating to the combination of parasite and tubercle bacilli described above suggest that the bacilli undergo a preliminary modification in the fluids of the tissues, owing to humoral factors, and that the modified cell reaction is a response to a modified stimulus resulting from the humoral treatment. That the cell reaction of the untreated but parasitized cattle to the human type should be the same as the reaction of partially immunized cattle to the bovine type is noteworthy.

Finally, there should be mentioned here certain experiments of E. L. Opie on induced tuberculosis of the dog. Opie treated induced tuberculosis of the pleura in dogs with leukocytes obtained also from dogs following the injection of turpentine into the pleural cavity. The disease was favorably influenced by these intrapleural injections, especially when the injected leukocytes were in direct contact with the tuberculous tissue. In some cases complete restoration of the pleura took place. The cells injected consisted of polymorphonuclear and mononuclear cells in about equal numbers. The evidence pointed to the inference that only living leukocytes can accomplish the results observed.

(To be continued)

Contributing Causes.—Unemployment, overwork, congestion of population, child labor, and the hundred economic causes which increase the stress of living for the poor are often contributing factors in the production of mental diseases.—Rosenau.

URETER CATHETER DRAINAGE IN THE TREATMENT OF RENAL INFECTIONS

WITH SPECIAL REFERENCE TO THE INFECTED HYDRONEPHROSIS COMPLICATING PREGNANCY *

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Modern urology owes its progress and substantial development in a great measure to conservatism, through which crude and often radical measures have been supplanted by scientific and accurate methods. This has been contributed to chiefly by the cystoscope and its accessories, preeminent among which stands the ureter catheter. It is perfectly safe to say that the ureter catheter has afforded us more real information than any other urologic instrument. Its use as a diagnostic aid is thoroughly known and appreciated by practically every one, and needs but little comment. There are a few, and there should be a very few, who still believe that ureter catheterization is a major procedure, attended with a great deal of traumatism and shock. I am unable to understand why this idea still prevails, for the procedure itself is certainly simple and attended with very little pain, seldom more than accompanies any instrumentation, and rarely necessitating a local anesthetic.

As a therapeutic agent it has served a gradually broadened field of usefulness. Since its first employment by Bozemann in 1888, and a little later by Pawlick and Kelly for lavage of the renal pelvis, it has displaced many radical surgical procedures which have been applied to numerous renal and ureteral diseases, of which may be mentioned certain hematurias, closure of renal and ureteral fistulas, removal of ureteral calculi, dilatation of ureteral strictures, relief of anuria, and finally the treatment of various types of renal inflammations. I do not intend to discuss its application to all of these conditions, but will confine myself in this paper entirely to its use in certain types of renal infection. Neither do I intend to enter into a discussion of the treatment of the ordinary forms of chronic pyelitis and pyelonephritis, as such treatment is so universally employed that it is thoroughly understood and appreciated. I shall discuss its value as a means of conservative surgical drainage for infected renal retentions, first, as a method of preparation; second, as a method of conservation, and third, as a method of cure, dependent on the extent and character of the disease and of the associated phenomena. Naturally such renal retentions as are consequent on definite pathologic obstruction within or without the urinary tract, such as ureteral stone, ureteral stricture, prostatic enlargements or extraneous tumors, will be relieved by the correction of such primary causes. There are, nevertheless, two classes of renal retentions which are of particular interest and demand prompt relief: first, those of obscure etiology, in which no tangible pathologic foundation can be ascertained, such as aberrant blood vessels, etc., and second, those secondary to physiologic obstruction, namely, the pregnant uterus, in which it is desirable if possible to preserve the cause of the obstruction. I shall not discuss the many phases of the pathology of renal infection, but will consider only the retentive type with the variations in the pelvis which seem to have a definite bearing on the curability of the disease by means of conservative measures. The normal pelvis is practically empty, the urine presses on by peristalsis from the papillae down the ureter, and pelvic residual urine is of pathologic significance. Should the residual urine in the renal pelvis become infected, the chance of cure will be dependent largely on its character and extent, also on the changes in the pelvic wall, and certainly in the kidney itself.

The three grades of renal retention which Perineau has described seem very pertinent, namely, the first, second and third degree, dependent on the amount of distention and destruction of the elastic tissue and muscle fibers of the renal pelvis, and of the accompanying kidney damage.

In the first stage, the retention is small, the contents are under great pressure, the fibers are under tension, but have not lost their tone, the catheter inserted into the pelvis brings forth urine in a jet, and renal function is little, if at all disturbed.

In the second type there is a more pronounced dilatation, and the muscle fibers are more weakened and feeble, but are still capable of returning to normal function if relieved of the strain of intrapelvic pressure. A catheter inserted into such a pelvis gets urine in drops, influenced by pressure on the kidney, the ordinary hydronephrotic drop; renal function is impaired.

In the third degree the kidney is encroached on materially, pelvic fibers are overstretched, incapable of returning to their normal; renal function is greatly impaired or destroyed.

In the first type of retention the patient has an excellent chance of cure. It has been our experience that one or two catheterizations with relief of the retention will suffice to clear up this type. On inserting the catheter, cloudy urine escapes, becoming more cloudy as it gets to the sediment. Following relief of retention there occurs a normal intermittent secretion of clear urine, usually in a very short period.

The second group of cases, in which the retention is much more pronounced, and the kidney function impaired, is often a very deceptive one, and unless one is careful a false impression may be gained of the extent of the pathologic condition, and it pays to be conservative as to our prognosis and plan of therapy. Often these patients are quite sick, with fever, chills, tenderness and mass in the kidney region, the urine is dirty with pus and bacteria, and the cystoscope may show a thick inspissated pus plug oozing from the ureteral orifice on the corresponding side. Such a picture suggests a large pyonephrosis. On inserting the catheter into the kidney and cleaning out the plug from the ureter, there is usually a large amount of milky, pale urine. The function of this kidney will be practically nil. We have seen a number of such cases in which the phenolsulphonephthalein would be hardly readable within a half hour after it had appeared following an intravenous injection. Such a picture would apparently indicate that the kidney was practically destroyed, but on drainage of such kidneys by means of the ureter catheter, leaving the catheter in place for several days, and in some instances by intermittent catheterization, they may assume fairly normal function. Such kidneys in which there has been a definite

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pyelonephritis are prone to recrudescences. The urine in these cases has in several instances become clear, and culturally negative. An occasional pus cell, however, is a common finding. This is the type which Rafen calls aseptics and not cures. I feel that if we can rid these kidneys of infection we have accomplished our aim, whether they are functionally disturbed or not.

Often some of the large retentions after drainage will completely empty themselves when the musculature of the pelvis has regained its tone. This group of cases is the group in particular in which great care has to be exercised in our surgical procedure. Many such patients are nephrotomized when they are acutely sick, and I believe that many could be spared and have a much better chance by drainage with the catheter. Should they be extreme and bordering into Group 3, and not be curable, they can be so improved as to make them far better surgical risks, excepting of course the large pyonephroses, which will not drain through a catheter.

Group 3, infected renal retentions in which there is an irreparable damage to the kidney, where functional tests following catheter drainage have proved the kidney to be functionally valueless and a constitutional menace, there is ultimately only one hope of recovery to the patient, and that is removal of the kidney, as in any incurable renal infection, provided the other kidney is sound; but such patients can be materially improved by drainage of the kidney by means of a retained catheter, leaving it in several days at a time, removing it for several hours, and reinserting, etc., in such manner relieving their absorption and toxemia, relieving the sound kidney of toxic nephritis, allowing many of them to get over a low grade uremia, and make them safe surgical risks, to be operated on at election rather than as an emergency.

Several cases have made a great impression with respect to the effect of drainage. The patients had very large retentions, marked pyelonephritis, accompanied by chills and high fever, and in very septic conditions, very dirty urines; after ureter catheter drainage and relief of their back pressure and absorption, they immediately ceased having their chills and fever, even though the urine was just as dirty as it had previously been.

When ureter catheter drainage is necessary over a lengthened period, we have found that usually the patients tolerate the catheter nicely, so that it has been perfectly easily borne for several days at a time, and the catheter in most instances has remained in place. We, as a rule, allow it to remain about three days, giving daily instillations of argyrol, 25 per cent., and silver nitrate, small amounts. It is then removed and allowed to remain out several hours and reinserted. This may be kept up for several weeks.

In Class 2 we watch very carefully from time to time the character of the urine and the amount of retention in the renal pelvis, and follow the patients' condition very closely. As previously mentioned, it is surprising how quickly the musculature regains its tone, and the pelvis completely empties itself if the retention is relieved, and how satisfactorily the patients improve.

Renal retention is an exceedingly common accompaniment of pregnancy, particularly in primiparas. This retention may be unilateral or bilateral, affecting the right side in about 85 per cent. of the cases if unilateral, as has been shown by Olshasen and Halberthsma. It is due to anatomic reasons which are well known to all, namely, that the uterus during pregnancy is obliquely placed in the abdominal cavity with the fundus inclined to the right and rotated around its long axis so that the left border looks to the left and forward, the right border to the right and backward, thereby bringing the right border in close contact with the posterior part of the pelvic brim. Obstruction is more common in the fifth and sixth months of pregnancy, because at this time the largest diameter of the uterus is occupying the superior strait and at this level the ureter is less protected by soft parts than anywhere else in its course. Thus we have a potent factor in the production of renal infection, and it is highly desirable that the cause of the retention predisposing to the infection should remain undisturbed. Therefore, with this marked frequency of right sided renal retention during pregnancy, I believe that infection of mild grades is much more common than is supposed; but these mild infections frequently may cause no symptoms except changes in the urine which are often regarded by the physician as representing cystitis or the albuminuria of pregnancy. Many of these patients, who have symptoms definitely referable to their kidneys and are recognized as having the classical pyelonephritis of pregnancy, get well by changes of position, flushings with water, administration of urinary antiseptics and careful bowel hygiene. Should they not promptly recover under this palliative treatment, they should not be allowed to drag on indefinitely, as many of them are, jeopardizing the life of the child and subjecting the kidney to grave damage by allowing this retention to continue.

I have seen a number of large infected right renal retentions complicating pregnancy. These women are quite sick and septic, running high irregular fevers, occasional chills, suffering with marked weakness and exhaustion, pain and tenderness in the side and vomiting. All of these have had large, tender kidneys, the urine cloudy with pus and all colon infections. They have been allowed to run for weeks on palliative measures in spite of their failure to respond. Two of the patients were extremely sick; two had gone so long with pain, suffering and fever as to be on the verge of abortion. One of these aborted; the other did not. It is for this class of cases that the ureter catheter in my mind has a most admirable field. It is done with practically no risk to the individual, the relief of the retention is immediate, the patients rapidly improve and fever drops; one patient was saved from aborting; others have gone to term from their seventh month and had perfectly normal deliveries and have improved marvelously in their condition during the latter months of pregnancy following such drainage. If the renal pelvis has not been too markedly distended, it will regain its tone and empty itself, and the urine become normal. One case had to be treated for three weeks before the condition was rectified, but the patient following this had a perfectly normal last two months of pregnancy.

These women with large infected renal retentions who are extremely sick and do not respond to palliative measures, in the majority of cases have been subjected to the induction of premature labor, if they did not abort spontaneously, with high mortality to the child, at least 40 per cent.; or they have been subjected to major renal surgery, such as nephrotomy, which was advocated by Davis before this Association in 1912, or by nephrectomy. One is impressed with the fact that so few of these persons have had a thorough trial with the ureter catheter, and I believe that even in the severe grades of infected retentions during pregnancy, if one is patient and uses a large retained ureteral catheter, most of these women will respond, provided the retention has not been too profound. Most of them will be able to go to full term, and have a perfectly normal labor.

Should such large retentions not be relieved in a short time, the patient's kidney is probably a third degree retention kidney, and will eventually have to be surgically attacked. Such kidneys are extraordinarily rare, but I believe that many of these kidneys may be kept under control by means of the ureter catheter until pregnancy has terminated.

Evidences of renal retention should not be palliated too long, but should be promptly drained by means of the catheter to prevent the pelvic musculature from being too greatly stretched, and the renal parenchyma from being disturbed. I am confident that if obstetricians would follow this plan, there would be far fewer damaged right kidneys, and more full term babies.

ABSTRACT OF DISCUSSION

Dr. Edwin Beer, New York: Years ago I was enthusiastic about ureter catheter irrigations of the pelvis and ureter in these cases, but during the last five years I do not believe I have washed a single pelvis, and the patients not so treated have done quite as well as those that I used to wash out. I would like to ask Dr. Caulk to give us some evidence of the fact that a pelvis which has been chronically stretched has resumed its normal shape; in other words, that it is no longer hydronephrotic and that its cubic content has been reduced. I have seen no evidence of that. It must be a very difficult proof to bring to convince the average man, because on filling the pelvis with colored fluid and testing its distensibility in the same case one day you may find the patient will take 20 c.c. and the next day only 5 c.c. The same thing may happen if you introduce thorium or argyrol. So that it seems to me, short of operation, one cannot find proof that after leaving in an indwelling catheter the non-acutely stretched pelvis resumes its normal shape.

Dr. William F. Braasch, Rochester, Minn.: I observed a case in a woman who had had a mechanical obstruction. A year later a pyelogram showed a normal pelvis; showing beyond question that following removal of the obstruction the pelvis will recede to practically normal size. A very large hydronephrosis, or one that is infected, will not do that. But most cases of that type, the type occurring during pregnancy, will do so. The large hydronephroses do not occur during pregnancy. That pregnancy is not the cause of the large hydronephroses is shown by the fact that only a small percentage of the patients we have operated on were pregnant. There is always some other factor present. There is no doubt whatever that introduction of a catheter in the pyelitis of pregnancy is the only way in which the condition can be relieved. It is quite remarkable how patients who have suffered for weeks with marked disturbance will improve by the mere passing of a catheter into the pelvis and draining.

Dr. A. J. Crowell, Charlotte, N. C.: From a rather large experience in irrigating the kidney pelvis with various preparations, among which is silver nitrate, it being the best, I am convinced that wonderful results can be obtained by this plan of procedure. A woman during her first pregnancy had an abortion on account of pyelitis. About the third or fourth month of the second pregnancy she began suffering with all the symptoms of pyelitis. The physician who had her in charge called me in consultation and on catheterizing the ureters secured quite a lot of pus from the right kidney, indicating a marked right pyelitis. The pelvis was irrigated with a 1 per cent. solution of silver nitrate and its strength gradually increased up to 5 per cent. She got along quite well as long as we kept up this treatment every third or fourth day. The urine cleared up almost completely and the patient felt so well she decided to abandon treatment.

Dr. Martin Krotoszyner, San Francisco: I wish to report a case of pronounced right sided pyuria and deterioration of renal function, in which the ureteral spurt appeared as a white puff. A collargol pyelogram showed a pronounced kink of the ureter, near the renal pelvis, and a moderate enlargement of the pelvis and of the berry-shaped and irregularly outlined calices. Marked improvement of the relative function of that kidney was noticeable soon after the pyelography, and when this procedure was repeated, the pyelogram showed a material straightening of the ureteral kink and a reduction in the size of the renal pelvis, while the shape and size of the calices had remained stationary, except for a slight reduction in the size of the median calix. A third pyelogram, made about two or three weeks later, showed a fairly normal renal pelvis and ureteropelvic anastomosis, the berry-shaped calices being the only pyelographic feature of pathologic note. Meanwhile renal function on the affected side had become equally as good as that of the other kidney, while the clinical symptoms had improved to such an extent that it was decided, for the time being, to refrain from operative interference.

Dr. H. L. Kretschmer, Chicago: The ureteral catheter has a definite field of usefulness in the treatment of pyelitis of pregnancy. Formerly, nearly all of these patients were treated by emptying the uterus. This method of procedure is still employed by many obstetricians, and I think it is a mistake. I have seen two very severe cases of pyelitis of pregnancy that were treated successfully by the ureteral catheter; one patient had a temperature of 104 F., chills, sweats and streptococci in the urine. She had been advised to have the uterus emptied. I inserted a catheter into each kidney pelvis, and injected silver nitrate into the pelvis; there was an immediate cessation of symptoms, and she went on to full term. The second patient had a residual urine of 30 c.c. in the right pelvis. Her temperature varied from 96 to 105 F. She was treated with the ureteral catheter. We attempted to leave the catheter in the pelvis for continuous drainage, but it was not well borne. The pelvis was drained of residual urine and irrigated with boric solution, and 20 to 25 c.c. of a 10 per cent. protargol solution were injected into the pelvis. She went on to a normal delivery. A recent report of her urine shows it to be free from pus but not free of organisms.

Dr. F. R. Charlton, Indianapolis: I wish to report the case of a woman who was delivered on May 9. One week later she went into an acute infection of some sort, with a temperature of 105 F. There had never been a history of any sort of urinary difficulty. As for a pyelitis running back to infancy, there was nothing to base such a statement on. She has had one remission since the middle of May with, practically a normal temperature. The first time I catheterized her ureters I found a compensatory flow from the right kidney and a complete disturbance of the left kidney. We injected argyrol, and ten days later, the flow from the left kidney was practically equal to the flow from the right. The left kidney took 25 c.c. of fluid without the slightest sign of distention. In the right kidney we used considerably less. There was a definite obstruction of some sort at about the point where the ureter crossed the brim of the pelvis. The chief point of interest was whether this was an injury caused during the progress of delivery. If that is so I am at a loss to explain the apparent advanced condition in both pelves. But, by reason of the passage of the catheter two or three times and the use of a very strong injection of argyrol, she has in every way been immensely improved. I have been puzzled by this picture chiefly on account of the enormous size of the left pelvis and the very apparent anomalous condition of the opposite side, wondering whether we could have stumbled into a polycystic kidney. There are, however, no palpable masses to be felt.

Dr. J. R. Caulk, St. Louis: I followed these patients with the ureteral catheter afterward for the amount of residual urine and also with pyelograms. The ones I have followed have had practically normal pelves. It is just a question of watching these patients and draining them. Even though you cannot cure all of them, I think you should give them a chance through catheter drainage, and not empty the uterus or do more drastic measures on the kidney during pregnancy. Certainly, the cases I have seen responded and did not need any such major surgery. I do not believe that lavage accomplishes what we are doing; I think it is just a question of emptying the renal contents. With regard to kinks, I do not know that it is a kink that is causing the trouble in pregnancy. We all know that the common time for obstruction is at the fifth to the seventh month, when the broadest part of the uterus is at the pelvic brim. Later on when the uterus changes its position and the pressure is more or less relieved, the musculature of the pelvis is allowed to contract and empty, rather than any relief of kinking in the ureter itself.

ETIOLOGY OF THE EPIDEMIC ACUTE RESPIRATORY INFECTIONS COMMONLY CALLED INFLUENZA *

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Epidemics of acute respiratory infections have occurred at irregular intervals for centuries in various parts of the world, and their prevention has been one of the most formidable problems in preventive medicine. These infections, different from other epidemic diseases, seem least liable to modification by hygienic or geographic conditions, and at some time in its history almost every race of people has suffered from their ravages. During these visitations, recorded in centuries of medical history, the general mortality is greatly increased; the etiologic agent, independent of its own virulence, may increase the death rate by combining with preexisting diseases, or by lowering the resisting power of the individual to such an extent that other more formidable infections gain a foothold and cannot be overcome. Furthermore, it is very striking that, notwithstanding the wide diversity of conditions under which these great epidemics have occurred, the clinical manifestations of the disease have always been the same. Usually the symptoms are those of an acute infection of the upper respiratory tract, but occasionally of the intestinal tract, with a rapid course and characterized especially by a very marked prostration of the patient. The complications are quite numerous, and probably represent the most important factor in determining the mortality of these diseases. Infections of the accessory nasal sinuses, lobar and lobular pneumonia, pleurisy, lymphadenitis and otitis media are common complications, while arthritis, pericarditis, abscesses, erysipelas, peritonitis, appendicitis, cholecystitis, illnesses diagnosed scarlet fever, and acute nephritis are frequently observed.

The pathologic anatomy of the disease is quite varied, and usually consists of the complicating morbid changes. Acute inflammation of the mucosa of the respiratory passages, varying grades and types of lobar and lobular pneumonia, generalized lymphadenopathy and infections of the various serous surfaces of the body may be mentioned as more or less typical of the pathologic anatomy of these infections.

Nothing can more forcibly indicate the definite character of the causative factor in these epidemic infections than this close similarity of symptoms and complications during several centuries and under such varying degrees of civilization. Whatever this factor may be, it must have a universal distribution and a most variable pathogenicity. Aside from a few observations on previous isolated epidemics, the most important bacteriologic work on these diseases was done during the great pandemic of 1889-1892. Notwithstanding the great number of observations during this time, however, no observer has satisfactorily proved that one species of bacteria is of primary importance in the causation of the disease. The larger group of investigators, including Weichselbaum, Newman, Ribbert, Finkler, Friedrich, Jaccoud, Gaucher, Bouchard and others found streptococci, pneumococci and staphylococci in the sputum and postmortem material from cases of influenza, and regarded the disease as a streptococcus or a mixed streptococcus and pneumococcus infection. In 1892, however, Pfeiffer published his great work on influenza in which he described a small gram-negative hemoglobinophilic bacillus as the causative factor, and this work gained almost universal acceptance at this time. The previously described bacteria — streptococci, pneumococci and staphylococci, because of their frequent presence in the sputum of normal persons, were henceforth considered as secondary invaders and of minor importance in the etiology of influenza. Pfeiffer isolated influenza bacilli from the sputum and bronchial tissues of persons suffering from the disease, but he was unable to find these organisms in the blood stream or satisfactorily to reproduce the disease in animals, although many attempts were made. Similar results were obtained by many of Pfeiffer's contemporaries. According to Pfeiffer, these gram-negative hemoglobinophilic bacilli cause true influenza, which he considered a local inflammation of the respiratory tract. Although these conclusions obtained wide acceptance for a time, except in France, recent investigators have failed to corroborate his findings, and the importance of this organism has been called into question. Davis and others have repeatedly found these bacilli in various diseases, such as whooping cough, tuberculosis and chronic bronchitis, in which there is a mucous expectoration, and many other diseases, and except in influenzal meningitis these observers consider the influenza bacillus of no primary importance. Again this organism has not been found with any regularity associated with the epidemics of acute respiratory infections since 1890. Whether or not Pfeiffer's bacillus was the causative factor in the great pandemic of 1890, there has been little evidence brought forward in recent years to support the view that it is of any great importance in the etiology of the disease.

During the winter of 1915-1916, the United States was visited by a severe epidemic of acute respiratory infections which resembled in every detail the great epidemic of 1890. This outbreak was apparently first noticed in the middle western states, and it spread rapidly over the entire country, taking a heavy toll of human life. December and January were the months in which these infections were most prevalent, and the epidemic had almost completely lost its impetus by March, 1916. During the height of this epidemic in Chicago, sixty-one cases of the disease were studied bacteriologically, and the results form the basis of this paper.

In all the cases the nasal discharge and sputum were examined, and in a few instances blood cultures were made. In forty-six instances, hemolytic streptococci

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* From the Memorial Institute for Infectious Diseases.

were found in predominating numbers, and in six of these cases these organisms were isolated from the nose and throat in pure culture. Green-producing streptococci were found in thirty instances with one pure culture, and pneumococci in thirty cases with four pure cultures. Staphylococci were isolated in fifty cases, *Micrococcus catarrhalis* in six, and Freidländer's bacillus in one case. In only one instance was the influenza bacillus found, and then in small numbers. Anaerobic cultures were also made in the majority of cases, but there were no findings of any great interest. The *Bacillus rhinitis,* which has been described by Tunnicliff in connection with acute rhinitis, was found in the nasal discharge in two cases, and fusiform bacilli were not uncommonly observed in these anaerobic cultures.

The majority of the patients were studied early in the course of the disease, and, in the earliest of these, hemolytic streptococci were almost constantly found, especially in the throat. These different strains of streptococci grew on standard blood agar plates as small round semitranslucent colonies of variable moisture surrounded by a clear zone of hemolysis from 2 to 3 mm. in diameter. They were gram-positive, arranged in pairs and short chains, medium sized and slightly oblong, and occasionally faintly staining capsules were visible. They were highly virulent for rabbits, doses of 1 c.c. of a twenty-four hour broth culture usually causing multiple arthritis and death in from five to ten days.

The pneumococci isolated were usually in small numbers, and often presented the characteristics of the organism found in the mouths of normal persons which Cole and his associates call Group 4 or the atypical type of pneumococci. The green-producing streptococci were also usually found in small numbers, and were in the instances studied relatively avirulent. In regard to the staphylococci found, it is interesting to note that many of the strains were hemolytic when first isolated.

In many instances the attacks of grip were followed by atypical pneumonias, and bacteriologic studies of material from these cases, both antemortem and postmortem, revealed the presence in predominating numbers of hemolytic streptococci in most instances. In no instance in which postmortem material was examined was the *Bacillus influenzae* found. In nine cases blood cultures were made, four of which were positive, three yielding hemolytic streptococci and one pneumococci in pure culture.

The most significant findings in this work were the hemolytic streptococcus, which, when present, was usually in predominating numbers. and the almost complete absence of the *B. influenzae,* although the disease simulated in every detail the so-called true influenza. The question of filtrable viruses cannot be excluded in such diseases, but in three early cases in which virus cultures were made no results were obtained. The results seem to indicate that the virulent hemolytic streptococcus must be considered as a very important factor in the etiology of these "grippal" diseases. Whether or not the infection is primarily a streptococcus infection cannot be determined; but, as the disease progresses, this organism rapidly becomes of paramount importance.

Throughout the literature on epidemic human respiratory infections there have been described coincident widespread epidemics of acute distempers among horses and occasionally other animals. These epidemics have been so frequently simultaneous that many of the earlier observers have described the clinical manifestations of the disease minutely. It is only necessary to say that the clinical picture, pathology and complications of the equine epidemic disease simulated very closely epidemic respiratory infections in man.

The clinical symptoms are always the same. The onset is sudden with a chill and high fever, or with a profuse mucous nasal discharge which rapidly becomes purulent, and profound exhaustion. In exceptional cases, gastro-intestinal symptoms have been noted as premonitary manifestations. The course is rapid, and usually terminates favorably unless serious complications intervene. The complications are, however, frequent, and determine the character of the prognosis. Pneumonia of a lobular type but in some instances lobar, pleuritis, empyema, abscesses, arthritis, acute nephritis and conjunctivitis are the most common complications. The pathologic picture simulates in every way that of human "grippal" infections, and it may be said that the two infections are quite similar in epidemiology, clinical manifestations, pathology and complications.

Such an epidemic occured among the horses of the United States during the winter of 1915-1916, and was at its height during the decline of the human epidemic, gradually abating with the advent of warmer weather. Great numbers of horses were attacked, and the disease spread rapidly along the various shipping routes to all the great concentration markets in the country. This epidemic was felt more severely in Chicago and New York, and in these cities thousands of horses suffered from the disease.

I had the opportunity to study this epidemic infection as it occurred in the Union Stock Yards veterinary hospitals in Chicago. Extensive bacteriologic observations were made on the nasal discharges and blood obtained during all stages of the disease, and on a large amount of fresh postmortem material. The technic used was similar to that used in the examination of material from human infections.

This work, which includes examinations of more than 100 horses sick or dead with the disease, yielded strikingly uniform results. Hemolytic streptococci have been isolated in pure or mixed culture from the nasal discharge before death, and from the infected tissues after death in almost all instances. In a large series of blood cultures taken at various stages in the course of the infection, hemolytic streptococci were found in pure culture in a large percentage of cases. Furthermore, these organisms have been isolated from pneumonic exudate obtained by lung puncture during life, infected joints, kidneys and urine in acute nephritis, abscesses, iritis exudate, acute painful swellings on the extremities of infected horses, a condition simulating erythema nodosum in man, and infected lymph nodes during the course of the disease. Other organisms, such as staphylococci, green-producing streptococci, gram-negative bacilli and *Bacillus subtilis,* were found occasionally in the cultures from the nasal discharges. It is also interesting to note that *Bacillus tetani* was found in these cultures in a few instances.

The results which have been briefly outlined indicate that the hemolytic streptococcus was a factor of primary importance in the etiology of this epidemic infection in horses; but before this conclusion can be considered logical, other possibilities must be excluded. The question of filtrable virus being responsible for the infection must be thought of. To obtain some information on this question, many culture and inoculation experiments have been carried out. The methods for the cultivation of viruses suggested by Noguchi and others were used, and Berkefeld filters were usually found of sufficient density to remove the bacteria. In twelve instances the mucous nasal discharges of horses in the first stage of the infection were suspended in sterile physiologic sodium chlorid solution and filtered through Berkefeld filters. This filtrate was cultured aerobically and anaerobically as well as sprayed into the nose of normal horses. In no instance did these culture or inoculation experiments yield any results which would indicate the presence of a filtrable virus. It is reasonable, therefore, to conclude that, using the known methods for identification of a virus, a virus is either not present in the nasal discharges of horses suffering from epidemic respiratory infections or it is not demonstrable.

Of three horses which were inoculated intranasally, however, with washed fresh cultures of hemolytic streptococci, one developed the typical acute infection three days after inoculation. This experimental infection ran an uncomplicated course and terminated in recovery in about fourteen days. The other two horses developed a slight mucous nasal discharge following inoculation, but the general reaction did not justify the conclusion that they were suffering from the disease. Up to this time immunity reactions have been studied in only a few instances, and the results have been inconclusive.

The streptococcus isolated from the equine respiratory infections corresponds with the organism described by Hel, Schütz, Pfeiler and others as the etiologic factor in pleuropneumonia in horses. The streptococci from human and equine sources, although similar in many characteristics, differ widely in pathogenicity, and seem to be highly parasitic for their specific hosts. The pathologic anatomy of the two epidemic respiratory diseases, human and equine, however, are quite analogous and typical of streptococcus infections.

When the observations just described are collated, some interesting relationships become evident. The epidemic of acute respiratory infections occurring in the United States during the winter of 1915-1916 simulated in every characteristic the great epidemic of 1890. In a detailed bacteriologic examination of material from sixty-one instances of this disease, the influenza bacillus was found in only one case. On the other hand, virulent hemolytic streptococci have been found in preponderating numbers in the noses and throats in these cases of influenza which suggest strongly that these streptococci play an important rôle in the etiology of these epidemic infections. The conclusion is certainly warranted that the influenza bacillus was of no primary importance in the causation of this epidemic of "grippal" diseases.

In regard to the epidemic of acute respiratory diseases in horses that occurred simultaneously with the human epidemic during the winter of 1915-1916, the accumulated evidence strongly suggests that the causative factor was also a hemolytic streptococcus. This streptococcus derived from equine sources, although similar in many cultural and morphologic characteristics to the streptococcus from human sources, differed from the latter in its biologic reactions, a fact which renders improbable a common etiology for the two infections. The pathogenic properties of each type of streptococcus for each specific host were quite similar. Furthermore, it is interesting to note that the conditions under which the two outbreaks of respiratory diseases occurred in man and in horses were quite analogous from the epidemiologic point of view. The activity of the horse market during the past year, the collection of large numbers of horses from the agricultural districts of the United States into concentration yards, and congested shipping facilities occasioned by the abnormal demand for horses created an artificial environment which simulated quite closely the crowded state of living among human beings — a factor apparently highly important in the transmission of these epidemic respiratory diseases. The disease prevalent at first only in the large concentration markets, rapidly spread along lines of transportation until horses in the more remote parts of the country were attacked.

This study of two diseases, apparently caused by two organisms of similar morphology and cultural characteristics, but differing in their pathogenicity for other hosts, occurring under similar epidemiologic conditions and characterized by identical pathologic lesions, emphasizes the importance of comparative pathology in the development of human medicine.

THE SURGICAL THERAPY OF BENIGN AND MALIGNANT TUMORS OF THE URINARY BLADDER *

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During recent years a renewed interest in the treatment of bladder tumors has been awakened, and with the introduction of the more extensive use of endovesical operative procedures as well as with the application of radium, new vistas have opened. With those procedures that are purely palliative this paper will not deal. Its limits, broad enough, will be the purely surgical therapy. Perhaps it is premature to attempt to standardize therapy in this field. By those of us who are fortunate enough to see many of these cases such an attempt should be made, even though further experience may lead to many modifications of the statements that seem justified today. Moreover, I hope that the discussion which this presentation will lead to will contribute a great deal to the elucidation of the subject before us.

From a therapeutic standpoint, cases of bladder neoplasm usually present themselves in three definite groups:

A. Benign papillomas, including single and multiple recurrences and papillomatoses.

B. Papillomas that cystoscopically simulate benign growths, that are microscopically malignant and respond but slowly, if at all, to the high frequency cauterization.

C. Papillary carcinomas and other types of malignant carcinomas and sarcomas which infiltrate the bladder wall.

My experience has demonstrated to me that all cases under Group A, except the papillomatoses, can be treated successfully by the endovesical high frequency method, unless: (1) the hemorrhage is too severe, or recurs at every introduction of the cystoscope; (2)

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* From the Mount Sinai Hospital, Surgical Service.

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the growth is inaccessible, or (3) the patient is intolerant. I have observed permanent cures by this therapy in these cases, including both the very large and the multiple papillomas, for a period of six years.

On the other hand, cases of papillomatosis, usually the result of very numerous implantations following a previous operation, are not as a rule fit subjects for endovesical therapy. Such therapy would be interminable, and in these cases, as well as in those three types of benign papillomas just enumerated as being unfit for the endovesical therapy, I believe an open operation should be performed.

In these cases, I believe, the bladder should be exposed through a wide suprapubic extraperitoneal incision in the Trendelenburg position. There should be the greatest gentleness exercised in all manipulations so as to avoid breaking off possible implants, and all exposed surfaces should be protected with gauze packings or thoroughly cauterized with heat. To insure oneself against implantations, the bladder should not be filled before operation, and it should be drawn out of the abdomen by its urachal end. This is readily done by gently pushing back the peritoneum to either side of the median line, when the urachal strand can be readily doubly clamped and cut between. By drawing forward on this band by means of the lower clamp, the peritoneum is gently stripped away from the bladder and the greater part of the organ brought forward to the surface of the body without undue traumatism of the tumor within the viscus. Several layers of gauze packings are now placed about the well exposed bladder, protecting the perivesical space and abdominal incision. Then the bladder is incised and the edges of the at first small incision are seized with forceps, which are used as retractors. If a papilloma is seen, it is immediately seared with the Paquelin cautery (hooked point) well into its base. Gradually the incision in the bladder is prolonged, each growth as it presents being seared in the same way. As little sponging as possible, and that as gentle as possible, is permissible. Through the gradually enlarged incision the whole interior is carefully surveyed, and every growth as well as every suspicious area is carefully paquelinized. At times such thoroughness may necessitate the use of the cautery for the greater part of an hour. In those cases in which there are very large tumors, these must be seized with blunt ring clamps and their pedicles seared, as it would take too long to burn them to a crisp in situ. Having assured oneself that there are no more growths to cauterize, the incision in the bladder is, in its turn, thoroughly cauterized, each clamp on the edge of the incision edge being removed so as to prevent any possible implant where the clamp has held the incision. Then to destroy any fragments that accidentally have broken off, the whole field is bathed for several minutes in alcohol. After this, fresh packings are placed around the bladder, and the incision in its anterior wall is closed in two layers, turning in the charred edges. Suprapubic tube drainage and closure of the superficial wound complete the operation.

Despite this long use of the cautery, there is no more postoperative discomfort than after ordinary suprapubic cystostomies, and except for a slightly more marked pallor of the mucous membrane, the cystoscopic picture several months, as well as a year or more later, gives no indication of what has been done.

When we come to Group B, papillomas which respond slowly and poorly to high frequency cauterization and which show microscopically changes suggestive of malignancy, though cystoscopically apparently benign, we approach a debated terrain. Some believe that these should be treated by endovesical methods, either the high frequency cauterization, with or without a snare, or first with radium as suggested by Young and then with the high frequency cauterization.[1] This position is taken because of the well recognized poor results of open operation. This teaching, if accepted, would lead to dire results, as malignant neoplasms would regularly be treated endovesically, and the proper time for an operative radical cure would have been lost. Others, realizing[2] fully that this type of growth may at times be cured by endovesical procedures, and realizing also that the malignant change may have progressed into the depths of the growth and that the extent of this progress cannot be determined by examination of superficial pieces of the neoplasms, favor the open operation. To the latter position I myself adhere. In 1912 I emphasized[2] that poor response to the Oudin current pointed to malignancy and indicated operation.

The only exception to this would occur under the following conditions. A patient is examined with the cystoscope, and a papilloma, apparently benign, is found. A piece of growth is immediately removed for microscopic examination and the growth is at once thoroughly cauterized with the Oudin current. If on reexamination within the week, which I do as a routine, the response to the cauterization has been such as I am used to seeing in typical benign papillomas, the growth having melted away, I naturally proceed with the high frequency current, even though the microscope reports marked cellular changes pointing to malignancy. During this brief respite further pieces are examined microscopically to determine my procedure. If such examinations show again similar atypical cells and other evidence of malignancy, if the response to the high frequency cauterization is also atypical, I believe it is safer to advise radical operation. Though there can be no doubt that such malignant changes in the superficial part of the growth may be destroyed by endovesical cauterization,[3] it is equally certain that we cannot tell how deeply those changes may extend in any particular case; and if they do extend into the depth, a cure by the high frequency current is out of the question. I believe, therefore, we must work out an operative technic that will allow us to deal successfully with these cases, and not shirk our duty and try methods that are doomed to failure from the very start, in a very definite proportion of our patients.

The operative treatment of these cases, I believe, will be identical with that of cases of outspoken and microscopically proved malignancy, that is, Group C. In these two groups of cases, B and C, the surgical procedures will vary with the site of the growth or growths, from a partial cautery cystectomy to a complete cystectomy. Just as in the technic described above for papillomatoses, etc., here, gentleness and care, avoidance of implants, extensive excisions with adjacent pelvic fat and lymphatics is absolutely essential to success.

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[1] Compare Geraghty: Surg., Gynec. and Obst., 1915, **21**.

[2] Beer, Edwin: The Treatment of Papillary Tumors of the Urinary Bladder with the High Frequency Current (Oudin), The Journal A. M. A., Nov. 16, 1912, p. 1784.

[3] Beer, Edwin: Footnote 2; Removal of Neoplasms of the Uninary Bladder, The Journal A. M. A., May 28, 1910, p. 1768.

Before describing the technic in these cases, the first point that comes up for discussion is whether the suprapubic approach should be extraperitoneal or transperitoneal. The latter route I have found more dangerous than the former. The advantages incidental to being able to explore the peritoneal cavity for metastasis in distant organs have proved elusive. Despite such deposits, all things being equal, I believe we should go ahead and give local relief by resection. As the immediate mortality of extraperitoneal partial, as well as complete cystectomy, has been nil as compared with the transperitoneal operation, I have during recent years restricted the use of the transperitoneal route to tumors on the posterior wall of the bladder. Opening the peritoneum widely in these cases, one can readily detect involvement of the peritoneum overlying the tumor, and regularly remove the whole thickness of the bladder wall. If this technic is used, I believe it is safer to place a tube drain in the pouch of Douglas, provided the bladder is the seat of an infection, as so often is the case in malignant tumors. For tumors on the lateral walls, on the anterior wall, about the ureters, on the trigon and at the neck, the extraperitoneal approach, I believe, is preferable. If the peritoneum is opened during the manipulations incidental to liberating the bladder, palpation of the pelvis, especially of the pouch of Douglas, can readily be made, and then the opening should be sutured lest infectious material be spilled and the peritoneal cavity be infected. Many of those cases, as I see them, have already a diminished resistance, owing not only to their disease and the superadded cystitis, but also to the back pressure effect on the kidney or kidneys, as well as that which comes with advancing age. A superadded, even mild peritonitis may, under such circumstances, deprive the patient of an otherwise successful operative interference.

For tumors of the lateral walls, anterior walls and ureteral regions, I believe, therefore, that an extraperitoneal cautery excision is indicated, with or without extraperitoneal ureteral implantation. For tumors of the neck and trigon (as well as for numerous scattered malignant growths), provided the patient consents, I believe a complete cystectomy, cutting through the middle or upper third of the prostate which forms our pedicle, and taking along the pelvic fat and lymphatics, seminal vesicles, etc., with implantation of the ureters through two small lateral incisions in the skin of the iliac fossae, until we know how to implant them safely in the intestine, is the operative procedure indicated.

In doing the latter operation, the complete cystectomy, naturally the bladder must not be opened. It is stripped out of its bed, the vascular ligatures are applied as near the pelvic wall as possible, and all the fat is peeled toward the bladder, as in the radical Wertheim operation. The ureters are drawn out so as to project beyond the level of the skin, are intubated, and are attached to the skin by sutures.

In doing the partial cystectomy with the Paquelin cautery, the bladder is delivered, etc., without filling, as previously described under the operative treatment of papillomatosis cases. The growth is carefully exposed and its whole surface burned thoroughly. Then well away from the base of the growth, with Paquelin blade, a cautery excision is made. All incisions in the bladder are seared just as carefully as possible, and the whole area is bathed in alcohol for several minutes. If the ureteral meatus is sacrificed, a neostomy is readily made at some new point without undue traction, with a couple of chromic sutures which draw the ureter into the viscus and a couple that attach it at its extravesical entrance to the bladder. After changing the packings that fill the perivesical space, the bladder is closed in layers and suprapubic tube drainage is instituted.

CONCLUSION

My experience in considerably over 100 cases studied during the past six years has brought me to this standpoint:

1. In all cases of benign papilloma, primary or recurrent, whenever possible, employ endovesical therapy and preferably the high frequency cauterization.

2. In all cases of extensive benign recurrences, papillomatoses, as well as all benign cases unsuitable for endovesical therapy, employ the suprapubic extraperitoneal Paquelin cautery excision, technic as described above.

3. In all cases of microscopically suspicious malignant papillomas that look clinically benign and that do not respond promptly to endovesical high frequency cauterization, perform a Paquelin cautery partial cystectomy.

4. In all cases of microscopically proved malignant tumors, that look clinically malignant, proceed at once to Paquelin cautery partial cystectomy or to total cystectomy, depending on the site of the growth, employing the technic described above. If the growth is in the posterior wall, the transperitoneal approach is probably preferable. If the growth is in any other site, the extraperitoneal approach is preferable, as it is less dangerous and gives even better access to the lateral pelvic recesses.

5. Gentleness in manipulations, thorough and intensive use of cautery, drawing the bladder out of the abdomen before opening it, and protective packings in the perivesical wound, all aimed against the danger of implanting new growths on the raw surfaces, are destined, I believe, to make our efforts in this difficult field more uniformly successful.

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ABSTRACT OF DISCUSSION

Dr. Edward L. Keyes, Jr., New York: Dr. Beer is better qualified to speak on this subject than any of the rest of us, and when he places a very large category of these tumors out of the range of intravesical treatment, we may take his opinion seriously. I am skeptical in regard to the microscopic diagnosis. There are those who with the microscope will tell you what kind of a tumor can be treated intravesically and what kind requires excision for its cure. The real criterion is the one that Dr. Beer has laid down precisely, whether or not these patients get better promptly with the intravesical treatment. If they do not, you are wasting time. If you are going to do a suprapubic section for multiple papillomas, or papillary carcinoma, the various technics described may be classed as intraperitoneal or extraperitoneal, cautery or excision. I have seen Dr. Beer perform his operation and no operation appeals to me more than his does. I am inclined to believe that he is a little too fussy on the score of potential implantation. The searing of the bladder wounds, etc., is quite unnecessary if every step has been taken with the precision that Dr. Beer has achieved. I do not feel quite so keenly as Dr. Beer the difference between intraperitoneal and extraperitoneal operation. I have done a number of successful intraperitoneal operations and do not feel as he does that the mortality is so greatly in favor of extraperitoneal work. Finally, in reference to cystectomy, I must ask Dr. Beer how many cystectomies he has done successfully. I have done a lot of cystectomies unsuccessfully. My experience with total cystectomy has led me to the conclusion that the scar left by previous cystotomies makes removal of the bladder very much more difficult. The whole prostate should come out. I understood Dr. Beer to say he took out a part of it. I believe we should first free the prostate from the perineum, then attack the bladder alone. It was stated yesterday that to do an operation on the order of the Wertheim operation in these cases is perhaps ideal, but rarely possible of materialization on account of the age and infirmity of these patients. I think that is true. Dr. Coffey of Oregon has described a method of implanting the bile duct or the ureter obliquely through the intestine that seems ideal. I have done three such operations since the first of January, doing one ureter at a time, as suggested by Mayo. That gives the patient a kidney to live on while he is having trouble with the other one. You do not infect both kidneys at one time. I have had three perfectly satisfactory results—the patients have very slight tenderness, rise of temperature, etc. Therefore I feel high hope of good results from this method of ureter implantation in the bowel. Implantation in the skin is bad, unless the patient has a million dollars and several servants to go around with bath towels mopping him up.

Dr. William F. Braasch, Rochester, Minn.: I have seen some of the results following total cystectomy and implantation of the ureter into the intestines, as suggested by Dr. Charles Mayo, and he and Dr. Judd have performed over twenty such operations. The patients recovered from the operation in over fifteen cases, and we have had only two postoperative deaths in the series, but a number of patients have died in the months following the operation. However, a large proportion of the patients are living and well. I have in mind particularly one case, a young woman who came to me with a bladder exstrophy three or four years ago. She agreed to take the chance of the operation. Dr. Mayo first implanted one ureter and then the second into the sigmoid, and later on removed the bladder. Now there is just a small scar where the bladder was. She holds the urine in the rectum six hours. She is a nurse, does all the operating room work, and looks the picture of health. That is only one of several instances. The implantation of the ureter into the skin has been tried and discarded. If the danger of infection could be removed and we would have a functionating ureter, the bowel offers the ideal site for implantation, because the urine can be controlled by the bowel after a few months of irritation just as well as by the bladder. The danger of infection is important, but most of these patients, particularly with exstrophy of the bladder, have a long standing immunity to infection. If with the vaccine treatment that Drs. Crabtree and Cabot have suggested we can increase this immunity it would be an added feature of the operation. As far as the oblique implantation is concerned, it seems to be of distinct value. It surely is better than direct implantation.

Dr. John A. Hawkins, Pittsburgh: In times past this operation with the high frequency spark has been discredited by general surgeons. They are prone to open the bladder for any condition that may be found there. Therefore, I think it would be well for us to have them understand just what Dr. Beer would teach, and that is that this treatment applies only to cases of papillomas or nonmalignant tumors of the bladder. I have had quite a little experience with the high frequency spark, and with the results I have had I shall continue to use it as long as they respond to the treatment. We must impress on general surgeons that for a simple tumor of the bladder or a number of papillomas of the bladder the high frequency current is the operation of choice. There is no necessity for opening the bladder except when these tumors are very large.

Dr. John T. Geraghty, Baltimore: The selection of the best treatment for any tumor, of course, depends essentially on the diagnosis. I was very glad to hear Dr. Beer say that he did not depend on the microscopic diagnosis quite as much as he formerly did. We find from a very large experience in excising pieces of bladder tumors that it is impossible to tell, microscopically, an infiltrating carcinoma from a papilloma. We divide bladder tumors into benign, malignant, and papillary infiltrating carcinomas. The diagnosis we try to make principally from the cystoscopic examination and from palpation. We have practically given up excising pieces of the tumor, because we found that it was really impossible to differentiate. You will find cystoscopically in the average tumor, when it is malignant, that the papillae show necrosis. The least bit of necrosis indicates malignancy. Incrustations indicate malignancy. Again, around the border of the tumor you will frequently find an edema of the mucous membrane. That means malignancy. If, then, we are in doubt as to the nature of the tumor, we tentatively try fulguration. If the tumor is benign certain changes occur in it that indicate that it is disappearing. If, however, after fulguration the slough does not separate, it indicates that this is not a tumor for fulguration. In some cases the fulguration has cured the malignant papillomas. In some of these cases, in which the response to fulguration has been very slight, by first irradiating these tumors, we apparently changed the character of the tumor entirely. Tumors that had been there for several months slowly disappeared, so slowly that sometimes you felt doubtful that the tumor would respond to fulguration. After 400 or 500 milligram hours of radium we noted that the tumor seemed to change remarkably, and then one or two fulgurations would produce what weeks of fulguration had formerly failed to produce.

The use of radium in carcinomas has not been very satisfactory. Most of them have shown very little if any response, and so far, I think, we have only had one definitely infiltrating carcinoma that showed any very marked improvement. Two patients presented themselves on the same day with tumors in the same place, close to the vesical orifice, on the trigon, both infiltrating carcinomas. One was 60, the other 35. Irradiation was tried in both cases. The young man seemed to be stimulated by the radium. The tumor grew very much faster than you would ordinarily expect. In the other case the tumor apparently has disappeared. Cystoscopic examination a few weeks ago showed the bladder apparently normal. That is, however, the only case in which the radium apparently has had any effect on the extensive infiltrating carcinomas. We feel that when a diagnosis of carcinoma of the bladder is made, if the tumor is on the anterior wall it should be resected; if it is on the lateral wall it should be resected; if on the posterior wall, and of such a size that it can be done, it should be resected. We have done no cystectomies in recent years. It is possible, with the technic of handling the ureters better developed, that in the future we will do it in cases of papillary carcinoma in which no other method of relief is available.

Dr. F. R. Charlton, Indianapolis: I doubt very much if doctors are physicists enough to actually know the chemical differences possessed by these different heat currents, the d'Arsonval, Oudin, diathermy, etc. My own feeling has been that it is a question of burning and that it does not make one bit of difference whether that burning is done with a hot iron, with a platinum tip, or some finely differentiated electrical current. Dr. Beer seems to place his dependence largely on the old-fashioned Paquelin cautery.

Dr. Edward L. Keyes, Jr., New York: Even radium, while scientifically different from the cautery, destroys tissue to a rather indefinite depth. Dr. Barringer has access to a very large store of radium and has made a tumor disappear by one application of radium. He has made another tumor disappear, which was a small pathologically proved infiltrating carcinoma of the trigon, about the size of your thumb nail. It had been burned frequently and in vain by intravesical methods elsewhere. Dr. Barringer gave a single burning, and three months later we cystoscoped and found no tumor in the bladder. It was a typical ulcerating type of carcinoma.

Dr. Louis E. Schmidt, Chicago: I have had not less than five cases of recurrences. I call it papillomatosis of the bladder, or implantation. I will cite one case. A year ago a patient presented himself with the history that he had been suprapubically operated on a year and a half previously for the removal of a benign papilloma. He evidently had a very stormy convalescence, requiring almost a year. On cystoscopy he had altogether too many tumors to count, certainly somewhere between seventy-five and 100. This patient was treated successfully in the course of four sittings, and I have had him under observation now for the last six months, and he is still entirely free. As Dr. Beer says, if it is possible to do that they certainly fall in the domain of intravesical treatment. I was fortunate enough in this instance to be able to reach every tumor. There is no question in my mind that if these patients return they are far better off, even if the periods are few and long between, and that this method of treatment is far superior to opening up the bladders repeatedly. I should like to mention the method which Dr. Kolischer and I have used in the last year and a half, that is, the diathermic method, which is probably nothing but electric coagulation or high frequency on a big scale. It requires a high frequency current and two electrodes. This method of treatment is used only for tumors where no resection of the bladder is permissible or where the question of cystectomy is out of the question. That is, it is reserved chiefly for tumors of the neck and base of the bladder. The bladder is opened and these electrodes (of different sizes and different shapes) are applied directly to the tumor. A thermocoagulation and a certain amount of destruction of tissue is obtained in that way. The heat is given off between the two electrodes, and does not radiate in all directions, particularly in directions in which you do not want it to radiate, as with the thermocautery. This slough is usually thrown off in due course of time, and then the patient is treated with radium. Dr. Kolischer has one case that he considers as a cure. I myself have treated not less than six in this manner, and the results have apparently been better than with the treatment of simply opening the bladder and using the thermocautery for the destruction of a growth which has been considered inoperable. I saw Dr. Keyes operate in one of the cases he mentioned and I was very much impressed with the ease and accuracy with which the Coffey implantation can be carried out. I think it is the best procedure brought forward for this condition.

Dr. G. Kolischer, Chicago: I am satisfied that the surgery as practiced heretofore in tumors of the bladder is not satisfactory. In the very few instances where we have to deal with benign tumors we may succeed. Success is permanent success, and that in malignant tumors is very infrequent. For instance, men who have had a very large experience have practically abandoned operation for malignant tumors of the bladder. The primary mortality compared with the results which at best are only temporary is out of proportion to what we may accomplish. A combination of chemotherapy and radiotherapy offers encouraging results and does not endanger the patient's life. Our results are very much better, so far as we can judge now, than with any other method, so far as temporary cure is concerned. We have treated patients who were absolutely inoperable. It would be foolish to claim that they are entirely cured, because the time is too short, but at the present time they are well, as far as any one can determine. No man of large experience claims any definite cure in all his cases. In fact, there is only one case on record where a total cystectomy kept a patient alive fifteen years. In most of the malignant tumors of the bladder technically a radical operation is impossible. Ninety per cent. are sessile in the base of the bladder. Consequently there is no such thing as a radical operation. Fulguration is an excellent means of treating papillomas, providing they are benign. There is no surgical interference known that leads to definite results, but we have today by a combination of diathermy, chemotherapy and radiotherapy a means which has given encouraging results.

Dr. Frederick C. Herrick, Cleveland: I would like to ask Dr. Beer one question. How many benign papillomas of the first group which he has fulgurated have had no recurrence? We are struggling to get carcinoma early, and in a person of 40 we are always afraid we will find a recurrence in what we thought was a benign tumor.

Dr. Edwin Beer, New York: The first point I would take up is the question of the attempt to standardize the treatment of tumors of the bladder. The general surgeon still is very skeptical as to what can be done by the transvesical route. Although we may change our viewpoint as we have more experience, I believe we are now in a position to define fairly exactly what should be done in certain types of tumors of the bladder. Operation is not the only treatment. As to Dr. Kolischer's remarks, I consider them very reactionary. The same argument can be applied to the treatment of carcinoma in any organ of the body. If we take Dr. Kolischer's viewpoint nobody with cancer of the bladder will have a chance at permanent cure, and that people with cancer of the bladder have been cured for a number of years cannot be denied. I do not know how long they must be free before considered cured. Dr. Kolischer suggests fifteen years of freedom. I have recently shown a series of six cases, representative of the different types of growth in the bladder, some of which went back four, five and six years, and remained well after a partial cystectomy. I also showed a case of total cystectomy that had been done more than a year before, and the patient, although unfortunately not a millionaire, was fairly comfortable. Whether endovesical cauterization is purely an application of intense heat or not is as yet an unanswered question. I think there is a very big difference between the d'Arsonval and the Oudin current. I prefer the Oudin. *A priori,* theoretically one would say the d'Arsonval current would be better, but as a matter of practice I have come to the conclusion that the Oudin current is to be preferred.

Dr. Geraghty touched on one very important point. He suggested incorrectly that I had changed my viewpoint as to the value of microscopic data. I made one exception in Group 2. I stated that if a tumor looks benign, if the microscope shows it to contain atypical epithelial cells suggestive of carcinoma, if the tumor melts away under high frequency on the very first treatment, I would hesitate to do a resection, though the microscopic section showed atypical cells. The reason is self-evident: If a piece is cut off of the tumor, a piece of one of the fronds of a papilloma, and that happens to show carcinoma microscopically, it is perfectly conceivable that that carcinoma may be limited to a small area, and if the whole tumor melts away at the first treatment, so that at the second examination instead of finding a tumor such as we saw originally, we find a small residue, I believe one is fairly safe, though not absolutely safe, in considering that a satisfactory response, and one is justified in continuing the treatment, even though the microscopic examination may have suggested a carcinoma. Unfortunately we have not any satisfactory way of implanting the ureters in the bowel so as to prevent infection. I have only come to my viewpoint regarding total cystectomy during the last two and a quarter years, and during that time I have done only two such cases. When cases come that are suitable for a cystectomy, naturally I have to lay the matter before the patient, and at least three patients who were suitable have refused. Any number who were unsuitable have gone on and died of their carcinomas. We all know how these patients suffer after cystostomy or bilateral nephrostomy. Although the operation of cystectomy is an extensive one, luckily my patients have survived it. I think the mortality is going to be much smaller than it has been in the past. If I were concerned personally I would select it.

Coal Mine Fatalities in 1916.—Reports from state mine inspectors received by the U. S. Bureau of Mines show that there was a decrease of about 3 per cent. in coal mine fatalities in the United States in 1916 as compared with 1915, while the increase in the production of coal amounted to about 12 per cent. The fatalities were 2,225 in 1916 as compared with 2,269 in 1915. Without having the figures as to the number of men employed, but on the basis of the number employed in 1915, the fatality rate was 3.03 in 1916 as against 3.09 in 1915 for each 1,000 men. This is said to be the lowest rate since 1898, when about half the number of men were employed. According to the calculations of the Geological Survey the coal production for each fatality in 1916 was the greatest in the history of coal mining in the United States. In 1916 there were eleven mine disasters in each of which five or more men were killed, the total number of killed being 154, which is the lowest since 1901. In 1915 the number was 262, in 1914, 316, and in 1913, 464.

TRICHINAE IN PORK AND NEMATODES IN BUTTERFISH

IN THEIR RELATION TO THE IMPLIED WARRANTY IN THE SALE OF ARTICLES OF FOOD *

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Several instances of the sale of trichinous pork and of nematode-infested butterfish have recently been brought to the attention of the division of zoology of the Hygienic Laboratory. As these cases bring up the question of the "implied warranty" connected with the sale of articles of food for consumption by human beings, it seems advisable to discuss them from the standpoints of medical zoology and public health.

Certain laws provide that "diseased" meat and meat from "diseased animals" may not be sold, and in the last analysis the interpretation of these laws is based on the interpretation of the term "diseased."

At least one judge has recently held that the term "diseased" in respect to the food laws should be interpreted in its popular sense. If, however, this view is admitted, it will be found that from the standpoint of the parasitic infections this interpretation would exclude all meats from sale, for probably no animal that has ever been slaughtered for food has been entirely free from infection by one parasite or another. Thus a very high percentage of hogs and sheep is known to be infected in the muscles (namely, the "meat," in narrower sense) with certain parasites belonging to the protozoan group named *Sarcosporidia*. Academically, these animals are diseased, but should they be so classified in the sense of the food laws? No case of disease in man has ever been traced to these (sarcosporidian) parasites when swallowed in pork or mutton, yet every person who has eaten pork, mutton or lamb a number of times has certainly swallowed many of the protozoa in question.

Again, every animal used for food has in its intestine either protozoa, roundworms, flukes or tapeworms. Some of these parasites, especially certain protozoa, are mere scavengers in the intestinal tract, but many of the infections undoubtedly do more or less harm to their hosts. Accordingly, academically these animals are "diseased," but are they "diseased" in the sense of the food laws?

If all animals harboring animal parasites are to be construed as "diseased," in the sense of the food laws, as they are undoubtedly "diseased" from the abstract academic point of view, it is clear from the zoologic point of view that no meat can be sold legally; hence it would appear logical to the zoologist to conclude that the term "diseased" in the sense of the food laws should be construed in a manner different from its academic interpretation and that, in the sense of food laws, "diseased meat" and "meat from diseased animals" really mean *meat that is likely to produce disease when eaten by human beings.*

Thus, pork, beef or mutton from animals containing *Sarcosporidia* in their muscles or strongyli in their stomachs would not, from this point of view, be meat from "diseased animals," in the sense of meat inspection regulations and food law, despite the fact that this meat is from "diseased animals," from the academic, clinical or pathologic point of view as applied to the animals themselves, unless the infection were so extensive as to produce in the meat an edematous or other condition sufficiently extensive to render the meat disgusting or otherwise unfit for food. But in the latter case the meat should be condemned, not because of the presence of the parasites but because of the secondary conditions due to unusually extensive infection by the parasites. Any other conclusion would mean that the law forbids the sale of all meat; but since the law permits the sale of meat, and since the law cannot be assumed to permit the sale of meat which it specifically excludes from sale, it would seem logical to conclude that it is the intent of the law to forbid the sale only of such meat as is likely to cause disease in man, regardless either of the academic or of the popular interpretation of the term "diseased" as applied to the animal itself.

Accordingly, from the zoological point of view, the term "diseased" in meat inspection and food laws is technically quite distinct from the term "diseased" in clinical work and in its ordinary sense.

On basis of the view that "diseased meat" in the sense of the food laws should be interpreted as meaning "meat that is likely to produce disease when eaten by human beings," the question arises as to the bearing of this interpretation on the "implied warranty" on the part of the vendor, that meat he sells comes under this construction. Here, again, the subject has a distinct zoological bearing.

If a vendor sells a bushel of live clams or live oysters in the shell, the sale, and therefore the implied warranty, is made on the assumption that the clams and oysters will be taken out of the shell before being eaten. Despite the fact that the clams and oysters have been sold in bulk, the vendor sold these goods in good faith that they would be *properly prepared for food before* they were consumed, and his implied warranty certainly cannot be assumed to cover injury to a person who might swallow the clams and oysters, shells and all, any more than it could be assumed to cover the point that the purchaser of this food allowed the clams to remain exposed to the sun for several days, to die and decay, before they were eaten.

Likewise, the vendor of live lobsters, crabs, snails, chickens, fish, or of flour, rice, salt, red pepper, milk, corn, green apples, green bananas, nuts of all kinds, potatoes, lettuce, berries, pineapples, coconuts, peas in pod, string beans, etc., presupposes in his implied warranty that the purchaser who buys these foods is under an implied guaranty that they will be *properly handled and properly prepared for reception into the stomach*, before they are served as food. Any other assumption would make the vendor responsible for all omissions and commissions (over which he has no legal control) with respect to the food articles after they had left his ownership and possession.

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* An outbreak of disease, diagnosed as trichinosis, occurred as a result of eating pork. Suits for damages were brought against the vendor. At the trial of the first case, physicians testified to the effect that the trichinae could have been discovered by proper inspection, and the case was decided against the vendor.

In the trial of the second case, I was requested to appear as expert witness. The surgeon-general consented to my appearing on the condition that no fee would be accepted. I testified that no inspection could guarantee the absence of trichinae, therefore that raw pork is not a proper article of food, and that the implied warranty involved in the sale of food was predicated on an implied guaranty that the food would be properly prepared for reception into the human stomach; if the food was not properly prepared, the vendor could not be held responsible for results dependent on lack of proper preparation. The trial judge ruled out part of my testimony because of the existence of a certain ruling of a higher court. This case was decided against the vendor. Several other cases came to trial before other trial judges, the testimony was repeated, and these cases were decided in favor of the vendor.

The line of argument I followed created some interest among several judges and attorneys who have discussed it with me, and it is on their suggestion that I bring these views to the readers of The Journal.

The implied warranty in the sale of food is therefore correlated with and dependent on an implied guaranty in the purchase of food.

Accepting this last point as axiomatic and fundamental, let us apply the principle to trichinous pork.

When a meat dealer sells pork, he is selling a product which *in its raw state* is dangerous to health, for the reason that it frequently contains certain disease germs (trichinae) the absence of which cannot be guaranteed by any practical and proper method of meat inspection known. *If the pork is properly cooked* or otherwise properly prepared, these germs are killed, are harmless, and do not per se render the pork "diseased" (as food), for if dead they cannot produce disease.

As the absence of live trichinae in fresh pork cannot be scientifically or practically guaranteed by any known practical and proper method of inspection, and as the presence of live trichinae in raw pork is liable to produce disease if eaten by human beings, the conclusion follows either that *raw* pork is not a proper article of food or that the law calls on the butcher to guarantee something that from the very nature of things is not subject to guaranty on basis of any available knowledge; in other words, that the law demands that the butcher must, in principle, *wager a bet* that the pork does not contain live trichinae. A bet is not a collectable debt at law, and financial reimbursement involved in an implied warranty that is nothing more or less than a bet would seem, logically, to have the same legal status as a bet!

To the zoologist the only proper conclusion is that pork which is not properly prepared for food comes under the same general principles as oysters or clams in the shell, undrawn fowls, live lobsters, uncooked rice, flour, etc., namely, that unless the pork is properly prepared to become food fit for consumption, it is not fit for food at all, and that when a vendor sells raw pork with the implied warranty that it is fit for food, this implied warranty is premised on an implied guaranty by the purchaser that he will prepare it properly to serve as food.

From this point of view, if a person contracts trichinosis, the vendor of the fresh pork is not in any way responsible, because had the pork been properly prepared to serve as food, trichinosis could not have resulted; and if the meat was properly prepared for food, the diagnosis of trichinosis was incorrect.

The case involving the condemnation of butterfish is slightly different from that of trichinous pork.

In August, 1915, the wholesale price of these fish was reported as 7 cents a pound, on a day when the inspectors in one of our cities discovered that certain lots contained small worms. The fish were condemned, and the next day the wholesale price is reported to have fallen to 1 cent a pound. The economic loss resulting to an important industry is estimated to have amounted to many thousands of dollars. The dealers appealed to the United States Fish Commission, and the commissioner requested "an expression of opinion from the Public Health Service as to the nature of these parasites and the probability of their communication to human beings through the eating of butterfish."

The report from the zoologist to the service may be summarized as follows:

1. The parasitic worms from the butterfish submitted for examination and opinion represent a larval (agamic) ascarid.

2. It does not agree with any parasite that is recognized as cause of disease in man.

3. There is no evidence that it would come to maturity in man, even if the ascarid reached the human stomach in uninjured condition and viable.

4. Most of said parasites seem to occur on the viscera of the fish, and since the viscera are removed before the fish is cooked, the number of ascarids that might eventually reach the human stomach is enormously reduced.

5. Since the butterfish are cooked before being served as food, those agamic ascarids that happen to be present in the flesh or under the parietal peritoneum would be cooked before being swallowed; hence they would not be infectious.

6. This office has no evidence that any case of disease in man has ever been caused by these small parasites.

7. The worms in question belong to a group, some members of which form a toxic substance that produces symptoms.

8. Clinical evidence is lacking in support of the theoretical possibility that these worms might, through such a toxic substance, produce harm if cooked and eaten by persons.

9. From the esthetic standpoint, opinion might differ as to the advisability of permitting fish, with these worms in their flesh, to be placed on the market.

10. My own view is that if numerous worms were found in the flesh of the fish, the purchaser himself would discard it; if only a few were present in the flesh, there is no evidence that these would do harm if cooked and eaten with the fish; accordingly, it appears safe to leave the matter in the hands of the public.

This conclusion is based on the premises that neither the raw flesh nor the entrails of butterfish are eaten in this country; in any locality in which these premises do not hold, the conclusion might, on local study, have to be modified.

11. My recommendation is that the bureau take the position (*a*) that the presence of parasitic worms in or on the viscera of food fishes that are eaten cleaned (eviscerated) and cooked does not render these fishes unfit for food; (*b*) that there is no evidence that agamic ascarids in the flesh or under the parietal peritoneum of fish are infectious to man; (*c*) that we have as yet no evidence that said agamic ascarids are toxic to man; (*d*) that at most, so far as present evidence goes, the presence of said agamic ascarids in the flesh or under the parietal peritoneum is an esthetic question, and (*e*) that if said agamic ascarids are present in the flesh or under the parietal peritoneum in sufficiently large numbers to greatly depreciate the food value of the fish or to render the fish disgusting or repellent as an article of food, the condemnation if made at all should be made clearly and distinctly on this ground and not because of possible communicability of said parasites to man; (*f*) that the bureau advise conservatism in this matter, as the point involves:

The possibility of reducing the home supply of an important article of food, used by many people;
The possibility of an extension of the condemnations to many other species of food fishes;
The possibility of a serious blow to a very important industry (fishing), in which large sums of money are invested and on which many families rely for their livelihood;
The possibility therefore of an actual lessening of our national food supply, with reactionary increase of food prices in other lines;
The possibility of unjustly developing toward fish in general, as an article of food, a prejudice from which it may take years to recover;

and all of these dangers are of a nature that they should not be lightly incurred on basis of theoretical possibilities which, so far as present knowledge goes, are not supported by any tangible practical clinical experience. In fact, the ultimate public health injury resulting from a possible restriction of the food supply might easily outweigh the occasional injury done to a few individuals in case these persons happened to develop some toxic symptoms as the result of swallowing too great a number of these parasites.

Here again is a case dependent on the interpretation of the word "diseased" in the sense of the food laws. As food, the fish should not be considered "diseased" since the presence of these innocent little threadlike worms encysted chiefly on the entrails would not render the fish liable to produce disease in man; but from the standpoint of the fish themselves, pathologic changes exist, and hence disease is undoubtedly present.

THE CYSTOSCOPIC DIAGNOSIS OF CONTRACTED BLADDER*

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TYPES AND UNDERLYING CAUSES

The abnormally small, or contracted bladder (*Schrumpfblase* of the Germans) may occur on the basis of a variety of etiologic factors. The congenital origin of the condition is extremely rare, and only the acquired forms deserve consideration for practical purposes.

In certain forms of neuroses (neurasthenia and hysteria) contraction of the bladder may occur as the result of continuous tonic spasm of its muscular coat. The main symptoms of this condition consist in distressing pollakiuria and strangury, gradually leading to almost continuous tenesmus, and eventually resulting in marked loss of bladder capacity. Classical descriptions of this "functional intolerance of the bladder" are recorded in the French literature by Guyon,[1] Guiard[2] and Janet.[3]

Extravesical inflammatory processes, terminating in definite pericystitic and paracystitic connective tissue involvement, as frequently encountered in the female pelvis, may occasionally lead to contracted bladder. I have had the opportunity to examine such bladders, in which loss of capacity did not seem to be due as much to disease and contraction of the bladder wall as to distortion of the viscus by pericystitic adhesions.

Neoplasms, pressing on the bladder from the outside, and large concrements or tumors inside the viscus, may be the cause of considerable reduction of bladder capacity. Many years ago I observed a man of 35 with a huge sarcoma of the bladder and complete loss of capacity, rendering cystoscopy impracticable.

Particularly cancer of the prostate, involving the bladder wall, is liable to result in rapid reduction or total loss of capacity. I recall the case of prostatic cancer in a man of 71, with most distressing tenesmus and constant dribbling, in which the bladder, on account of its extreme smallness, could be found only with great difficulty at suprapubic exposure.

Contracted bladder, due to stone, is particularly frequent in children, as stated by Kausch.[4] I have seen two such cases in boys under 7 years. In one of them loss of bladder capacity was apparently due to the presence of a large stone and the resulting severe cystitis, while in the other case, concerning a boy of 5, a comparatively small and rough oxalate, situated at the outlet of the bladder and embedded in its wall, proved to be the cause of constant dribbling connected with most distressing and continuous tenesmus, and resulting in almost complete loss of capacity by bladder contraction.

By far the most frequent cause of contracted bladder is chronic cystitis which, in its final stage, may present two main forms of the condition. Reduction of the caliber of the bladder cavity may be due to concentric hypertrophy of its muscular coat, connected with marked trabeculosis. Such bladders, if viewed from the outside, appear to be of fairly normal size, while the abnormal thickness of their wall is, in reality, responsible for the small capacity. Cases of that character, presenting an abnormal irritability of the muscular apparatus of the bladder, not based on tangible central lesions, are recorded in the French literature, and particularly Guyon[5] gives, under the heading "Cystite douloureuse," a masterly description of its symptomatology; he, as well as Hartmann,[6] have published photographs of excellent specimens of the condition.

Through the courtesy of Dr. Henry Meyer of San Francisco I had the opportunity to observe a typical case of that character, in a patient of his: A man of 58 for thirty years past, had suffered from gradually increasing urinary disturbances, as the only cause of which a pronounced phosphaturia could be ascertained. Bladder capacity was about 40 c.c. Cystoscopy under general anesthesia, on account of rapid expulsion of the injected fluid, was barren of diagnostic significance. On account of the intensity of the symptoms, uncontrollable by expectant measures (bladder dilatation), suprapubic cystostomy was performed, at which the bladder wall was found to be considerably thickened and trabeculated. The patient's untoward urinary symptoms were almost instantaneously relieved by establishment of suprapubic drainage, which, on account of the return of distressing symptoms, following attempts to remove the drain, was made permanent, and by which the patient has been kept comfortable and entirely dry for more than eight years past.

While this form of contracted bladder, though, is comparatively rarely encountered in the literature and in practice, the second form, that due to interstitial chronic cystitis, comprises the greatest majority of cases and, therefore, is of the utmost practical importance. Pathologically this condition is characterized by an extension of the process from the mucosa of the bladder wall to its muscular coat, replacing it by connective or scar tissue and, by these means, materially reducing, or totally destroying elasticity of the bladder wall.

On the degree and extension of the pathologic process involving the bladder wall depends the intensity of symptoms. In the most pronounced cases which come under observation, bladder capacity may be reduced to less than 10 c.c. Constant dribbling occurs in all cases up to a capacity of 30 c.c. and above, and incontinence practically ceases only at or above a capacity of 50 c.c., when bladder evacuation will occur spasmodically and be attended with postmictural dribbling. Pain in or around the bladder, which may be either constant or assume the character of intermittent paroxysms, may vary in intensity according to the secretory activity of the primary infecting focus, and recurring periods of exacerbation and remission of inflammatory bladder symptoms may develop by the occurrence of new or secondary infecting foci.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

[1] Guyon: Leçons cliniques sur les maladies des voies urinaries, Paris, 1897.

[2] Guiard, M.: Ann. d. mal. d. org. génito-urin., 1891, p. 230.

[3] Janet: Ann. d. mal. d. org. génito-urin., 1895, p. 132.

[4] Kausch: Arch. f. klin. Chir., 1907, **23**, 78.

[5] Guyon: Ann. d. mal. d. org. génito-urin., 1887, p. 72.

[6] Hartmann: Des cystites douloureuses, Thèse de Paris, 1887, Obs. IV.

CLINICAL SYMPTOMS

The clinical diagnosis of the abnormally small bladder is easily established on the basis of its characteristic complex of symptoms, and by determining reduction of bladder capacity by means of the catheter. Recognition, though, of its existence, does not, in the great majority of instances, pave the way to rational treatment of this most distressing condition, which renders the sufferer unfit for work and social intercourse, and sooner or later terminates his life by ascending renal infection. Successful treatment, insuring relief or cure, practically depends on the correct localization and removal of the underlying cause. Viewed from this standpoint the diagnosis assumes the aspect of one of the most difficult and complicated medical problems.

Cystoscopy, for obvious reasons, would be the most appropriate and exact diagnostic method, if its application were always feasible. Cystoscopic investigation of the bladder, in order to be of diagnostic significance, requires, according to good authority (Nitze, Kümmell, Luys and others) a bladder capacity of at least 50 c.c., which in a large number of cases is not available. Although, by the use of the American close vision cystoscope, it is possible to make an examination with less than 50 c.c. of distending fluid,[7] many authors still consider cystoscopy impracticable and contraindicated in cases below that capacity. The question, therefore, arises, to what extent the underlying etiologic factors of contracted bladder are diagnosticable without cystoscopic investigation.

The diagnosis of contracted bladder due to stone is comparatively easy, which in most instances is feasible on the basis of roentgenography or by means of the stone searcher. By eliciting an unusual irregularity or roughness of the bladder wall, with metal sound or catheter, the diagnosis of concentric hypertrophy may, occasionally, be facilitated. Bladder contraction, due to pericystitic inflammatory processes, can, as a rule, be correctly interpreted by anamnesic data and clinical investigation. Equally amenable to correct diagnosis are cases of contracted bladder occurring on the basis of long standing prostatic, urethral or fistulous affections. The diagnosis of bladder contraction, complicated by one or more diverticula, is, in the presence of a large diverticular sac, occasionally feasible on the basis of shadow-casting roentgenography alone. I have seen an interesting case of that type:

> A man of 74 with long standing distressing cystitic symptoms, a small prostate, as revealed by rectal palpation, and a bladder capacity of about an ounce, showed after thorium radiography, on the plate, a large sac, which communicated with the bladder by a small opening, at the center of its anterior wall. The capacity of the diverticular sac by far exceeded that of the bladder.

The availability, though, of such prima facie evidence, without the aid of cystoscopy, is the exception, and the differential diagnosis of diverticulum, prostatic involvement, and renal infection may, even in the hands of the experienced observer, present most appalling difficulties, as in the following case:

> A man of 57 entered the hospital with symptoms of severe cystitis and marked urosepsis. Prostate by rectum was considerably enlarged. There was almost constant dribbling of purulent urine. Bladder capacity was about 40 c.c., with 15 c.c. of residual urine, presenting the appearance of pure pus. After long and painstaking treatment of the bladder, it was possible to effect momentary cystoscopic inspection, revealing fairly normal outlines of the sphincter. Attempts, though, to view the trigon and fundus were constantly frustrated by instantaneous clouding of the bladder fluid, as usually observed in severe pyuria of renal origin. When, after many futile attempts, bilateral ureteral catheterization was finally performed, clear urine was obtained from both kidneys, thus proving the vesical character of the persistent pyuria, as the actual source of which the cystoscope, finally, demonstrated a diverticulum at the bladder fundus.

CYSTOSCOPIC MANAGEMENT

While, though, the etiologic diagnosis of some forms of contracted bladder may occasionally be feasible without cystoscopic evidence, the differential diagnosis of idiopathic or inflammatory bladder contraction (*cystite douloureuse*), the abnormally small congenital bladder, and the classical tuberculous scar tissue bladder (*tuberculöse Schrumpfblase*) is a most difficult task, which, without the aid of the cystoscope, in most instances is impossible of performance. This is the more regrettable, since the tuberculous form by far exceeds in frequency all other types of bladder contraction. Guyon[8] found, among twenty-one specimens of contracted bladder, ten to be of tuberculous character. Kelly[9] considers a large percentage, probably 80 or 90 per cent., of cases of intractable or rebellious cystitis, characterized by loss of bladder capacity, to be associated with tuberculosis of the upper urinary tract. I myself have seen more cases of tuberculous bladder contraction than of all other types combined. The extravesical origin of long standing cystitis was pointed out, long before the advent of the cystoscope, by Thompson,[10] Ultzmann,[11] Coulson[12] and others, who declared cystitis to be, but very rarely, an idiopathic condition, while the probable renal origin of chronic bladder affections is mentioned in the writings of precystoscopic authors like Guyon[13] and Lebert.[14] Exact methods for the recognition of renal tuberculosis, at a very early stage, have been well established for many years past. Moreover, statistical investigations compiled by Rovsing,[15] Simon,[16] von Oppel[17] and others have proved that a large percentage of cases of renal tuberculosis, at least 50 per cent., are complicated by tuberculosis of the bladder, which only very rarely is encountered as the result of genital tuberculosis, and which, in all probability, never occurs as a primary condition. Viewed under this angle, many cases of so-called genuine or idiopathic bladder contraction, recorded by writers of the precystoscopic and earlier cystoscopic eras, like those of Rothschild[18] and Raskay,[19] would at present be recognized as tuberculous scar tissue bladders, while reported cures must be interpreted on the basis of autonephrectomy. In spite of these universally accepted facts, Guyon's[20] words, written about twenty-five years ago, descriptive of the distressing symptoms of patients afflicted with bladder tuberculosis, "these miserable sufferers, who so often are the object of diagnostic errors," have not lost their pungent significance with the present generation of practitioners. For cases of neglected cystitis, characterized by tenesmus, hematuria, pain and loss of bladder capacity, and therefore not *a priori* suggestive as being of renal origin, are even today, in many quarters, interpreted as primary affections and, unfortunately, become the object of cystoscopic investigation at a late stage, in which that procedure is impracticable.

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[7] Pilcher, Paul M.: Practical Cystoscopy, 1915, p. 110.

[8] Guyon Leçons cliniques sur les maladies des voies urinaries, Ed. 3, 1896.

[9] Kelly: New York State Jour. Med., April, 1906.

[10] Thompson: Clinical Lectures of Diseases of the Urinary Organs, London, 1879, p. 294.

[11] Ultzmann: Die Krankheiten der Harnblase, Deutsch. Chir., **52**, 108.

[12] Coulson: Diseases of the Bladder, 1891, p. 163.

[13] Guyon: Footnote 8, p. 455.

[14] Lebert: Cyclopedia of the Practice of Medicine, Diseases of the Bladder, p. 688.

[15] Rovsing: Arch. f. klin. Chir., 1905, **77**, 43.

[16] Simon: Beitr. z. klin. Chir., 1901, **30**, 1.

[17] Von Oppel: Folia urol., 1907, p. 494.

[18] Rothschild: Deutsch. med. Wchnschr., 1901, **27**, 84.

[19] Raskay: Deutsch. med. Wchnschr., **27**, 298.

[20] Guyon: Footnote 8, p. 389.

In a man of 40, who was confined at a climatic sanatorium for pulmonary tuberculosis, and who had suffered for some time past from the classical syndrome of urinary tuberculosis, cystoscopy was found to be impracticable on account of persistent bladder intolerance toward attempts at water distention. Before the intention to remove the patient to a hospital equipped with modern cystoscopic facilities could be carried out, he died, rather suddenly, under uremic symptoms.

A man of 39 entered the hospital with grave symptoms of urosepsis, superinduced by long standing and severe cystitic symptoms. The history pointed to left-sided renal involvement. After a few attempts at cystoscopic diagnosis, rendered futile in the extremely small and intolerant bladder, exposure of the left kidney revealed an inert pus sac (autonephrectomy), while the right organ showed, on the postmortem table, the typical picture of parenchymatous tuberculous nephritis. The guinea-pig inoculation test gave, later on, a positive result.[21]

A man of 41 was brought to the hospital in a state of deep uremic coma. Cystoscopy was impracticable on account of bladder intolerance. Roentgenography showed two apparently typical concrement shadows in the left kidney region. This organ, on exposure, was found to be considerably enlarged, containing a pus cavity at its upper pole, while in the center of the organ two small cavities, filled with cheesy material, were present. The right kidney was found, at the postmortem examination, to be small, presenting the typical picture of tuberculous atrophy. The bladder was extremely small, showing marked scar tissue infiltration (interstitial cystitis[22]).

Fortunately, though, the chronicity of the condition permits, in the great majority of cases of tuberculous bladder contraction, of a longer period of observation and preparatory treatment, rendering feasible, under favorable circumstances, the exact focal diagnosis, which is indispensable to rational operative treatment.

Ocular inspection of the bladder, by means of the cystoscope is, in advanced cases of contraction, barren of diagnostic information. As a rule the cystoscopist encounters an intensely sensitive and inflamed bladder wall of a deep red angry color, on which all cystoscopic landmarks are more or less obliterated by irregular and ragged ulcerated areas with uneven edges, covered with necrotic shreds and purulent material. Ureteral meatoscopy, moreover, the most important object of cystoscopic investigation, is, as a rule, obviated in these extreme cases. Quite frequently the walls of the vesical portion of the ureter have become thickened and the sphincter has lost its contracting power,[23] or the characteristic ureteral spurt is, by stricture of the canal, changed into cystoscopically insignificant dribbling. Judging, furthermore, on the color and appearance of the secretion of either kidney, whether it be clear or turbid, is very difficult and often misleading. For, unlike in earlier forms of unilateral pyonephrosis, we are not dealing with a sharply circumscribed process, clearly localized about a ureteral orifice and pointing to infection of the corresponding kidney, but with much larger and more diffuse areas of inflammatory tumefaction and elevation, covering the whole trigon and fundus, and thus obliterating these cystoscopic landmarks by edematous and ulcerated tissues.[24]

The diagnosis, therefore, is but rarely aided materially by cystoscopic observation alone. In the majority of these extreme cases of bladder contraction, infection of both kidneys exists, and the only hope for the patient lies in the probability of ascertaining satisfactory function of one organ, which, after removal of its anatomically and functionally valueless mate, would be likely to recover from toxic nephritis. Reliable data on this most vital question can be obtained only by examination of separated renal urines, as available by catheterization of both ureters.

CYSTOSCOPIC MANAGEMENT

Cystoscopic investigation, therefore, must be conducted, from the start, with ureteral catheterization as its main object. Any other means, devised to obtain indications for life-saving nephrectomy, like bilateral exposure and palpation of both kidneys, as recommended by von Illyès[25] or application of functional tests on one kidney, after temporary clamping of the ureter of its exposed sister organ, as proposed by Casper,[26] ought to be *a priori* rejected as risky and crude diagnostic makeshifts. In fact, as the most potent source of enthusiasm for continuous and persistent efforts, or as the best protection against discouragement and disappointment, in the face of repeated cystoscopic failures, in these desperate and seemingly intractable cases, must be considered the cystoscopist's firm conviction that nothing short of bilateral ureteral catheterization will insure a successful issue of the case. Only in this way cooperation of the patient can be obtained, who, as a rule, consults the urologist, totally demoralized by long suffering. Not radical, therefore, and hasty cystoscopic measures, intended to force the diagnostic issue by one or two sittings, but painstaking work, characterized by perseverance, gentleness and infinite patience, may, by means of a large number of cystoscopic sittings, sometimes extending over several weeks, finally yield palpable diagnostic results. Successful cystoscopic management, besides that, is feasible only on the basis of modern urologic hospital facilities, including assistants and nurses specially trained for that work.

Most essential is tactful and efficient preparatory treatment of the bladder, which should not be conducted by means of the irrigator. Forceful bladder filling is to be shunned, as liable to excite detrusor spasm, resulting in simultaneous expulsion of catheter and injected fluid. "The more sensitive the bladder, the less fluid must be injected, if manipulations in the viscus are to be done with care," and "the bladder does not wish to be put on tension, but is ready to retain a certain amount of fluid only, which comes in mere contact with its wall." These golden rules, set down by Guyon,[27] should always guide the operator in his work. A good hand syringe will permit of measuring the proper amount of pressure to be exerted, and help to communicate to the operator's hand the onset of spasmodic detrusor contraction, which, by intermittent release of pressure, may readily subside. By cautiously adding minute amounts of fluid, thus imitating, as it were, physiologic bladder filling from above, distensibility of the bladder may be gradually increased, according to the character of the underlying cause of loss of capacity. Bladder contraction, due to nervous cystalgia, or to inflammatory changes of the mucosa, on the basis of nontuberculous renal lesions, will yield more readily to tactful efforts at distention, to which the tuberculous scar tissue bladder, on account of loss of elasticity of its wall, generally proves refractory.

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[21] Compare Am. Jour. Med. Sc., 1906, **131**, 217.

[22] Compare Krotoszyner, Martin: Differential Diagnosis of Nephrolithiasis and Renal Tuberculosis by Roentgenography, The Journal A. M. A., Dec. 5, 1914, p. 2006.

[23] Pilcher, Paul M.: Practical Cystoscopy, 1915, p. 375.

[24] Rumpel: Cystoscopy as Adjuvant to Surgery, 1910, p. 59.

[25] Von Illyès: Folia urol., 1912, **6**, 477.

[26] Casper: Deutsch. med. Wchnschr., 1908, **34**, 1337.

[27] Guyon: Footnote 8, p. 407.

Extensive experience with these cases has convinced me that general narcosis for cystoscopic purposes is to be shunned as dangerous, and disappointing in diagnostic results. A tuberculous bladder wall will often not relax under ordinary general narcosis, and in order to obtain disappearance of bladder reflexes, such a profound degree of anesthesia is required that the patient's life would be endangered.[28] Attempts to increase bladder capacity under spinal anesthesia (0.06 tropacocain) are liable to result in more or less serious lacerations of the shrunken and ulcerated bladder wall, and hemorrhages of such intensity may occur that cystoscopic vision is obviated. But spinal anesthesia, because rendering cystoscopic examination entirely painless, is often indispensable, especially for initial sittings in very nervous patients. Under the guidance of the resourceful operator, however, even moral cowards become gradually used to cautious and delicate cystoscopic manipulations, so that, for later sittings, a previously administered codein—or morphin—suppository, or the usual local cocainization of the deep urethra will suffice. The anesthetizing effect of locally applied remedies is extremely limited in these severe bladder affections, and wherever possible, I try to carry on cystoscopic investigation without any anesthesia, which, for obvious reasons, is especially desirable in cases in which many sittings are likely to be required. Particularly for the beginning, I prefer brief cystoscopic sittings, at intervals, determined by the patient's local and general reaction to instrumentation. Everything in this connection depends on establishing the patient's confidence in the operator's skill and instrumental delicacy. In this way, the duration of sittings can be materially extended later on, without great discomfort to the patient, while cystoscopy may then be repeated at shorter intervals, without the occurrence of consecutive reactions.

Air cystoscopy I have entirely abandoned. Air inflation of the bladder, aside from being very painful, renders cystoscopic vision indistinct, on account of glaring light reflexes. Some authors, particularly Stoeckel, recommend that method as facilitating cystoscopy in severe hemorrhagic conditions. I agree, however, with Bransford Lewis,[29] that irrigation through one of the modern close vision cystoscopes is practically always sufficient to cope with that difficulty.

Bladder distensibility and capacity having been ascertained, the bladder wall is mechanically cleansed of adherent shreds of mucus and pus by small quantities of fluid, injected with the hand syringe. For initial cystoscopic sittings, merely aiming at quick orientation in the bladder, I prefer Nitze's evacuation cystoscope with inverted optic, which permits of meatoscopy from a bird's eye view, as it were, and, by this means, often facilitates localization of one or both ureteral orifices. Repeated change of fluid is accomplished by filling through the shaft of the cystoscope with the aid of two assistants, while the penis, in order to prevent expulsion of the injected fluid, is firmly compressed by the operator around the shaft during the act of actual cystoscopy. If every manipulation connected with the examination is done rapidly and skillfully, a more or less conclusive conception of the intravesical condition, including the most important features of the trigon, will be available in bladders capable of some degree of distention.

The various types of the Nitze cystoscope are entirely unsatisfactory in bladders below 40 c.c., in which meatoscopy is often found to be still feasible by means of the American close vision cystoscope. I am using for this work, almost exclusively, the Brown-Buerger double catheterizing cystoscope, the irrigating device of which allows of rapid change of the bladder fluid without disturbing the patient, by removing the optic, while the brilliant light of the instrument produces a large and clear picture of the ureteral orifice and its neighboring tissues. By keeping up almost continuous irrigation, it is often possible to bring into cystoscopic view the ureteral region in an even extremely contracted bladder, so that momentary glimpses of the meatus, sufficiently long for its catheterization, can be obtained. After catheterization of one ureter, identification and entrance of its mate is, occasionally, much more easily accomplished. In most instances, though, the finding of the other meatus, because of its abnormal position, owing to contraction and distortion from ulcerations, is fraught with difficulties which, at first, appear insurmountable, and may require many sittings, spent in laborious and systematic search of every groove and slit suggestive of the meatus. In rarer instances, catheterization of an orifice, located high up on the wall or roof, or hidden in a mass of ulcerated tissue, is feasible only by blindly searching in all ulcerated areas with the end of the catheter until, by chance, the meatus is entered.[30]

Of material aid in this work is chromocystoscopy (injection of 10 c.c. of 4 per cent. indigocarmin), if performed after previously determining the time of acme of color elimination. Since the majority of these desperate cases are characterized by involvement of both kidneys and material deterioration of renal function, meatoscopy should not be started until the generally delayed climax of appearance of blue coloring has set in.

Stricture of the ureter, unless located so low down in the tube as to obviate collection of urine of its corresponding kidney, is, as a rule, not a serious obstacle to the diagnosis, even though the obstruction remains impassable. Total obliteration of the canal, where the ureteral tube is shrunken to a blind cord, as the result of autonephrectomy, may entirely obviate the cystoscopic diagnosis, as in one of my own observations, reported elsewhere.[22] These cases, however, are rare and void of practical interest, since they generally are beyond repair.

Time and space forbid the enumeration of many more details, the neglect or omission of which, insignificant and unimportant as they may seem, nevertheless may frustrate success, while their harmonious combination, at the hands of the experienced and resourceful cystoscopist, will eventually pave the way to the correct diagnosis, as in the following observation, selected from my case records:

A man of 35 entered the hospital on account of severe "bladder trouble," which for a long time past had proved refractory to local treatment. Past history was unimportant, except that the patient had suffered from pain in the left kidney region at the onset of bladder symptoms. Physical examination was negative; the kidneys were not palpable. The patient complained of very painful and frequent (almost continuous) micturition with postmictural dribbling. The urine was cloudy, containing pus and blood microscopically and numerous acid-fast bacilli. The two hours' bladder phenolsulphonephthalein was 55 per cent.; blood cryoscopy, 0.546; blood urea, 192; bladder capacity, about 1 ounce. Momentary cystoscopic glimpses of the bladder wall revealed the picture of severe tuberculous cystitis; the landmarks of the trigon could not be made out on account of rapid clouding of the fluid. Dilatation treatment was inefficacious on account of extreme sensitiveness of the bladder, from which the injected fluid was almost instantly expelled. Under spinal anesthesia it was possible to catheterize the right ureter to a point about 8 cm. above the meatus, where it met an impassable obstruction. Right-sided renal secretion showed abundant microscopic pus and blood, many tubercle bacilli, and gave, later on, a positive guinea-pig test. The left ureter could not be localized in two further sittings under spinal anesthesia, at which also chromocystoscopy was applied.

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[28] Guiteras, Ramon: Urology, 2, 100.

[29] Lewis, Bransford: Cystoscopy and Urethroscopy, p. 29.

[30] Thomas: G. L.: Collected Papers of the Mayo Clinic, 1911, p. 401.

From then on, short cystoscopic sittings, without any anesthesia, were held at regular intervals, about every fourth day. Determination of the acme of indigocarmin elimination revealed onset at about forty, and climax of blue coloring at about 90 minutes after injection. Finally, after many futile attempts to locate the left ureter, a blue spurt was seen to emanate from a point behind a fold of the mucosa, at the extreme upper end of the left side of the fundus. The beak of the cystoscope was pushed into that niche where the catheter found its way blindly into the ureter, and was easily moved forward to the pelvis.

Examination of renal urines demonstrated marked anatomic and functional deterioration of the right side, while the kidney secretion of the left side was almost clear, showing microscopically a few epithelial cells, no tubercle bacilli and no other bacteria. The guinea-pig test, later on, proved positive.

The right kidney, after its removal, presented the macroscopic and microscopic picture of caseous destruction, due to chronic tuberculosis. The nephrectomy wound was completely closed about three weeks after the operation.

The patient left the hospital locally and generally improved, while his bladder capacity had increased to about 100 c.c.

Prior to exact cystoscopic diagnosis, exposure of the left kidney, which was suspected to be anatomically and functionally destroyed, had been contemplated. Exposure and eventual removal of the other kidney might not have been undertaken at the same sitting, as too risky a procedure in the patient, exhausted by long suffering. Bilateral ureteral catheterization, on the other hand, at once clinched the diagnosis and rendered right-sided nephrectomy a safe and rational procedure.

CONCLUSIONS

1. The congenital and so-called idiopathic contracted bladder is rare and practically unimportant.
2. Bladder contraction, in the majority of instances, is due to extravesical causes (pyonephrosis, etc.).
3. Of the utmost practical importance is the tuberculous scar tissue bladder, secondary to renal tuberculosis.
4. The clinical diagnosis of contracted bladder is comparatively easy, while recognition of its underlying causes is very difficult and, as a rule, feasible only on the basis of comparative examination of renal urines, obtained by bilateral ureteral catheterization.
5. Successful cystoscopic exploitation of contracted bladders below 50 c.c. capacity is almost always feasible, provided sufficient time, modern urologic equipment, cystoscopic experience and skill, and cooperation of the patient are available.

999 Sutter Street.

VALUE OF SPINAL PUNCTURE IN ETIOLOGIC DIAGNOSIS OF CARDIOVASCULAR DISEASES *

LEON BLOCH, M.D.

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The examination of spinal fluid in cardiovascular diseases was suggested to me by the finding of a positive spinal fluid Wassermann test in a man, aged 54, who had an aortic aneurysm, a bilateral optic neuritis and unequal pupils, and a negative blood Wassermann test. The spinal fluid showed also positive Nonne and Noguchi tests and a high cell count, consisting mainly of lymphocytes. These evidences of meningeal irritation or inflammation, as they undoubtedly are, were first described by Ravaut, and are now accepted without controversy. Yet no attempt has been made heretofore to arrive at an etiologic diagnosis of cardiovascular diseases by resorting to an examination of the spinal fluid in cases in which the blood Wassermann test has been found negative.

As Cabot[1] has shown, the etiologic factors in the production of these diseases may be grouped under four headings: (1) nephritis; (2) toxic conditions, such as gout and diabetes; (3) infectious diseases of the rheumatic type, as well as other infectious diseases, and (4) syphilis. In this classification, Groups 3 and 4 are contributory causes in the majority of the cases of cardiovascular disease. While more than one etiologic factor may play a part in the production of the morbid condition, still, a careful inquiry into the history, and a complete physical and laboratory examination will help considerably in determining the dominant cause. At this juncture it must not be forgotten that a patient, who can trace his cardiac affection to one of the other groups, may subsequently acquire syphilis and therefore present the above mentioned evidences of meningeal irritation. These instances are not of sufficient frequency, however, to interfere materially with the results here set forth.

The series of cases here reported consists of twenty-two out of about 200 found within the last year in the service of Dr. Williamson and myself at the Cook County Hospital, Chicago. Puncture was not done in cases of the endocarditic group, when the patient's condition was too serious to allow the procedure, or when a positive blood Wassermann test was obtained. In all, thirty patients were subjected to spinal puncture, of whom twenty-two showed positive evidences of syphilis. Among these twenty-two patients, five had aortic aneurysm; one, abdominal aneurysm; four, aortic regurgitation; nine, myocarditis in various stages of decompensation; two, hypertension, and one, angina pectoris. Only four of the entire series admitted syphilitic infection. A positive spinal fluid Wassermann test was obtained in seventeen cases. These included four of aortic aneurysm; the one of abdominal aneurysm; three of aortic regurgitation; eight of myocarditis, and the one case of angina pectoris.

The five cases yielding a negative Wassermann test were distributed as follows: one case of aortic regurgitation; one aortic aneurysm with a spinal fluid under high pressure and positive Nonne and Noguchi tests; one of myocarditis, with a negative Nonne test and a cell count of 36; two of hypertension, both with a

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* Read at the meeting of the Society of Internal Medicine, Oct. 23, 1916.

[1] Cabot, R. C.: The Four Common Types of Heart Disease, The Journal A. M. A., Oct. 24, 1914, p. 1461.

positive Nonne and Noguchi test, and a fluid under high pressure. One of these patients was a man of 34, with a systolic pressure of 260 and a diastolic of 140, who subsequently developed a hemiplegia and died.

An examination of the spinal fluid in the seventeen cases yielding a positive Wassermann test showed a positive Nonne test in the case of abdominal aneurysm; a high cell count in one case of aortic aneurysm; a positive Nonne test and normal cell count in another, and a positive Nonne test and cell count of 30 in still another. In one case of aortic regurgitation with a + + + + Wassermann test there was a cell count of only 1.

The fact that in this series there were no cases of double mitral lesion — a condition generally of endocarditic origin — may be of interest. Whether this is simply a coincidence, or whether these cases are all of syphilitic origin, which might seem to be the fact, can be determined only by the study of a larger number of cases than that covered by this report.

There can be no question of the presence of syphilis in those cases which yield a positive Wassermann test; but there may be in the case of those which are negative. Ravaut,[2] in 1903, showed that in the early stages of secondary syphilis a high percentage of involvement of the nervous system obtained. Altman and Dryfoos[3] reported 61 per cent., and Wile and Stokes[4] 63 per cent. involvement. The presence of syphilis is indicated by lymphocytosis, increased albumin and globulin, a positive Wassermann test and an increase in spinal fluid pressure. A pressure of 200 mm. or over is considered pathologic. I did not include in this series those cases which, in addition to high pressure, did not show some of the other evidences of spinal involvement mentioned above.

A lymphocytosis in the spinal fluid beyond the normal limits (Nonne,[5] 10 cells per cubic centimeter, Gutmann,[6] 5 cells per cubic centimeter, von Kafka,[7] 5 cells per cubic centimeter) is considered the most constant finding in connection with symptoms referable to the central nervous system. Bayley[8] quotes Mott as saying that lymphocytes in the spinal fluid are important evidence of syphilis of the central nervous system. He also states that there may be a distinct lymphocytosis without the power of complement fixing. When these points are borne in mind and errors in technic are eliminated, it seems almost certain that the results of the spinal fluid examinations are conclusive. As there were no other signs of tuberculous meningitis, and especially in view of the fact that several of the patients left the hospital improved, tuberculosis cannot be considered as a factor in the production of these changes.

Although there is no way of computing by the aid of these statistics the actual percentage of increase of cases of cardiovascular diseases determined in this way as due to syphilis over the percentage of such cases commonly known, the fact still remains that the etiologic factor under such conditions can be determined in a greater number of instances by resorting to spinal puncture. This applies particularly to those cardiac conditions which are now known to be of syphilitic origin in a large percentage of cases. These include aortic diseases and to a lesser extent myocarditis.

Where the etiologic diagnosis has been made, the treatment becomes simplified. Longcope[9] has shown that cases of long standing will not be benefited to any pronounced degree by salvarsan treatment, but that amelioration of symptoms, of temporary duration at least, may be obtained. In acute cases, however, Brooks and Carroll[10] have shown that heart involvement in early syphilis, irrespective of the lesion, may be cured by specific measures, independent of circulatory measures. My own experience has not been very satisfactory, although at times I thought that temporary benefit was obtained by specific treatment in cases of long standing.

SUMMARY

1. Positive Wassermann tests have been obtained in the spinal fluid in seventeen out of thirty selected cases in which the blood Wassermann test was negative.

2. In five of those cases in which the spinal fluid Wassermann test was negative, either lymphocytosis or a positive Nonne or Noguchi test has been found.

3. Spinal fluid examination, as a result of these findings, would seem to be of value in cardiovascular diseases, when syphilis is suspected and the blood Wassermann test is negative.

25 East Washington Street.

ANILIN POISONING *

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As comparatively few cases of anilin poisoning have been described, the symptoms, treatment and outcome of the following case should prove of interest, particularly since the dye industry has of late tremendously increased.

Anilin poisoning occurs in one of three ways: (1) by the swallowing of anilin with suicidal intent; (2) by inhalation of anilin fumes, or (3) by absorption of anilin through the skin from the clothes. The symptoms of anilin poisoning are similar to those of nitrobenzene.

REPORT OF CASE

History.—White man, aged 20, single, laborer, admitted July 22, 1916, Hospital No. 38491, had been working for one week in an anilin dye factory. In carrying out his work, he inhaled anilin fumes. He felt weak, especially in the lower extremities, and had severe headache. He tried to walk but was unable, lost consciousness, and was brought to the hospital.

Physical Examination.—The respiration was slow and superficial. The head and scalp showed no signs of injury. The pupils were equal, regular in outline, dilated, and reacted to light and accommodation. The conjunctivae were dark blue. The nose was negative. The ears were bluish. The mouth, lips and gums were dark blue. The tongue was clear, but decidedly bluish. The throat was congested. The teeth were in poor condition. The neck showed no rigidity, and no glands were palpable. The finger nails were blue. The chest was well formed; expansion was fair and equal; pulmonary breathing was normal. Heart examination revealed the apex in the fifth interspace, 3½ inches from the midsternal line. The right border was at the right sternal edge. The left corresponded to the apex beat. The sounds were of poor muscular quality, and were irregular in rhythm. There was a systolic murmur at the apex which was transmitted toward the axilla. The second pulmonary sound was accentuated. The pulse was irregular and of poor tension. There was no sclerosis. The abdomen was distended. The liver and spleen were not palpable. There was no tenderness or masses. The extremities were negative. The reflexes were normal. There was a severe acne over the chest and back. A pustular acneform rash existed on the anterior aspect of the chest and forehead (anilin rash?). The patient developed restlessness and pulmonary edema, which subsided under venesection.

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[2] Ravaut: Ann. de dermat. et de syph., 1903, Series 4, No. 2.

[3] Altman and Dryfoos; quoted by Wile and Stokes (Footnote 4).

[4] Wile and Stokes: Jour. Cutan. Dis., 1914, **22**, 607. Dermat. Wchnschr., Sept. 12, 1914.

[5] Nonne: Syphilis of the Nervous System, translated by Ball.

[6] Gutman: Dermat. Wchnschr., 1914, **58**, 705.

[7] Von Kafka: Die Cerebrospinalflüssigkeit, Ztschr. f. d. ges. Neurol. u. Psychol., **6**, 415.

[8] Bayley: Pathology of Syphilis and Parasyphilis.

[9] Longcope, W. T.: Syphilitic Aortitis: Its Diagnosis and Treatment, Arch. Int. Med., January, 1913, p. 15.

[10] Brooks, Harlow, and Carroll, John: The Treatment of Heart Involvement in Syphilis, The Journal A. M. A., Oct. 24, 1914, p. 1456.

* From Dr. Merzbach's Service at the Brooklyn Jewish Hospital.

Treatment and Course.—The patient was admitted to the ward at 11:30 a. m., July 22, 1916. The heart was hyperactive and the pulses were of poor tension. A phlebotomy was done, and 14 ounces of very dark blood were removed. The patient had projectile vomiting consisting of food previously ingested. He voided involuntarily and expelled dark fluid by rectum. He had some facial twitchings. After the venesection, his color slowly improved. The systolic blood pressure was reduced to 100, diastolic, 80. A hypodermoclysis of 1,000 c.c. of sterile water was given. The condition slowly improved.

July 23, the patient felt much improved. The color was good. He felt comfortable.

July 25, the systolic blood pressure was 110, diastolic, 80.

The temperature on admission was 98.6, rose to 100 in six hours, and then dropped to normal the next day and stayed there.

The pulse on admission was 110; it dropped to 72 the next day, and ranged after that between 72 and 92.

The respiration on admission was 30, dropped to 22 the next day, and then ranged between 18 and 24.

The patient voided 97 ounces in the first twelve hours and over 86 ounces each of the two following days. We have no reason to believe that this increase in urine output was due to any diuretic effect of the poison, but believe that the diuresis can be well explained by the large quantities of fluid given to the patient.

LABORATORY EXAMINATIONS

Urine	7/23/16	7/25/16	Blood 7/22/16	
Specific gravity	1.015	1.025	Red blood cells	4,900,000
Reaction	acid	acid		
Albumin	0	0	Hemoglobin over 100	
Sugar	0	0		
Microscopic	Neg.	Neg.		

The treatment consisted in venesection, Murphy drip, oxygen inhalation, forced fluids, cold pack, the administration of rhubarb and soda, and hypodermoclysis. The patient having recovered completely, he was discharged from the hospital, July 26, 1916.

COMMENT

When inhaled in small quantities for a long period, anilin fumes give rise to symptoms of chronic poisoning, and one must always bear this in mind among dye workers, when there is no other explanation for the symptoms. In such cases the sweat may be red or violet. From 10 to 25 gm. is the fatal dose of anilin.

Dr. Merzbach informs me that in a nearby dye factory a provocative test has been practiced on all applicants for employment, and has been found very useful in eliminating those who are particularly susceptible to anilin poisoning. The test consists in making a slight abrasion on the skin of the forearm and rubbing in some anilin. In those who are particularly susceptible to this chemical, symptoms of poisoning rapidly ensue. Such a person is denied employment.

It has also been observed that symptoms of anilin poisoning generally appear after meals; particularly after the noonday meal, the patient will begin to vomit. The question arises, Does the gastric juice liberate the anilin from its various combinations or is the anilin simply then introduced by way of mouth from food, hands, utensils, etc.? This point will have to be cleared up in the future.

Since nitrobenzene poisoning closely simulates anilin poisoning, it is important to bear in mind that in the former instance the breath, vomitus and the excreta of the patient have an odor of bitter almonds (Dr. Merzbach).

1352 Carroll Street.

FREQUENCY OF URINATION IN WOMEN *

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A large proportion, perhaps the majority, of women who seek medical advice have some urinary disturbance. It may be of such slight degree, or of so gradual an onset, that the patient is not aware that she is the victim of this particular trouble. In such case the history of the disturbance is elicited only after close questioning. On the other hand, it may be of such severity as to be the prime cause of consulting the physician.

There is ample explanation, on anatomic and physiologic bases, for the frequency of urologic lesions, and the consequent disturbances of urination, in women. When we consider the anatomic situation of the female urinary organs, and the physiologic exigencies of adolescence, of the child-bearing period, and of the menopause, there is little wonder that affections of these organs are so common, so diverse in character, and often so distressing. The sexual organs, so often the seat of lesions or new growths, the rectum and appendix, with rich blood and lymphatic supply for the transmission of infections to the bladder, the urethra, prone to infections and to injury incident to childbirth and pelvic operations, the kidneys, constantly eliminating bacteria supplied by the blood stream and so situated that they directly transmit infections to the bladder, even though not infected themselves, are all factors which may be concerned in the cause of urologic lesions in women, the one most frequent symptom of which is frequency of urination.

From a consideration of the various elements concerned, it is easily concluded that frequency of urination is by no means dependent on lesions primary in the bladder. One can see at a glance, therefore, how futile it is to treat a bladder affection per se, until it has been ascertained that the lesion is primary. One cannot rely on symptoms, which are often most misleading.

The keynote to the study and management of these conditions is a correct diagnosis. This can be made only after a complete history has been taken, a thorough physical examination made, and an inspection of the bladder and urethra, as well as an exploration of the ureters and a separation of the urines from the kidneys, affected. It is often necessary to supplement these measures by a combined cystoscopic and Roentgen examination, outlining the tract.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

The accompanying tables, with the comments, of 1,000 cases of frequency of urination in girls and women which have come under my observation in hospital and private practice, is presented with the hope of stimulating a closer study of these disturbances and the underlying causative factors.

Considering, *ad seriatim,* the nine age periods given in the tables, certain salient features of each will be noted.

First Decade (Table 1, from 1 to 9 years).—Undoubtedly, if the figures had included the pediatric services or children's wards, more than seven cases of frequency of urination in young girls would have been found in a general list of a thousand cases. But the urologist sees these patients, as a rule, in consultation with the family physician or the pediatrician, and, as I have said, is apt to see only the more severe cases. This is doubtless particularly true of cases of enuresis, and perhaps also of cases of frequency associated with gonorrheal vaginitis.

TABLE 1.—CASES IN THE FIRST DECADE

Diagnosis and Etiology	No. of Cases
Enuresis	1
Spina bifida	1
Vaginitis and urethritis (gonorrheal)	3
Pyclonephritis (colon bacillus) single	1
Pyelonephritis (colon bacillus) double	1
Total	7

It will be noted that the colon bacillus makes its appearance in the first group, causing pyelonephritis of one kidney in one case, and of both kidneys in another, this, in turn, giving rise to frequency of urination. We know that such infections accompanying intestinal disorders are common in children, and if we are able to locate a renal lesion, and to improve the urologic condition by local treatment in conjunction with the general measures, such cases may be seen more often by the urologist.

Second Decade (Table 2, from 10 to 19 years).—Of the sixty-one cases belonging to this age group, forty-six had urethritis and trigonitis as the immediate causative factor in urinary frequency. Of these, twenty-nine gave a history of vaginal infection, gonorrheal in character. In seven others, cultures from the upper urinary tract showed the primary focus to be the kidney. In five cases the symptoms appeared following catheterization after operation. In two cases the frequency of urination was undoubtedly associated with urethral hyperemia due to masturbation. In six the urinary disturbance was secondary to colon bacillus infection of the kidney, and in one it followed influenza.

In two of the cases of frequency associated with urethritis and trigonitis, renal calculi were found, and in one renal tuberculosis. The frequency in this case, as in any case of urinary tuberculosis, was not due to the lesions in the kidney, but to the secondary involvement of the bladder. If the kidney is draining, the bladder symptoms (frequency, burning and tenesmus) will appear; otherwise, no bladder symptoms are manifest. In nearly all the cases of renal tuberculosis, a thickened, tender ureter on the affected side was easily palpated through the vaginal wall, and a large percentage revealed stricture of the ureter.

Of the total number of this group (sixty-one), there were only four cases of enuresis—a relatively smaller number than the first group presented.

In five cases the condition was apparently purely neurotic, no urologic lesion being found to explain the bladder irritability. According to Cary,[1] this condition is rarely traceable to a pure neurosis. Repeated examinations of the urine, he asserts, may disclose nephritis or tuberculosis of the kidney as a cause of the frequency. In the cases herewith recorded, no such cause could be found. Whether this condition is a "pure neurosis" or a psychosis must be left for the neurologist to determine. It is for the urologist to exclude absolutely, by the various methods of examination at his command, the possibility of any local factor or factors in the production of this annoying trouble, before he falls back on the diagnosis of last resort.

In the second age group, pressure on the bladder appears as the cause of frequent urination in three cases, the pressure in one being due to pelvic abscess, in two to malpositions of the uterus. It has been asserted that it is doubtful if pressure on the bladder alone causes vesical symptoms, but must be associated with a secondary complication. In all of these cases there was congestion of the urethra and trigon. Pressure caused by stone in the lower ureter may lead to frequency due to a reflex, or it may give rise to cystitis and urethritis, with consequent frequency of urination, two such cases being found in this group.

Cyst of the floor of the bladder was found in one case, causing almost complete obstruction at the outlet of the bladder, and consequent overflow. The cyst was as large as a hen's egg, and projected upward from the floor of the viscus. With the cystoscope, light was transmitted through the cyst. The cyst wall was punctured with the high frequency cautery, and collapsed, whereupon the patient began to void at once. The cyst was entirely destroyed by this means.

Third Decade (Table 3, from 20 to 29 years).—In the third age group, urethritis and trigonitis appear much more frequently, constituting 165 out of a total of 219 cases of this group. While the majority of these cases were secondary to or accompanied a vaginal infection, other patients dated their symptoms from a catheterization after operation; some were secondary to a colon bacillus pyelonephritis and colon bacillus pyelonephritis occurring during pregnancy, and others accompanied syphilis of the kidney and nephritis.

TABLE 2.—CASES IN THE SECOND DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with vaginitis or history of vaginitis (gonorrheal)	29
Urethritis and trigonitis with symptoms since catheterization after operation	5
Urethritis and trigonitis with hyperemia due to masturbation	2
Urethritis and trigonitis from colon bacillus pyelonephritis	6
Urethritis and trigonitis following influenza	1
Enuresis	4
Neuroses	5
Pressure on bladder (pelvic abscess, 1; uterus, 2)	3
Calculus in lower ureter	2
Calculus in kidney, with urethritis and trigonitis	2
Tuberculosis of kidney, with urethritis and cystitis	1
Cyst of bladder, causing obstruction and overflow	1
Total	61

In this connection, the condition of the gastro-intestinal tract is of supreme importance, especially the teeth. While, in many cases in which the patient is seen by the urologist in consultation, the general findings of the physical examination are given him by the physician in attendance, I believe it to be the duty of the urologist personally to make his own observations. If this were done, an explanation for these annoying infections of the vesical orifice and urethra and sometimes the entire bladder would more often be found, and the patient would be permanently relieved by general and local treatment, rather than by the local applications of the urologist, or the bladder irrigations of the family physician, and perhaps, the gynecologist.

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[1] Cary, W. H.: Bladder Irritability in Women, Am. Jour. Obst., 1915, **71**, 259.

TABLE 3.—CASES IN THE THIRD DECADE

Diagnosis and Etiology		No. of Cases
Urethritis and trigonitis		124
Urethritis and trigonitis from catheterization after operation		7
Congestion at menstruation		4
Urethritis and trigonitis, colon bacillus pyelonephritis		17
Urethritis and trigonitis, colon bacillus pyelonephritis pregnancy		2
Urethritis and trigonitis, with syphilis of kidney		2
Urethritis and trigonitis, with nephritis		3
Urethritis and trigonitis, with stricture of urethra		6
Pressure on bladder:		
Fibroids	2	
Uterus (pregnancy)	3	
Displacements	2	
Pelvic abscess	2	
	—	9
Tuberculosis of kidney, with urethritis and cystitis		9
Neuroses		9
Prolapsed kidney		4
Prolapsed kidney with pyelonephritis		3
Calculus in ureter		7
Calculus in kidney, with pyelitis		6
Urethritis and trigonitis, with cystocele		3
Urethritis and trigonitis, from tuberculosis of ureter		1
Calculi in bladder		1
Enuresis		1
Traumatic stricture of urethra		1
Total		219

In six cases of this age period, the inflammation in the urethra was sufficiently severe and of such duration as to give rise to stricture. These observations have shown stricture of the urethra in the female to be a common pathologic condition. I have often had patients experience immediate relief after a single dilation of the urethra, while in others it was necessary repeatedly to cauterize the thick, edematous mucous membrane or polypoid growths about the bladder neck, before relief could be obtained.

In three cases the urethritis and trigonitis were associated with cystocele, and in one with tuberculosis of the ureter (the kidney having been removed).

Congestion during menstruation apparently gave rise to frequency of urination in four cases of this group.

Pressure on the bladder was found in nine cases, the pressure being due to fibroids, in two cases; uterus (pregnancy), in three; uterine displacements, in two, and pelvic abscesses, in two.

In nine cases tuberculosis of the kidney, with urethritis and cystitis, gave rise to the urinary disturbance. In four cases there was prolapsed kidney, with intermittent frequency, in three prolapsed kidney with pyelonephritis, and in six calculus of the kidney with pyelonephritis. Calculi in the ureter were found in seven cases, and in the bladder in one.

In nine cases no demonstrable cause could be found other than the general neurotic history of the patient. Organic lesions and local infections were carefully excluded in all of these cases.

Enuresis appeared in only one case of this group, showing a tendency to overcome this condition as age advances, and pointing to the educational management of at least a proportion of these cases.

Fourth Decade (Table 4, from 30 to 39 years).—Urethritis and trigonitis are still conspicuous causes of frequency of urination, as will be seen from the table, though the proportion is somewhat smaller than in the preceding group. The symptoms in seven cases were traceable to catheterization after operation. Colon bacillus kidney infection was found in twenty-five cases of this group, and pyelonephritis associated with infections other than colon bacillus and tuberculosis was found in six cases. Urethritis and trigonitis associated with stricture of the urethra was found in thirteen cases, with cystocele in nine cases, and with calculi in the kidney in seven cases.

Pressure on the bladder was found in a much larger proportion of cases of this group (thirty-two) than in any of the others. The pressure was due to the pregnant uterus in eight cases, to fibroids in three, to pelvic abscess in six, to uterine displacements in eleven, and to ventral fixation in four.

This age group presents the largest number of cases in which no organic lesion or local infection could be found, and in which the frequency could fairly be placed on a neurotic basis.

Calculi in kidney, ureter and bladder are noted in this group. One case of stone in the bladder was particularly interesting in view of the fact that two calculi were found in the center of a growth (papilloma) of the bladder. Four other cases presented papilloma of the bladder as the cause of irritability and frequency of urination.

More cases of prolapse of the kidney were noted in this group than in any other. Of the seventeen cases, eleven were associated with colon bacillus pyelonephritis. The frequency with which infection is found in displaced kidneys tends to confirm the theory that congestion in such an organ predisposes to infection. Polycystic kidneys were found in three cases.

TABLE 4.—CASES IN THE FOURTH DECADE

Diagnosis and Etiology		No. of Cases
Urethritis and trigonitis		116
Urethritis and trigonitis from catheterization after operation		7
Urethritis and trigonitis, traumatic		4
Congestion during menstruation		4
Urethritis and trigonitis from pyelonephritis (colon bacillus)		25
Urethritis and trigonitis from pyelonephritis (not colon bacillus) or tuberculosis		6
Pressure on bladder:		
Pregnant uterus	8	
Fibroids	3	
Pelvic abscess	6	
Displacements	11	
Ventral fixation	4	
	—	32
Prolapsed kidney		6
Prolapsed kidney with pyelonephritis (colon bacillus)		11
Tuberculosis of kidney with cystitis and urethritis		12
Neuroses		12
Urethritis and trigonitis with cystocele		9
Urethritis and trigonitis with calculi in kidney		7
Calculus in ureter		6
Calculus in bladder		2
Calculus in bladder with growth		2
Relaxation of sphincter		5
Nephritis		5
Urethritis, trigonitis, stricture of urethra		13
Polycystic kidney		3
Urethrovaginal fistula		2
Vesicovaginal fistula		3
Prolapsus uteri		3
Papilloma of bladder		4
Traumatic stricture of urethra		2
Adhesions of bladder		2
Caruncle		2
Oxaluria		3
Chyluria		1
Pyelonephritis, pregnancy		4
Stricture of ureter		2
Total		315

Fistulas and carunculae appear in this group for the first time, as do likewise adhesions of the bladder. Oxaluria was found in three cases, and chyluria in one. The oxaluria was an accompaniment of constipation. The case of chyluria was exceedingly interesting. The urine from one kidney was loaded with chyle, which appeared only during pregnancy and the early days of lactation. Study of kidney function showed slight deficiency on the affected side. A double pyelo-ureterogram showed no abnormality.

It will be noted from a study of the table that the complications of pregnancy are relatively frequent in this group, which embraces the period of greatest sexual activity.

Fifth Decade (Table 5, from 40 to 49 years).—This entire age group is smaller than the preceding. Urethritis and trigonitis still lead as associated factors, though the number is relatively smaller than in the third and fourth age groups. Pyelonephritis is also less frequent. Catheterization after operation still appears in connection with the initiation of the symptoms of disturbance of urination. Stricture of the urethra is relatively more common in this group, twenty-four cases being associated with urethritis and trigonitis. They serve to show how often these cases of urethritis are allowed to go unrecognized, treated as cystitis, which treatment gives only temporary amelioration of symptoms.

TABLE 5.—CASES IN THE FIFTH DECADE

Diagnosis and Etiology		No. of Cases
Urethritis and trigonitis		54
Urethritis and trigonitis, traumatic		4
Urethritis and trigonitis from catheterization after operation		4
Urethritis and trigonitis, with pyelonephritis		27
Urethritis and trigonitis, with stricture of urethra		24
Pressure on bladder:		
Fibroids	3	
Displacements	5	
Pelvic abscess	4	
Abdominal tumor	2	
Ventral fixation	2	
	—	16
Urethritis and trigonitis with cystocele		27
Prolapsed kidney		4
Prolapsed kidney with pyelonephritis		2
Urethritis and trigonitis, calculus in kidney, pyelonephritis		2
Calculus in ureter		10
Urethritis and trigonitis with stricture of ureter		2
Calculus in bladder		2
Tuberculosis of kidney, cystitis, urethritis		5
Tuberculosis of kidney double		1
Polycystic kidney		2
Hypernephroma		2
Neuroses		8
Relaxed sphincter		4
Vesicovaginal fistula		2
Nephritis		6
Caruncle		3
Prolapsus uteri		4
Cancer of bladder		3
Tabes		1
Papilloma of bladder		3
Total		222

Pressure on the bladder (from fibroids, three; displacements, five; pelvic abscess, four; abdominal tumor, two; ventral fixation, two) was the cause of the frequency in sixteen cases of this group.

Cystocele is found with much greater frequency in this period than in any of the preceding, always associated with urethritis and trigonitis. It is undoubtedly an important factor in predisposing to local infection, in the same manner as the prostate does in the male.

In addition to pyelonephritis (found in twenty-seven cases associated with urethritis and trigonitis), prolapse of the kidney, with and without pyelonephritis, renal tuberculosis, nephritis, polycysts of the kidney, hypernephroma and renal calculi, were observed in this period.

Neurosis was still to be recorded as the only explanation for the frequency of urination, in the absence of organic lesions or local infections.

Cancer of the bladder was found in three cases, and papilloma of the bladder in three.

Sixth Decade (Table 6, from 50 to 59 years).—It will be noted, in substantiation of the theory that frequency of urination is most common during the periods of greatest sexual activity, that the sixth age group is less than half as large as the preceding one. The types of infection of later life are less acute and of longer duration, and the patients are probably less likely to apply for relief. Urethritis and trigonitis still lead as causes, but of these cases the largest proportion yet recorded is associated with cystocele (thirty-four). Prolapsus uteri, and calculi in different portions of the urinary system, are found with relatively greater frequency in this age period. Diabetes makes its appearance for the first time, and here only because of suspected complications, the simple cases being treated by the internist.

TABLE 6.—CASES IN THE SIXTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with cystocele	34
Urethritis and trigonitis with pyelonephritis	12
Urethritis and trigonitis (no history of vaginitis)	6
Urethritis and trigonitis with stricture	6
Urethritis and trigonitis from catheterization after operation	3
Relaxed sphincter	4
Calculus in kidney, pyelonephritis	3
Calculi in ureter and bladder	3
Prolapsus uteri	6
Caruncle	4
Nephritis	4
Fibroids	2
Ureterovaginal fistula	3
Papilloma of bladder	3
Prolapsed kidney	2
Carcinoma of bladder	2
Calculi in bladder	2
Diabetes	2
Total	101

The number of cases in which catheterization after operation seemed to inaugurate the symptoms is decreased. Neoplasms (fibroids, papillomas and carcinomas of the bladder) are relatively more common in this group.

Seventh Decade (Table 7, from 60 to 69 years).—Of the thirty-one cases of urethritis and trigonitis in this age group, twenty-four were associated with cystocele. Of these twenty-four cases, four were complicated with diabetes, and three additional cases of cystocele presented vesical calculi. Two cases of diabetes appear in this group. The number of cases of cancer of the bladder is double that of the last age group. It will be noted that the total number, again, is decreased by about one half of the preceding group.

TABLE 7.—CASES IN THE SEVENTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with cystocele	20
Urethritis and trigonitis with cystocele and diabetes	4
Urethritis and trigonitis with pyelonephritis	5
Urethritis and trigonitis with pyonephrosis and calculus in kidney	2
Cancer of bladder	4
Nephritis	5
Calculi in bladder, cystitis and cystocele	3
Fibroids	3
Caruncle	2
Urethral stricture	2
Calculus in ureter	1
Diabetes	2
Total	53

Eighth Decade (Table 8, from 70 to 79 years).—Here we find a marked drop in the total number of cases, this group containing only one third of the number found in the preceding group. Urethritis and trigonitis, as in the preceding groups, outnumber other conditions, and cystocele is still found to complicate the majority of these. Cancer of the bladder is relatively much more frequent, and diabetes and procidentia are still to be noted.

Ninth Decade (Table 9, from 80 to 89 years).—Of the four cases (less than one fourth of the total of the preceding group) found in this period, three are associated with cystocele and one with procidentia.

From the foregoing tables it will be seen that frequency of urination is least common in the extremes of life, or during those periods when the so-called physiologic exigencies associated with the sexual function have not been established, on the one hand, and have ceased, on the other. The three decades (20 to 29, 30 to 39, and 40 to 49, inclusive), which embrace the years of active sexual life and the child-bearing period, present the largest proportion of cases, the largest of all occurring in the decade between 30 and 39, inclusive.

TABLE 8.—CASES IN THE EIGHTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with cystocele	6
Urethritis calculi in bladder and kidney	1
Cancer of bladder	3
Calculus in kidney	3
Tumor of kidney	1
Diabetes	2
Prolapsus uteri	2
Total	18

It is but fair to assume, however, that if the subject were differently approached, a larger proportion of cases of frequency of urination in women would be found in all the age periods. Unfortunately, the urologist, within whose province such cases properly fall, is apt to see only the more extreme cases; and those of less severity are often overlooked by the pediatrician, the gynecologist, the neurologist, or the other specialist, as well as the general practitioner, whose interest in a given case is generally directed particularly to other conditions.

CONCLUSIONS

1. The study of the 1,000 cases recorded herewith confirms the hypothesis that frequency of urination in women is one of the most common symptoms of disturbance of the urinary system.

2. A closer association of the urologist with the pediatrician, the gynecologist, the neurologist, the internist and perhaps the geriatrist, would doubtless lead to the discovery of many more cases of frequency of urination in women and accompanying lesions than at present find their way into the records, either of the clinics or of the libraries.

TABLE 9.—CASES IN THE NINTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis, cystocele	2
Cystocele, pyonephrosis	1
Procidentia	1
Total	4

3. Lesions of the urinary system in women are primarily a concomitant complication or sequel of the sexual and child-bearing functions, secondarily of the sedentary life.

4. Urinary frequency during the earlier age periods is associated with acute infections much more frequently than in the later periods, which infections, in a large proportion of cases, are localized in the urethra and trigon, and which if not properly treated go on to stricture formation. These are cases which, in the past, have been treated as cystitis.

5. Tuberculosis is not found in the first age period, nor is it found in the last four age periods.

6. Intermittent attacks of vesical irritability are of common occurrence, accompanying colon bacillus pyelonephritis.

7. The relatively common occurrence of frequency of urination following postoperative catheterization forces the conclusion that this procedure, as commonly practiced in hospitals and dispensaries, calls for radical improvement, both as to technic and as to instruments employed.

8. Calculi are comparatively common, in the ureter in young adults, in the kidney and bladder in those of advanced ages. In the former, acute attacks of colic occur; in the latter, mild symptoms, or those of the accompanying infection, are present. Fewer operations for acute appendicitis are being performed. More calculi are being assisted in their passage, or are being removed.

9. Prolapsed kidney, with disturbed drainage and congestion, must be acknowledged to be a predisposing factor in kidney lesions.

10. Urinary complications are common during the period of gestation.

11. It may be stated, in a general way, that the findings in these cases with reference to the occurrence of cancer are not at variance with the commonly accepted views regarding the age incidence of malignant growths.

TABLE 10.—SUMMARY

	No. of Cases
Table 1, from 1 to 9 years	7
Table 2, from 10 to 19 years	61
Table 3, from 20 to 29 years	219
Table 4, from 30 to 39 years	315
Table 5, from 40 to 49 years	222
Table 6, from 50 to 59 years	101
Table 7, from 60 to 69 years	53
Table 8, from 70 to 79 years	18
Table 9, from 80 to 89 years	4
Total	1,000

12. The frequent occurrence of cystocele in connection with frequency of urination in women past the meridian of life suggests that this condition, in women, with the residual urine subject to infection, may be the analogue of the enlarged prostate, with its urinary disturbances, in the male.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

Dr. John R. Caulk, St. Louis: Frequency of urination in women is unquestionably very common. There are several types other than the frequencies due to vesical lesions complicating upper urinary tract infections, etc. A frequent type is due to changes around the internal orifice, which may or may not be associated with pelvic disease, such as villous formations and proliferations, so commonly seen in middle aged women, causing slight obstruction and frequency of urination. This type can be rectified by dilatation, burning, etc., and most of them will respond promptly just as in the male. Then there is the other type of intermittent retention, with more or less frequency of urination in the intermittent periods, namely fibroids, papillomas, ureterovesical cysts, etc. This class of cases seen frequently in young women who have been stamped as neurasthenics and hysterics we must be careful about. Urologists who use the cystoscope do not make such mistakes very often but it is the commonest mistake for the general practitioner to make. These patients almost always have gone for years as neurasthenics. I recognize that there is a neurotic bladder, but we have to be very careful in eliminating every factor before diagnosing a neurotic bladder, because so many of these cases are due to pathologic conditions at the vesical neck. The most common type of frequency of urination which I see is the type which Dr. Bugbee has found so commonly in his series, that is, the one due to trigonitis and urethritis, and it is one so terrifically neglected. The urine is frequently clear and corresponds to chronic prostatic and verumontanum trouble in the male. All of these women, provided they have nothing gross in the way of a calculus, etc., have the typical trigonal pictures described by Kolischer, Garceau, and others. There are various types of trigonal disease, the type of bullous edema, the peculiar proliferative type of granular white deposit which one sees so frequently around one of the ureteral orifices; again the strawberry type, which is more common in the midtrigonal section, with a blushing internal sphincter. These are all very common, and all have associated with them urethral lesions which, as Dr. Bugbee says, promptly respond if investigated properly and treated. I was surprised that he found so many strictures of the urethra. Recently I have seen two cases, but I had no idea they were so common. It shows we cannot get results unless we investigate the urethras and the bladders in all urinary disorders.

Dr. Irvin S. Koll, Chicago: Despite this very excellent collection of causes for the frequency of urination in women that Dr. Bugbee has given us, I find in my experience one large group that he has scarcely touched on and which Dr. Caulk barely mentioned, and that is the cases in which you find absolutely nothing in the bladder and nothing anatomically wrong but a hyperacidity of the urine—simply a very highly acid urine. By the administration of alkalies these patients are relieved of the frequency of urination. A lady came to me with a bottle of urine and said there was a lot of blood in it. She had an enormous deposit of brickdust urates, and after giving her a large quantity of alkali she came back and said the blood had turned to pus, but that she was not urinating so frequently. She had a strongly alkaline urine, though there was no frequency of urination. I thought I would try and see what I could do by making the urine acid again. I gave her sodium benzoate. She came back in a few days urinating very frequently again. When these cases go on for a long time cystoscopically they will show a trigonitis. My experience is that it is simply due to the irritation of the urine. These cases are hard to manage; in spite of the fact that you alkalinize the urine, if you do not relieve the trigonitis they will continue their frequency. I would like to know what to do. I have done everything I know, made topical application to the neck of the bladder with silver nitrate, and many times I get no results.

Dr. A. W. Nelson, Cincinnati: I was rather surprised to hear the report of so many cases of stricture of the female urethra. I have seen quite a number of cases of stricture of the female urethra, but was many times tempted to doubt my diagnosis. This was the result of reference to medical literature, which tells us that stricture of the female urethra is a rarity. Therefore, finding a number of cases of this affection I felt that either my diagnosis was wrong or that medical literature was far from being correct. As to urethral caruncle, experience contradicts the usual teaching that urethral caruncle is a common cause of urinary disturbances, in a broad sense of the word, particularly of pollakiuria. As to hyperacidity of the urine being a cause of frequency of urination, I have noticed pollakiuria, in women, to occur a few days before the menstrual period and disappear shortly after the onset or immediately after the termination of menstruation. Therapeutically my experience in treating such cases with sodium bicarbonate was as favorable as that of Dr. Koll. I treated the symptom, as physical examinations always failed to reveal anything pathologic. Probably such frequency is the result of metabolic disturbance.

Dr. Theodore Baker, Pittsburgh: One striking fact brought out in this paper on frequency of urination is the absence of a single case classified as primary cystitis. Papers like this are of the utmost value in teaching the general practitioner that the diagnosis of cystitis is absolutely wrong, that cystitis is only a symptom. There is always a cause back of these cases. The treatment of frequency of urination by soda seems to me to be only a palliative measure when the urine is acid, and indicates nothing of value. Another interesting point in the paper is the diagnosis of neurosis in thirty-four cases. None was reported as occurring after the fifth decade, the majority of them being in the fourth decade. We should look with extreme suspicion on the diagnosis of a neurosis; because we cannot find any pathologic lesion I think we should be very careful about calling it a pure neurosis. I want to call attention to syphilis as a cause of urinary disturbance. A year ago I saw a woman who had been having the utmost difficulty for five years in spite of all treatment. I treated her for several weeks for a trigonitis with no relief; and it was only after the appearance of a suspicious looking macule that I commenced antisyphilitic treatment, and she finally got well on this alone. The Wassermann reaction was positive. In looking over the literature I was able to find only thirty-seven cases reported to date, and of these twenty-four have been reported since 1902. Margoulies in 1902 and Englemann in 1904 each reported a case of papilloma of the bladder which was at first thought to be malignant, but both patients recovered completely on antisyphilitic treatment. I mention this because it has not been spoken of before, and because the literature on the subject is yet rather scanty.

Dr. Arthur B. Cecil, Los Angeles: It is the so-called neuroses in which we are interested. The gross causes of frequency of urination we all recognize, but when we speak of "frequency" in women it brings to the urologist's mind that type of case in which we are absolutely unable to find anything the matter with the patient. We do not see this type of case among men. It would seem that, perhaps, there may be in women a hypersensibility, where even normal urine under slight pressure will produce the desire to urinate.

Dr. F. R. Charlton, Indianapolis: I presented in St. Louis a series of cystoscopic views in color, at least hoping that the discussion might bear out my claim that the condition had been hitherto undescribed and yet was a definite clinical entity. Those pictures presented a type of bullous edema that was not confined to the trigon or the neck of the bladder at all. It was found quite as often in the upper as in the lower portion of the bladder. It appeared after middle life. It ran an essentially chronic course. I have not lived long enough to follow all these histories into old age, but I have followed some of them as long as eight or ten years. These cases will be found to appear soon after middle life, and in recurring cycles will appear in advanced age. The same lesion that I described in the bladder is to be found invariably in the vagina and in the rectum. I am not so sure but what if an investigation were carried on, the same lesion would not be found in mucous membranes elsewhere, and I look on it as a senile change, for some unaccountable reason locating itself in the pelvic mucous membranes. This particular condition I do not believe Dr. Bugbee included in his lists. Whether it is going to merit such consideration as I claim remains to be seen. It is not considered anywhere in the literature. Dr. Caulk made a remark which struck in me a responsive chord. It is to the shame of genito-urinary specialists all over the country that they have permitted their practices to narrow down to work with men and often enough almost exclusively to venereal diseases. That is our fault. There is no reason why we should not be seeing the women and the babies in larger proportion and so lending added interest and scientific dignity to our field of work.

Dr. James A. Gardner, Buffalo: I wish again to congratulate Dr. Bugbee on his paper, because I believe such papers as this cause the urologist to think. We learn as much probably from our mistakes as we do from our achievements. One of the men spoke of neuroses of the bladder. Most of those cases are called neuroses because we are faulty in our diagnosis; we are not able to find out just where the trouble lies. I wish to cite two cases. One of them was looked over by myself, a competent neurologist and a couple of gynecologists. This woman gave nothing but symptoms of frequency and apparently trouble in the urinary tract. She was all right at night and when lying down, but as soon as she got up she would have frequency. There was never any pus or anything pathologic in the urine. The gynecologists found a small fibroid tumor on the front of the uterus, which when she stood erect fell over against the bladder and caused the frequency. She had been called neurotic and everything else. The other case was also one of those neurotic women who had been everywhere. I saw her about three or four months ago. She had been examined by a number of men. We went over her urinary tract carefully, but could find nothing. A number of gynecologists had looked her over and reported negatively. After we had seen her another gynecologist examined her standing and found a large rectocele. After that was operated on she had no more urinary symptoms. I believe in women we are more apt to err and call them neurotic because we are faulty in our diagnosis.

Dr. Frederick W. Robbins, Detroit: I would like to ask Dr. Bugbee how he decides that these women have stricture of the urethra? It seems to me that when you have this condition present of which he speaks and pass a sound once or twice, curing the patient, that is sufficient proof that the patient has no urethral stricture but a pathologic condition usually inflammatory, often located under the vesical spincter. Such cases are often cured by passing a sound once or twice, but a true stricture, never.

Dr. H. J. Scherck, St. Louis: There is one class of frequency of urination in women of which I have seen quite a few, and that is the postoperative frequency of urination following certain gynecologic operations. I have in the last year or two seen a few such in which the Wertheim operation for prolapse was done, which has so pushed the bladder forward that the women are suffering from frequency of urination. Usually these cases show a trigonitis on cystoscopy. I have seen a case or two in which after suspension of the uterus the bladder capacity was limited by the operation and the frequency and bladder symptoms persisted in spite of treatment, so that it is important to bear in mind that certain gynecologic operations which limit the bladder expansion are sometimes the cause of a frequent desire to urinate.

Dr. Henry G. Bugbee, New York: I was well aware that the question of stricture of the urethra would come up, because it was quite as surprising to me to find so many cases in women as it has been to many of you. For the past three years I have had the opportunity to see all of the urologic cases, or those presenting urologic symptoms, at the Woman's Hospital in New York, and I have seen a large number of cases complicating gynecologic infections and lesions. In these cases of stricture I have only included those in which it was difficult to pass an 18 French dilator. I have not taken up the question of cure at all, and I do not think I made the statement that any of the cases of stricture were cured by the single passage of a sound. I did say that they experienced relief; that relief, of course, was only temporary, and the treatment had to be carried on. I could not go into every detail of the lesions found in these cases; it would have made the paper too extensive; I have only tried to mention the principal pathologic lesions which accounted for the symptoms. As regards the question of neuroses: In these cases we have made a careful examination of the entire urinary tract, gone over the physical findings, and we thought that we could not find any one lesion which accounted for this frequency of urination. Occasionally we find these cases of hyperacidity that are relieved and improved by the administration of the alkalies. It would seem that those cases came rather under the head of neuroses than as an entity.

Tuberculous Hemoptysis.—G. A. Alfaro, professor of semiology at the University of Buenos Aires, in the *Prensa Medica Argentina*, 1916, **3**, 2, declares that physicians who have had the widest experience with tuberculosis have noted that the larger proportion of cures or of long survivals have been in persons who have had repeated and profuse hemorrhage from the lungs, much more than in those who never presented hemoptysis. He cites Andral's patient who had profuse hemoptysis from his twentieth to his eightieth year, dying then from an intercurrent affection. He calls the hemorrhage, which occurs as the first manifest sign of trouble, providential hemoptysis, as its warning is promptly heeded. With this type, there is no fever, the appetite is good, and after the patient and family have recovered from their fright, only the positive tuberculin reactions show that anything is wrong. As long as there is fever, the hemorrhage is liable to recur. The peripheral blood pressure may be high, with hemoptysis, but, perhaps in the majority of cases, it is normal or even below.

INTRAVENOUS INJECTIONS OF COLLOIDAL SOLUTIONS OF ACACIA IN HEMORRHAGE

PRELIMINARY NOTE *

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It has been a frequent observation among clinicians and laboratory workers that transfusion of blood is a better form of treatment for acute or prolonged hemorrhage and shock than any other mode of therapy. As a result of such treatment, the blood pressure is usually raised, it is better sustained, and the general improvement which results surpasses that obtained by the use of fluids other than blood. And apart from the value of blood in combating the dangerous anemia which may bring about an impairment of nutrition of the vital physiologic centers essential for the maintenance of a normal blood pressure, blood possesses certain colloidal properties to which its great efficacy may be in large measure attributed. Regarded from this point of view the value of blood transfusion is more or less independent of its action on the vasomotor center. By virtue of its colloidal nature, blood exerts a mechanical effect in raising the blood pressure by filling the vascular system with a slowly diffusible fluid. By doing so it improves the action of the heart, and tides the patient over a very critical period.

On the other hand, the experimental and clinical observations of Crile[1] and other workers have shown that the use of saline solution is not as efficacious as whole blood in the treatment of hemorrhage. The reason is clear. Because of the noncolloidal character of salt solutions they pass rapidly out of the vascular system of the recipient, and the rise in blood pressure which follows such infusions, although at times rapid, is as a rule only transitory.

Working, then, on the basis that the symptoms of acute or prolonged hemorrhage are due in great measure to a diminution in the volume of circulating blood, clinicians have given much thought to the problem of finding other fluids which, in the absence of blood, might serve as suitable substitutes. The results of such studies have brought forth some interesting facts concerning the manner in which the volume of the blood is regulated under normal and pathologic conditions, and the rôle which colloidal fluids play in this process. It is fair to say that every detail of the regulatory mechanism involved in maintaining the volume of the blood constant is not yet clear, but considerable knowledge of some of the underlying principles has been gained from the recent investigations of Bogart, Underhill and Mendel,[2] and from the studies of Fischer[3] on the physiologic importance of colloids in the body processes. The experiments of Bogart, Underhill and Mendel have shown that the regulation of blood volume in normal animals is rapid and efficient, and that tissue absorption rather than kidney activity plays the major rôle in this mechanism. The observation which interests us most in this connection is the influence which colloidal solutions exert on the rapidity of return of an altered blood volume to a normal state. Following the injection of colloidal gelatin solutions, they have found a considerable delay in the restoration of the blood volume to normal; that is, the regulation is less efficient. Their results may, then, be interpreted to mean that a fluid in combination with a colloid is not so readily absorbed by the cellular membranes as is a solution not so combined; whereas the injection of saline solutions is followed by a rapid tissue absorption which results in a reduction of the total bulk of circulating fluid.

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* Read before the San Francisco County Medical Society, Nov. 14, 1916.

* From the Surgical Clinic and the George Williams Hooper Foundation for Medical Research, the University of California Medical School.

* An experimental study of the effect of intravenous injections of acacia solutions on blood pressure, pressure pulse, blood volume and urinary secretion is now being carried out in collaboration with Dr. S. T. Pope and Dr. A. C. Eaton of the surgical clinic. The detailed results of these observations will be recorded in a later paper.

[1] Crile, G. W.: Hemorrhage and Transfusion, New York, D. Appleton & Co., 1909.

[2] Bogart, L. J.; Underhill, F. P., and Mendel, L. B.: Am. Jour. Physiol., **41**, 219.

[3] Fischer, M. H., and Hogan, J. J.: Kolloid-chemische Beihefte, 1912, **3**, 385.

Fischer and Hogan have come essentially to the same conclusions. They, however, are inclined to place greater emphasis on the secretory activity of the kidneys in the regulation of blood volume. According to their views, colloidal solutions exert their beneficial effects in maintaining the blood volume in a little different way. They have shown that water in a "bound" state, that is, in colloidal combination, is not readily secreted by the renal epithelium, whereas "free" water, such as saline, escapes with rapidity from the blood vessels, and is secreted by the kidneys.

Without entering into a discussion concerning the relative importance of tissue absorption, and of kidney activity in the maintenance of a normal blood volume, the conclusion is justified that fluid introduced in colloidal combination leaves the vascular system more slowly than "free" fluid.

About a year ago, Hogan[4] emphasized the great practical application of this point by calling attention to the fact that intravenous injections of colloidal gelatin solutions are not diuretic, and that their introduction into the circulting stream results in a higher and in a more sustained blood pressure. Our attention was directed to this problem several months ago in connection with some unpublished experiments on plasmaphaeresis. During the course of this study we found that repeated bleedings followed by the injection intravenously of a suspension of red blood corpuscles in Locke's solution[5] could not be carried out more than two or three times without a great drop in the animal's blood pressure, which was frequently fatal. On the other hand, similar injections of corpuscles in Locke's solution containing acacia gum (gum arabic) were not accompanied by such a striking lowering of the pressure, and permitted a more frequent repetition of the injections. This observation suggested to us the use of an acacia-Locke solution therapeutically in man and in animals for the purpose of combating the immediate mechanical ill effects of lowered pressure following excessive hemorrhage. Such a solution is especially to be recommended for this purpose because of the ease with which it can be prepared and sterilized, and because of its apparent nontoxicity even in quantities approximating the total blood volume of an animal.

For the preparation of the solution we employed the acacia commonly used by pharmacists for emulsions and emollient mixtures. As is well known, this is an amorphous substance which dissolves slowly in water, forming a thick, transparent mucilage of acid reaction. Acacia gum is chemically composed of carbon, hydrogen and oxygen. For a long time most of the gums were classified as carbohydrates, but the researches of O'Sullivan[6] have shown that gum acacia is an acid of high molecular weight, composed of an acid nucleus to which are attached a number of different carbohydrate radicals. The better kinds of gum acacia do not reduce Fehling's solution,[7] a red precipitate being due to the presence of small quantities of a reducing sugar or of dextrin, which exists in certain inferior varieties of the gum.

In practice, we have found it best to use an approximately 5 per cent. acacia-Locke solution. This gives a fluid the viscosity of which is about 2.2, approximating closely to the viscosity of blood plasma (from 1.7 to 2.0). Subsequent observations may indicate the desirability of using slightly lower or slightly higher percentages of acacia.

Locke's solution is to be preferred to ordinary saline for intravenous use because its substitution for salt solution in the treatment of hemorrhage and shock has given better results in the hands of some clinicians, and further because its slight alkalinity is sufficient to offset the acidity of the acacia, thereby yielding a fluid which is neutral to litmus.

The acacia goes into solution with some difficulty. Solution, however, is facilitated by stirring and shaking. The fluid is now filtered through heavy filter paper, either on an ordinary funnel or with the aid of suction, and is then immediately sterilized in the autoclave in the manner customary for the sterilization of salt solutions. Sterilization of the acacia solution should be carried out as soon as possible after its preparation, so as to give rise to minimal bacterial contamination.

Some preliminary experiments on animals together with the employment of the acacia solutions in a number of patients following hemorrhage have convinced us of the value of this solution in combating lowered blood pressure due to depletion of the circulating fluid. Following shortly on a rapid hemorrhage in dogs with a loss of blood amounting to from one half to one third of the blood volume, the injection of acacia solution in moderate amounts will at once produce a striking elevation of the pressure. In one instance, the blood pressure rose from a level of 30 mm. of mercury, to which it had fallen after rapid hemorrhage, to its initial level of 110 mm. of mercury within ten minutes, and in spite of further smaller hemorrhages continued at a high level for a period over one hour and thirty minutes. The good effects resulting from the reestablishment of a normal blood volume and a more nearly normal pressure were noticeable also in an increased fulness of the peripheral vessels, in a rise in the pressure pulse, and in a more forcible heart beat.

Equal success has attended the use of acacia solutions following the hemorrhage and shock observed in a limited number of patients. In the treatment of hemorrhage in man, it should be emphasized that in the employment of colloidal solutions the same rules should be observed which hold in case of the introduction of saline solution intravenously. The infusion of the acacia solution should be given as soon as possible after the onset of hemorrhage and before sufficient time has elapsed for exhaustion of the vasomotor center and for cardiac failure. Furthermore, in order to avoid embarrassment of the heart's action and fatal dilatation, the fluid should be introduced at a moderate rate and in not too large quantities. It need hardly be added, moreover, that all other useful measures recommended in the treatment of hemorrhage should also be employed.

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[4] Hogan, J. J.: The Intravenous Use of Colloidal (Gelatin) Solutions in Shock, The Journal A. M. A., Feb. 27, 1915, p. 721.

[5] Locke's solution is a solution of sodium chlorid, 0.9 gm.; potassium chlorid, 0.042 gm.; calcium chlorid, 0.024 gm.; sodium bicarbonate, 0.03 gm.; glucose, 0.1 gm., and distilled water, a sufficient quantity to make 100 c.c.

[6] O'Sullivan, quoted by Thorpe, Edward: A Dictionary of Applied Chemistry, London, Longmans, Green & Co., 1912, **3**, 21.

[7] Allen, A. H.: Commercial Organic Analysis, Philadelphia, P. Blakiston's Son & Co., 1912, **1**, 440.

The principles underlying the value of acacia solutions in the treatment of hemorrhage are, then, the same as those given for other colloidal solutions. The advantages which may be claimed for this particular substance over those previously recommended are its nonprotein and noncarbohydrate character, as well as the simplicity of preparing and of sterilizing fluids which contain it.

THE TREATMENT OF HODGKIN'S DISEASE *

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AND
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NEW YORK

In the past three years we have had under observation eighteen cases of Hodgkin's disease. In reviewing these cases an attempt will be made to present the results thus far obtained by the various methods of treatment. We shall also point out some of the clinical phases of the disease which have a bearing on the treatment. The diagnosis of each case was established by microscopic examination. The cases were all fully developed with lesions generalized throughout the body.

Although the claims of a specific diphtheroid organism as the cause of this disease as advanced by Negri and Mieremet,[1] and Bunting and Yates[2] have been disproved by Torrey,[3] still the clinical evidences accumulated in the study of our cases, as from many other sources, point to the infectious origin of the disease and are in accord with the general opinion that the lesions are infectious granulomas. The first symptom noticed by most of our patients was involvement of the cervical glands. Tonsillitis or other pathologic conditions of the tonsils did not appear to be a frequent factor of the disease in this series. No case in the series gave a history of tonsillitis immediately preceding or after the onset of the disease. In none of the cases had tonsillectomies been performed. However, the absence of signs of pathologic lesions in the tonsils does not exclude the possibility that pathogenic bacteria had been carried through the tonsils to the lymphatic glands of the neck.

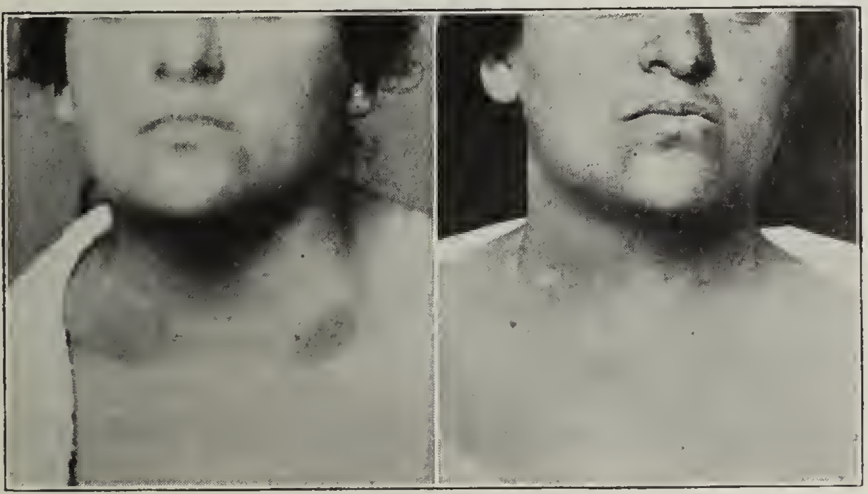

Fig. 1.—Case of Hodgkin's disease, before and after treatment: Twenty-three massive treatments with Roentgen deep therapy, 30 X (Kienböck) to each area, filtered through 4 mm. of aluminum; total, 690 X (Kienböck). Areas treated: both sides of neck; both groins; mediastina, anterior, posterior and lateral; axillae. Treatment began, March 21, 1916. Last treatment, July 11, 1916. Patient improved, but ultimately relapsed and died.

The first symptoms noticed by these patients were enlargement of the cervical glands, usually on one side, and pruritus of the extremities. Enlargement of glands is the most important symptom. We are of the opinion that pruritus is an important early symptom of Hodgkin's disease, and in cases of persistent pruritus, especially of the extremities, aggravated by perspiration, the possibility of Hodgkin's disease should be more generally considered by practitioners. From a therapeutic point of view an enlarged gland is the most important symptom, as by excision and microscopic examination an immediate diagnosis of the nature of the disease may enable us to save life in an early case of Hodgkin's disease. It is all important, therefore, to remove the enlarged glands for microscopic examination and in toto if the case is seen early when the lesion is localized. If we are to wait for other symptoms to manifest themselves, such as general enlargement of the glands, enlarged spleen or liver, anemia and fever, the patient is then beyond help and the prognosis is bad.

The differential diagnosis from lymphatic leukemia, lymphosarcoma, thymoma and other adenopathies of the lymphatic system depends on the microscopic examination of the blood and excised tissues. Clinically it was noticeable in our series that although the cases were all well advanced, the enlarged glands in Hodgkin's disease did not occur as such prominent tumor masses as they did in the other conditions mentioned; the disease tends to extend generally throughout the lymphatic system without localizing in initial large prominent tumor masses. This is well shown in the accompanying illustrations. Some of the clinical differences in Hodgkin's disease and lymphosarcoma of the neck are pointed out in parallel columns.

Seven patients were males; eleven patients, females; the ages varied from 6 to 56 years. All but one of the patients had primary enlargement of the nodes in one side of the neck and the mediastinum. One patient had a positive Wassermann reaction. The pathologic report in this case was "atypical Hodgkin's disease."

CLINICAL DIFFERENCES

Hodgkin's Disease	Lymphosarcoma
No macroscopic involvement of tonsil	Macroscopic evidence of growth in tonsil
Lymphatic swellings in neck tend to be isolated, not adherent to deeper structures or skin, softer in consistence, and tumor masses are less prominent	Lymphatic swellings firm, hard, and adherent to deeper structures. Skin distended and adherent over tumor
Death occurs late	Death occurs early
General and constitutional symptoms, such as anemia, loss of weight and appetite, develop early in the disease	General and constitutional symptoms develop late in the disease

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* From the Memorial Hospital.

[1] De Negri, Ernestine, and Mieremet, C. W. G.: Zur Aetiologie des malignen Granuloms, Centralbl. f. Bakteriol., orig., 1913, **68**, 292.

[2] Bunting and Yates: Bull. Johns Hopkins Hosp., 1915, **26**, 376.

[3] Torrey, J. C.: Bacteria Associated with Certain Types of Abnormal Lymph Glands, Jour. Med. Research, 1916, **34**. 65.

The patient was given antisyphilitic treatment as well as roentgenotherapy, and is now symptomatically well, for which reasons it might appear that this case was really syphilis. The rapid recurrence, however, of the tumor in the scar immediately after operation would argue strongly against syphilis and in favor of the diagnosis of Hodgkin's disease. Eight patients had enlarged nodes on both sides of the neck. In seven cases both axillae were involved. In six both groins were involved. None of the patients had any history or any evidences of tuberculosis or other definite infections except the single patient who had a positive Wassermann reaction. The initial symptom in two of the cases in which we got our best results was pruritus of the arms and legs aggravated by perspiration, which symptom was treated over extended periods by general practitioners, internists and dermatologists before the true diagnosis was recognized. These two patients were particularly intelligent, and emphasized this initial symptom. Eight patients were operated on from one to five times. All these patients had rapid occurrences and extension of the disease generally. In most of our cases we were able to demonstrate typical lesions of the mediastinal glands by means of the Roentgen rays. If this method were employed as a routine measure, patients would be spared many useless operations, because lesions inaccessible to the knife could be shown. Four patients were treated with mixed toxins; all these patients failed to show improvement and so were transferred to Roentgen treatment, under which they showed rapid regression of their symptoms and general improvement in health.

One patient was treated with ten intravenous injections of vaccine made from one of the excised nodes. The patient had simultaneous Roentgen treatments also over certain nodes. These nodes promptly diminished in size, while the nodes which were not treated with the Roentgen ray did not diminish in size. This proves that the vaccine did not have a constitutional action and that the improvement was due to the Roentgen ray and not to the vaccine. Two patients were treated with serum from a sheep immunized against *Bacillus hodgkinii*. One developed severe pain in the abdomen, without improvement; the other developed urticaria with improvement; the serum was discontinued, and Roentgen treatment instituted. One patient was improved by radium treatment but the case was too far advanced to permit a permanent result. We have every reason to believe that radium will produce fully as good results as the Roentgen rays in Hodgkin's disease. It is too soon to say

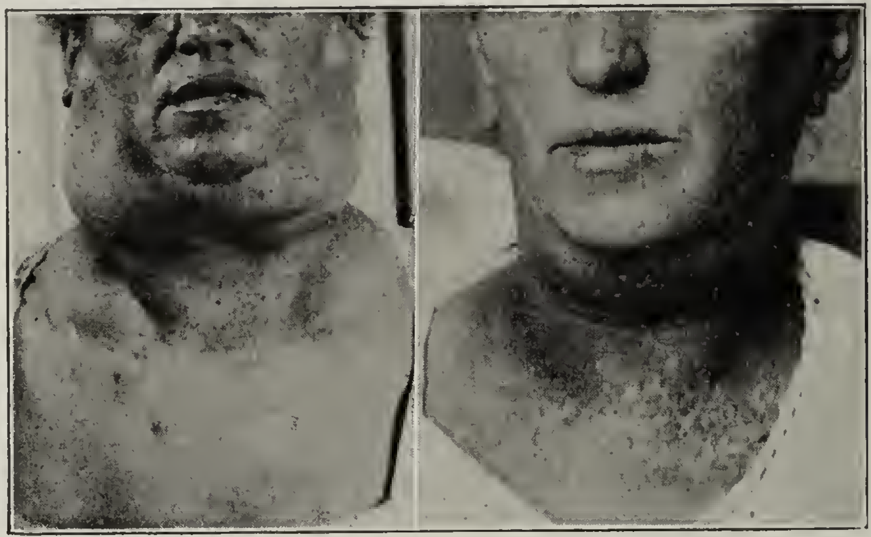

Fig. 2.—Case of lymphatic leukemia, before and after treatment: Thirty-two massive treatments with Roentgen deep therapy, 30 X (Kienböck) to each area, filtered through 4 mm. of aluminum. Total, 1,430 X (Kienböck). Areas treated: both sides of neck; both axillae; both groins; mediastina from all sides; abdominal lymph nodes. Treatment begun, March 19, 1915. All palpable nodules disappeared after 655 X (Kienböck) were administered. Leukocytes dropped from 164,000 to 44,000. Patient became symptomatically well. Last treatment, Dec. 28, 1915. Patient died, Jan. 11, 1916, of exhaustion, terminal illness one week in duration. Patient complained of a sense of pressure about the breast. No necropsy.

SERIES OF CASES OF HODGKIN'S DISEASE

Case No.	Age. Yrs.	Sex*	Duration	Locus†	Initial Symptom‡	Treatment§			Results	Present Status‖	Roentgen-Ray Units; Kienböck	Remarks
						Previous Operations	Roentgen Ray	Other¶				
1	23	♀	5 yrs.	1, 2, 3, 4, 5	a	5	...	Vaccine	Improved	Dead	1,200 X	Nodes which were rayed disappeared
2	55	♀	2½ yrs.	1, 3	a	2	...	Toxins	Improved	?	540 X	One year after treatment, patient symptom free; present condition unknown
3	16	♂	2 yrs.	1, 2, 3, 4, 5	a	1	...	....	Improved	D. T.	150 X	
4	29	♂	4 mos.	1	a	1	...	Antisyphilitic	Symptom free	Symptom free	300 X	
5	41	♀	1 yr.	1, 2, 3, 4, 5	a	1	...	Radium	....	Dead	240 Millicurie hours	
6	23	♂	1 yr.	1, 3	a	...	. .	Toxins	Improved	U. T.	1,020 X	Did not improve under mixed toxins
7	27	♀	4 mos.	1, 3	a	...	...	....	Improved	?	210 X	Symptom free; returned to Europe; no subsequent reports
8	42	♂	8 mos.	1, 2, 3	a	...	...	Serum	Improved	Dead	2,130 X	Reacted severely after serum
9	7	♂	1 yr.	1, 3	a	2	...	....	Unimproved	D. T.	540 X	
10	42	♀	8 mos.	1, 3	a	...	X	Toxins	Improved	....	570 X	Did not improve under mixed toxins
11	9	♀	6 mos.	1, 3	a	1	X	....	Unimproved	D. T.	150 X	
12	22	♀	1 yr.	1, 3	a	1	X	....	Unimproved	D. T.	180 X	
13	26	♀	2 yrs.	1, 2, 3, 4	Pruritus	1	X	Serum	Improved	U. T.	2,670 X	
14	6	♂	8 mos.	1, 3	a	...	X	....	Improved	U. T.	102 X	
15	56	♂	2½ yrs.	1, 2, 3, 4	a	...	X	Toxins	Improved	Dead	660 X	Did not improve under mixed toxins
16	27	♀	10 weeks	1, 3	a	...	X	....	Improved	U. T.	570 X	
17	27	♀	18 mos.	1, 3	a	...	X	....	Improved	U. T.	570 X	Was treated with Roentgen rays from a gas tube for 18 months in another institution without improvement; with Coolidge tube showed rapid improvement
18	35	♀	3 yrs.	1, 2, 3, 4	Pruritus	...	X	....	Symptom free; improved	U. T.	2,730 X	
Totals						8	17	....	....	....	....	4 patients died

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* In this column ♂ indicates male and ♀ female.

† The numbers refer to the regions of the body in which lesions were present: 1, neck; 2, axillae; 3, mediastinum; 4, groins; 5, spleen and liver.

‡ The letter "a" means enlarged glands.

§ The numerals refer to the number of operations performed previous to Roentgen treatment; "X" means massive roentgenotherapy.

¶ Treatments other than surgery or Roentgen ray.

‖ In this column, "D. T." means discontinued treatment, and "U. T." still under treatment.

whether or not the results from radium will be any more lasting than those of the Roentgen rays. Fourteen of the eighteen patients were treated with the Roentgen rays alone with rapid retrogression of the tumors and general constitutional symptoms in all cases. Three patients discontinued treatment before results could be noted. Two patients, symptomatically well, are kept under observation and given prophylactic Roentgen treatment once a month; thirteen were improved; six are dead; eight are still under treatment.

As regards the bearing on the prognosis of histologic structure, the stage of the disease, and the degree of anemia, it is noteworthy that the prognosis was worse in those cases in which the morphology of the tumor presented that of typical well developed Hodgkin's disease, in those cases which had been of several years' duration when the patients were referred for treatment, and in those cases in which the anemia was markedly developed. In relation to the effect of mixed toxins when used for a long time, it is of interest to compare the results in Cases 10 and 15 with those of Cases 2 and 6. The histologic pictures in Cases 10, 15 and 2 were those of typical Hodgkin's disease; that in Case 6 was atypical, showing more reticulum cells and presenting an appearance more like sarcoma. The morphology of Cases 2 and 6 as compared with Cases 10 and 15 indicates that Case 6 was more malignant in type than any of the other three cases and that Case 2 was as malignant as Cases 10 and 15. In Cases 10 and 15, the patients were given mixed toxins over a long period of time before being given over to Roentgen treatment. In Cases 2 and 6 the patients were submitted to mixed toxins only for a short period of time before being placed wholly under Roentgen treatment. The results in Cases 10 and 15 were bad while the results in Cases 2 and 6 were good. We feel that from our observations we are justified in holding that the patient's welfare is distinctly hazarded by the use of mixed toxin treatment for any extended length of time before placing him under Roentgen treatment, and we strongly advocate that the interests of the patient would be served best if the mixed toxin treatment were omitted altogether in these cases. In Case 18 the result has been better than in any of our previous cases. This may be explained to some extent by the patient's strong constitution and lack of anemia, and it may also be of interest to state that in this case there is some evidence that the initial lesions were of thymic origin. It is to be regretted that we were unable to secure necropsies in any of our cases. It was noticeable that the enlargement did not recur in glands treated by the Roentgen ray. When enlarged glands did develop they were in locations other than those which had been treated.

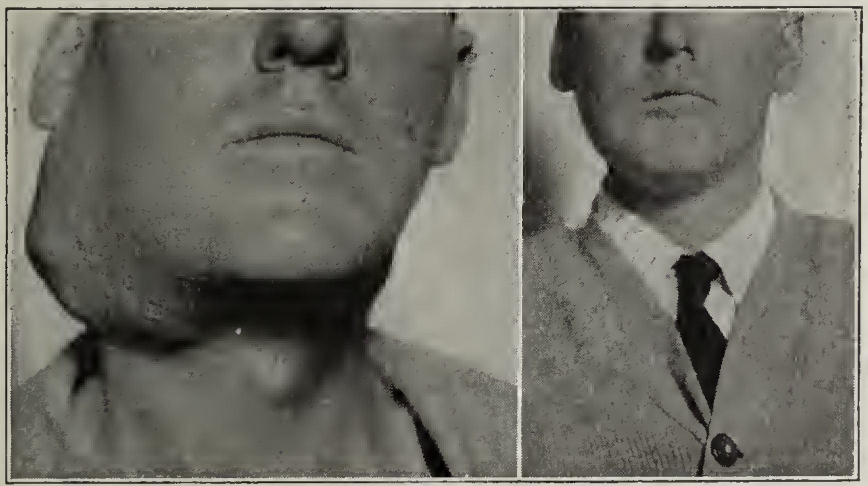


Fig. 3.—Case of lymphosarcoma, before and after treatment: Duration previous to our observation, five months. Mixed toxin treatment, November, 1913, to January, 1914. "No visible change. Measurements are the same." Jan. 3, 1914, one massive Roentgen treatment given. January 10, growth had diminished one half. January 15, excision en bloc. (Dr. W. A. Downs). January 26, tumor present in the left neck just below the angle of the mandible; 7 by 10 cm. January 27, Roentgen treatments resumed. Feb. 7, both sides of neck almost normal in contour. February 10-28, autogenous vaccine prepared from the excised tumor was used (Dr. R. Weil). March 4, 13, 16, 20, killed cultures of diphtheroid bacillus cultures obtained from the excised tumors were given (Dr. Torrey). March 16, 1914, superficial nodules yielded to the Roentgen treatment, but internal metastases in lungs, stomach and abdominal cavity continued to grow. Twelve massive Roentgen treatments, 3,604 X (Kienböck) units, were given. Jan. 14, 1915, patient died. Necropsy showed lymphosarcomatosis.

Death in all these cases was by slow exhaustion with extreme anemia. In none of the cases were there any deaths by asphyxia, dyspnea or other disagreeable symptoms due to the mechanical pressure of the enlarged glands such as commonly occurs in cases of Hodgkin's disease treated by the usual methods. This is a very material point in favor of the Roentgen treatment of these cases.

TREATMENT

The treatment of Hodgkin's disease is extremely unsatisfactory both in results obtained and methods employed. Perhaps this is to be expected in a disease, the cause of which is unknown, and which on microscopic examination of involved tissues in its early stages is extremely difficult to differentiate from lymphosarcoma, lymphoma, thymoma, and the other adenopathies of lymphoid origin. No specific or constitutional method of treatment has been established. The modern methods advised are essentially the same as those employed for malignant tumors (complete excision and diagnosis by microscopic section in the earliest stages while the lesion is restricted to a single locus, followed by prophylactic Roentgen treatment, together with the searching out and the elimination of all possible foci of infection).

We feel that particular emphasis should be laid on the necessity of extensive general Roentgen treatment in all of these cases immediately after the diagnosis is established. The surgical removal is only local in its action, and constitutes more or less of a shock and drain on the patient's vital resources.

The Roentgen rays should be given over all lymphatic structures of the body, including the mediastinal and abdominal lymph nodes, thus giving us a general action which in proper dosages we have invariably found to improve the patient's general physical condition instead of weakening him as the extensive surgical operations did in the fully developed stages of the disease.

The matter of the best Roentgen-ray dosage to give and its regulation on some physiologic basis is a very important question which we feel is far from being satisfactorily settled. Before the Coolidge tube was perfected we gave smaller doses. With the increased dosage which we are enabled to give with the Coolidge tube, we are able to get the symptoms under control more quickly than we did previously. However, we are not convinced that our therapeutic results in Hodgkin's disease are any more lasting than they were formerly with less powerful apparatus. Of late we have felt that we were getting better results by giving the massive doses at the beginning of our treatments and continuing them until the symptoms were controlled and then giving more moderate dosages to keep the development of the disease in abeyance. At present we feel that we are justified in saying only that the optimum dosage has not been worked out and that the maximum dosage which we have been able to give with the Coolidge tube when long continued is not as beneficial as initial large doses until the symptoms are controlled, followed by smaller doses repeated at frequent intervals. This whole question needs further study, and the discovery of some physiologic method of checking the dosage to replace the present methods of the maximum dosages that the skin will tolerate.

In our experience the administration of inorganic arsenic in large doses as generally recommended in medical textbooks has been attended with poor results, and where efficient Roentgen-ray or radium treatment is available, arsenic in large doses should be avoided. We much prefer to overcome the anemia by the use of sodium cacodylate, iron, and constant and persistent elimination of all stasis and autointoxication from the intestinal canal as being more efficient and less harmful treatment.

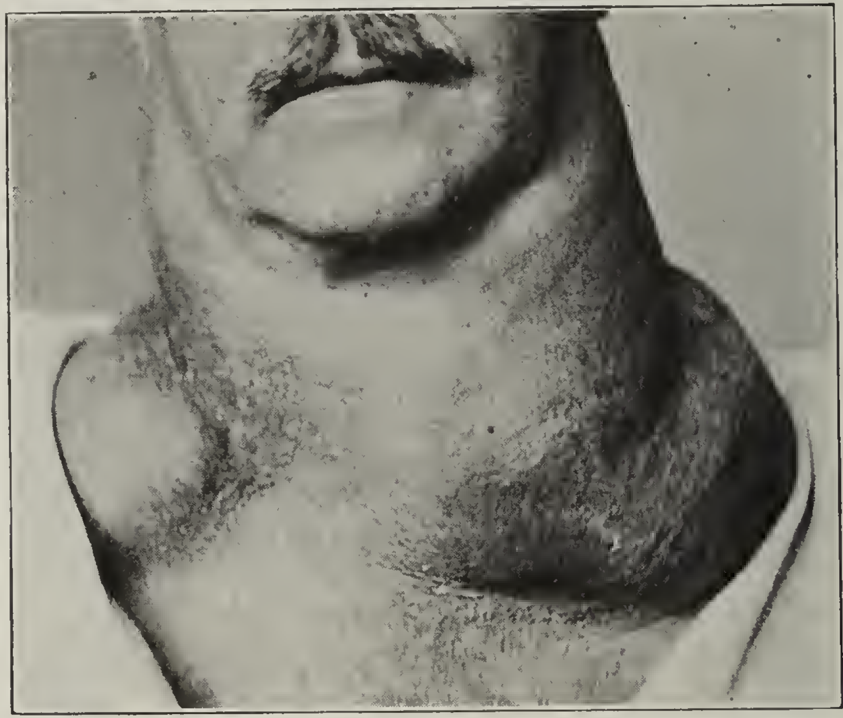


Fig. 4.—Case of lymphadenoma: Forty-one massive treatments with Roentgen deep therapy, 30 X (Kienböck) to each area, filtered through 4 mm. of aluminum. Total, 1,620 X (Kienböck). Areas treated: both sides of neck; both axillae; over abdominal lymph nodes; mediastina from all sides. Patient under treatment from June 24, 1915, to Nov. 1, 1915. The size of the tumors diminished very materially but never disappeared. Patient dead.

As in all diseases for which no cure has been found, the literature is frequently embellished by premature reports of cures. On account of the common history of relapse in these diseases we agree that it is wise to demand that a patient shall be symptom free at least five years before the term "cure" is employed. In this connection, Johnson's dictum in regard to cancer cures is quite appropriate: "I never count a case of malignant tumor cured until the patient is dead of some other disease."

We have no cured cases to report at this time. Our experience has made us skeptical in regard to methods of treatment which have given results in only one observer's hands, even if his enthusiasm leads him to maintain his claims over long periods. In the so-called incurable diseases, and in the light of medical history, no method of treatment which has given results in a single observer's hands can be accepted as scientific or truthful until his results have been confirmed by other observers using the given method.

In regard to the few authenticated reports of cured cases out of the many thousands of patients who have died of this disease, it is only just to state that they were thoroughly treated in their incipiency by surgery and the Roentgen ray, and it is the experience of every one who observes large numbers of hopeless cases to witness an occasional sporadic instance of unusual recovery or spontaneous cure often when least expected. This is fortuitous, merely emphasizes the complexity of the forces we are dealing with when treating the human body, and stimulates us to search still further in such cases to find the reason for the recovery.

While the necessity of searching out hidden foci of infection in the tonsils and about the teeth, gums, etc., has been thoroughly emphasized, our experience is that efficient attention to ridding the intestinal tract of all stasis and autointoxication is practically neglected. We find it advisable to give nonirritating enemas twice a week or often enough to get scybala-free evacuations. The most harmless and efficient intestinal antiseptic we have found to be sulphur. Nonirritating enemas and sulphur should be persisted in until the ingestion of sulphur is not associated with any odor of hydrogen sulphid in the patient's stools.

It was noticeable that better results were obtained when treatment was instituted in the early stages of the disease when lesions were confined to one side of the neck. It is quite probable that if patients in whom the lesion was confined to the tonsil or to a few glands of the neck presented themselves for treatment, they might be cured by complete tonsillectomy and excision followed by postoperative Roentgen treatment; certainly these methods should be given a thorough trial in cases in the incipient stages of the disease.

CONCLUSIONS

1. Microscopic examination of the tissues in all cases of enlarged nodes, especially in the neck, is to be recommended.

2. Attention should be called to the fact that cases of persistent idiopathic pruritus may be due to Hodgkin's disease.

3. The treatment of Hodgkin's disease is unsatisfactory. No efficient treatment is known. The treatment recommended is that in vogue for malignant tumors and occult infections. The results to be expected are temporary ameliorations.

4. Recoveries are rare. Of the thousands of patients treated there are only two authentic cases in which the patients are reported symptom free after five years.

5. The Roentgen ray and radium are the only new agents found beneficial in this disease, and should be used in treating it, at least after operation.

6. A Roentgen examination of the chest is indicated in all cases before an extensive surgical removal is considered. This will save many patients from a needless operation.

53 West Fiftieth Street—235 West Seventy-First Street.

Health Dividends.—I will frankly admit that I could not realize what a great change could be brought about by systematic work and with very little expense. The money spent in antimalarial work here has paid the quickest and most enormous dividends I have ever seen from any investment, and after having had our experience I would, if necessary, do the work over again if I knew it would cost ten times the amount. . . . Our experience has taught us that the eradication of mosquitoes is not only the proper thing to do from a strictly health standpoint, but it is an exceedingly profitable thing to do.—Manager of a Southern cotton mill, quoted by J. W. Trask, *Public Health Reports,* Dec. 22, 1916.

FREE TRANSPLANTATION OF THE OMENTUM

SUBCUTANEOUSLY AND WITHIN THE ABDOMEN

CARL B. DAVIS, M.D.
CHICAGO

The use of the unsevered omentum and free omental grafts is a well known surgical procedure. The literature concerning the fate of the free transplants is meager.

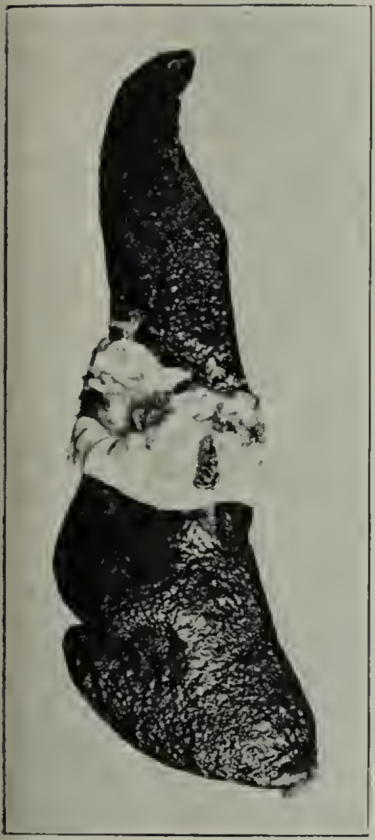


Fig. 1.—The spleen severed: a free transplant of the omentum inserted; the cut edges of the spleen approximated with catgut.

The purpose of these experiments was to determine the ultimate fate and value of omentum cut loose from its normal blood supply. Freeman suggests that an advantage of the free transplant over the undetached tip of the omentum is that we avoid entangling bands and injurious traction on the colon and stomach, and that if the entire omentum is attached to a given spot, a secondary emergency may develop in which it would be needed again.

TECHNIC

In this work the omentum was transplanted in large and small amounts to the stomach, large and small bowel, liver, spleen, kidney, bladder, and various areas denuded of peritoneum. It was also transplanted free beneath the skin to determine its ultimate fate when used for plastic purposes. It was used to check superficial and deep hemorrhages in the liver, spleen and kidney.

The grafts almost invariably did well wherever they were carried, becoming firmly adherent and remaining viable. One great objection to the use of the free omentum is the enormous production of adhesions wherever the free cut edge is exposed. This may be avoided in large part by accurately turning under all raw edges. The raw stump of the proximal portion of severed omentum must also be rolled back under normal omental tissue to avoid adhesion. A number of our animals died of pneumonia. As there was distemper in the laboratory at the time, it was taken for granted that this was the source of the complication, and no microscopic study of the lung was made. Later it was suggested that omental thrombosis might have been the cause of these deaths.

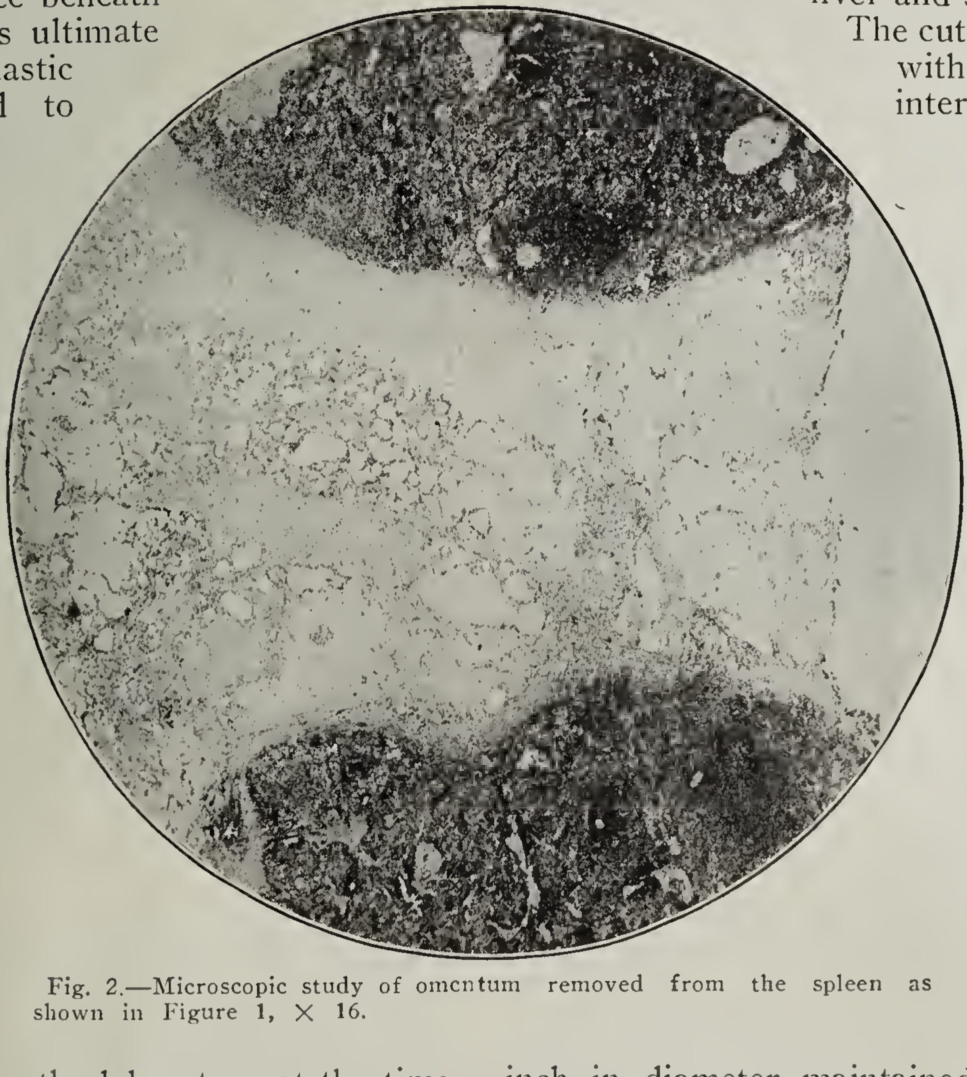


Fig. 2.—Microscopic study of omentum removed from the spleen as shown in Figure 1, × 16.

Strangulation of the bowel occurred in a case in which the graft was attached by widely separated sutures. A loop of small bowel passed under the graft became adherent, and the animal was lost.

RESULTS

The transplants to the various viscera and abdominal wall, when properly applied, gave excellent results. In a number of cases of adhesions of the small bowel in postoperative hernial sacs, we were able to cover a section of denuded ileum with transplanted omentum with excellent results, so far.

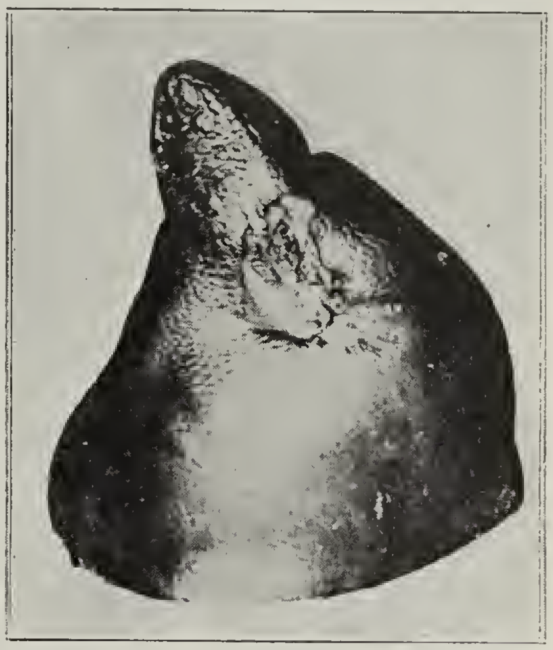


Fig. 3.—A through-and-through perforation of the liver; defect filled with omental graft; animal killed after six weeks.

Loewy was the first to use free omental transplants to check severe hemorrhage from the liver. In repeating Loewy's work, we abraded the surface of the liver, and in addition cut the body of the liver and spleen entirely through, or with forceps produced extensive through and through lacerations of the liver and spleen.

The cut edges were approximated with catgut sutures after an intervening omental graft had been applied. The lacerations were filled with omental plugs. The almost immediate hemostasis was quite striking and beyond that which might be expected by mechanical means.

Hilse has shown that tissue extracts of omentum, fascia and muscle possess the ability to shorten greatly the coagulation time of blood by activating the prothrombin.

The liver and spleen with their free grafts were removed at varying intervals from weeks to months, and showed complete viability of the tissues.

Omentum transplanted freely beneath the skin in masses an inch in diameter maintained the greater portion of their bulk.

Microscopic examination of the grafts shows an astonishing viability. It seemed to be of little consequence whether the graft was half an inch or 3 inches in diameter.

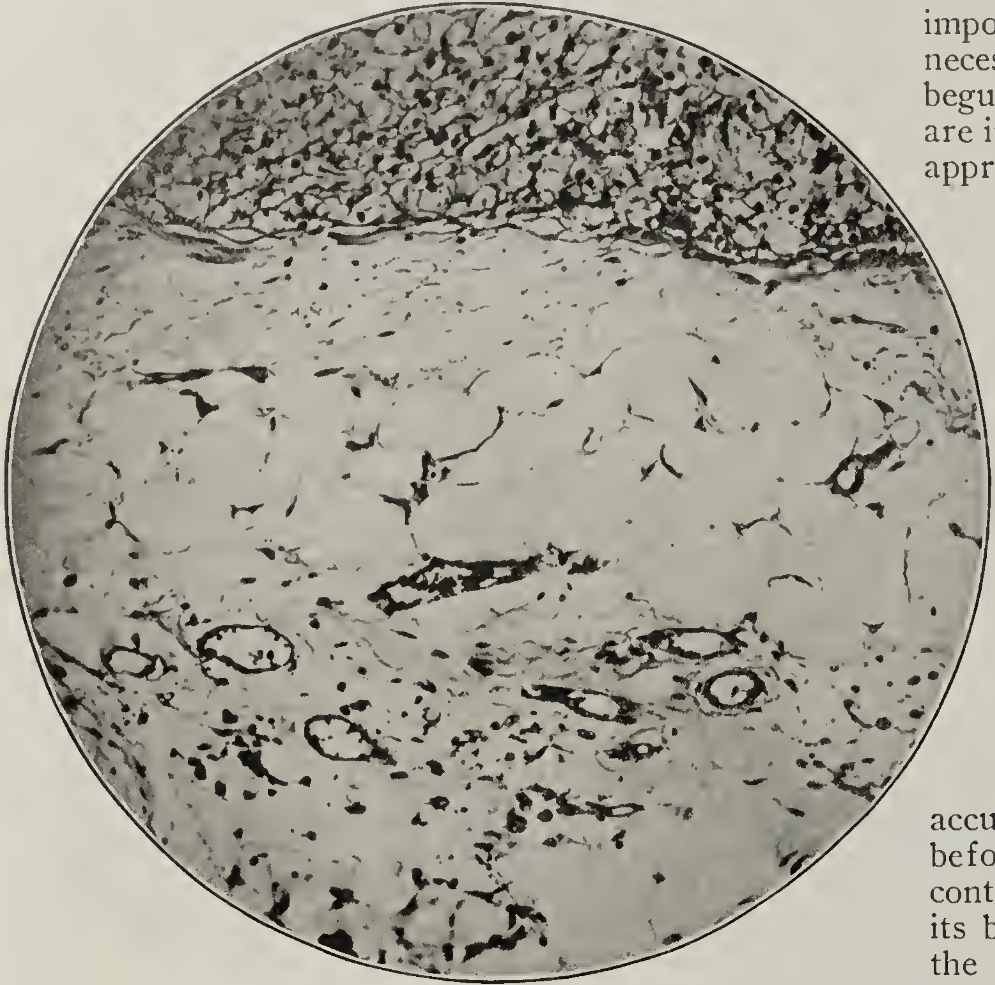


Fig. 4.—Microscopic study of omental graft removed from liver, as shown in Figure 3, × 160; section removed after two months.

122 South Michigan Avenue.

A METHOD OF CONTROLLING HEMORRHAGE IN CHOLECYSTECTOMY

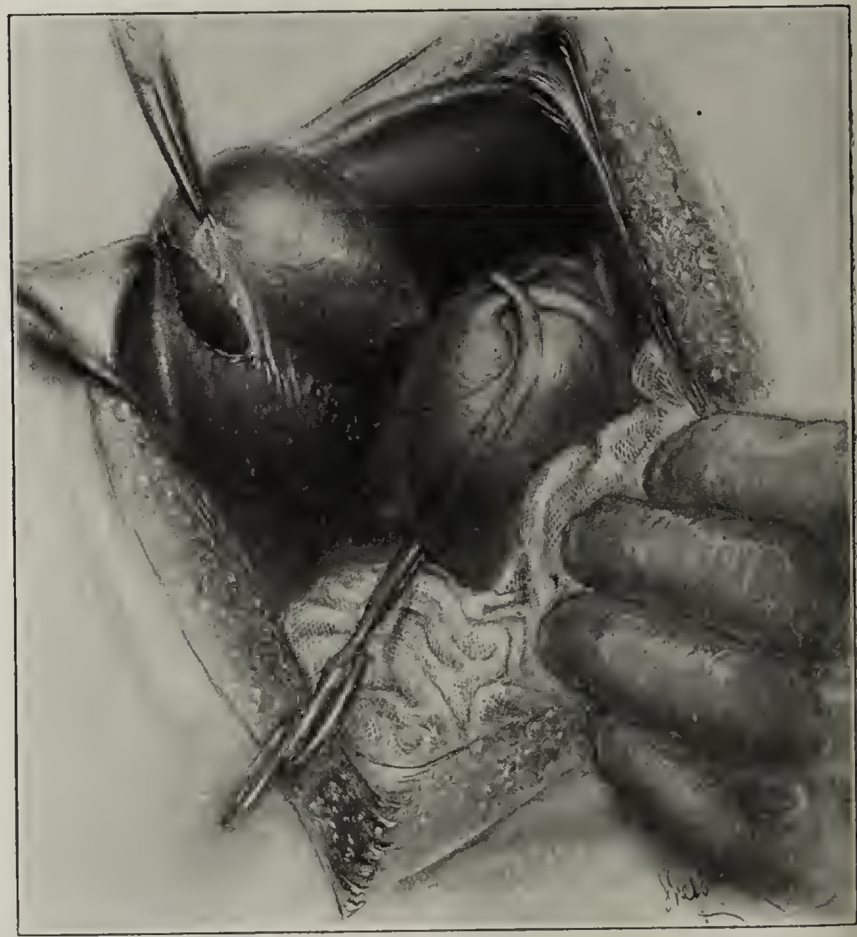
D. B. PHEMISTER, M.D.
CHICAGO

The difficulties experienced in the operation of cholecystectomy, with their consequent increase in the operative risk, are responsible to a considerable extent for the wide variance in opinion as to the advisability of its performance in place of chylecystotomy. The general adaptation of the Bevan curved or oblique incisions beginning above near the xiphoid, permitting of outward rotation of the liver with consequent exposure of the region of the ducts, has greatly improved the operative results. The removal of the gallbladder by starting at the cystic duct has become the routine procedure wherever possible in a great many clinics. Its chief advantage lies in the better hemostasis during the separation of the gallbladder from the liver, since the most troublesome bleeder, the cystic artery, is clamped, cut and ligated along with the cystic duct as the first step in the removal. The oozing which occurs from the surface of the liver as the gallbladder is cut away is usually readily controlled by the suture with which the gallbladder sulcus is closed. Separate ligation of bleeding points or a gauze pack left in place may be necessary in some cases.

This is doubtless the best plan of procedure when it can be carried out. Yet a great many surgeons find it difficult or still prefer to begin the removal of the gallbladder at the fundus. Even in the hands of its most skilled advocates it has to be abandoned in certain cases in which adhesions and liver fixation make it impossible to obtain sufficient exposure. When by necessity or choice the removal of the gallbladder is begun at the fundus, the branches of the cystic artery are injured repeatedly as the main trunk of the vessel is approached. This frequently results in an annoying hemorrhage, which can be avoided in the following way:

After separation of adhesions about the gallbladder and its pedicle, if any are present, the cystic duct and artery region are definitely located by inspection, if possible, and, if not, by careful palpation and a curved forceps applied at the point at which it is desired to amputate and ligate. This will prevent any hemorrhage from the cystic artery, and the gallbladder can be removed from the fundus to the neck with only such minor disturbance from bleeding as occurs from the liver surface. After separation of the gallbladder, if the clamp is not on the pedicle at the point at which it is desired to amputate, it may be unlocked and readjusted. This will usually be found unnecessary, as by inspection or accurate palpation the forceps can be properly placed before the separation is begun. The peritoneal fold containing the duct and artery may be perforated at its base and separated from the liver by the point of the forceps, after which the entire pedicle is grasped in the forceps. This facilitates ligation after the gallbladder has been cut away.

An objection brought against this procedure was that in all cases in which a curved forceps could be placed on the pedicle, it ought to be possible to begin the removal of the gallbladder at this point. This objection does not hold, as the forceps can be applied after separating the adhesions in the most buried cases.



Forceps in position on artery and duct at beginning of cholecystectomy.

122 South Michigan Avenue.

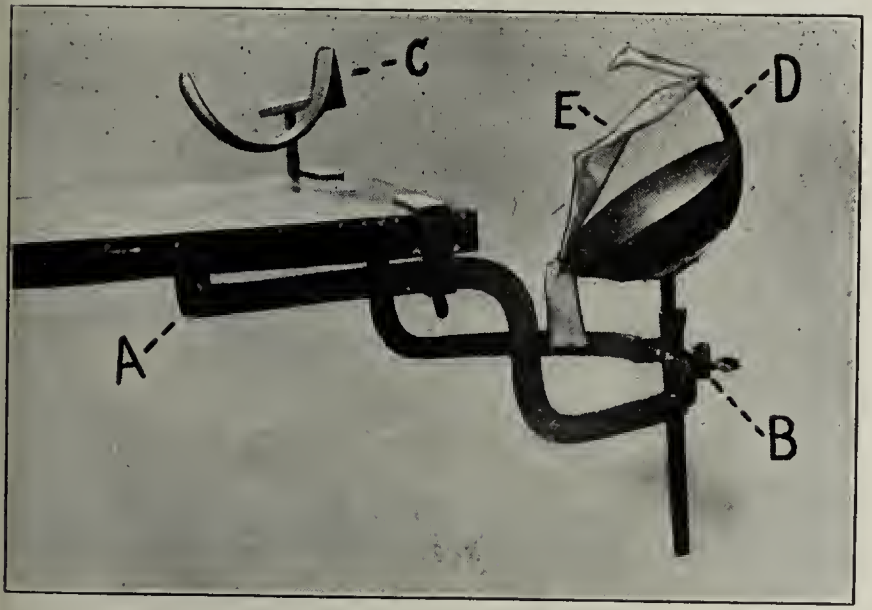
New Instruments and Suggestions

A NEW CEREBELLAR HEAD REST

Norman Sharpe, M.D., New York
Neurologic Surgeon, New York
Post-Graduate Hospital

The head rest here illustrated possesses these advantages:

1. It will fit any operating table.
2. When adjusted, it is a part of the table and is not dislodged from position if the table is moved.
3. It is simple, having only three points of adjustments.
4. The head is held firmly in place, thus permitting strong retraction of the muscle flap, obviating the necessity of extra incision. I now no longer find it necessary to make the vertical incision of the cross bow, thus lessening loss of blood and amount of scar.
5. The head is held in strong flexion, permitting easy access to the depths of the wound about the base of the occiput.
6. The head cap can be raised or lowered at will, allowing for change of position if desired and making an easier approximation of the wound edges in closing.
7. It is light, weighing less than 10 pounds, and is easily transported, forming, when taken apart, a package 24 inches long and 8 inches in diameter.



New cerebellar head rest.

The head rest is fastened to the table by the clamp, *A*. It is adjusted to the width of the table by the cross bar at *B*. This allows a play of 5 inches, making it fit any operating table. The shoulder supports, *C*, move in two directions, lengthwise on the side arm of the apparatus, and transversely, to fit differences in the width of the chest. The head cap is moved upward or downward, passing through a socket 3 inches long to give stability. All sockets and bars are made square to prevent slipping or turning.

When the head is placed in the padded cap, the slotted curved metal ribbon, *D*, is moved up over the head to the crown, and from the slot in the end of the ribbon a wet piece of muslin bandage (*E*) is carried along the head on each side to slots in the forehead of the cap and firmly tied. The slotted ribbon, *D*, is secured in place by a thumb screw at *F*. This draws the muslin strips which pass under the parietal eminences and above the ears still tighter, and holds the head firmly in the cap. In operations on children a smaller cap is used, which rests by hooks on the rim of the larger cap.

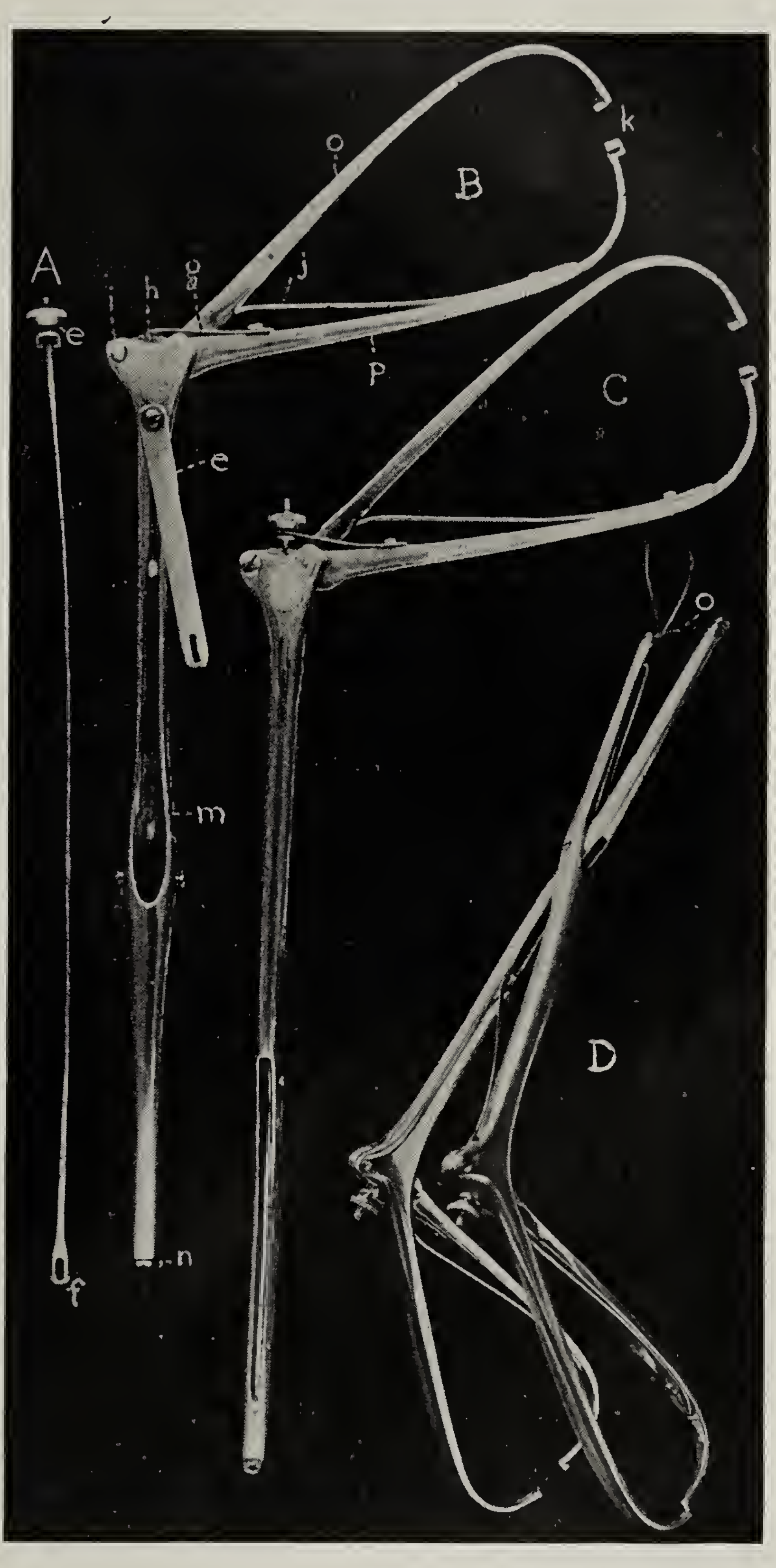
I have used this head rest in my last seven operations on the cerebellum, and find it far superior to the others I have used.

No Room for the Impracticable.—Those things which are not practicable are not desirable.—Edmund Burke.

A NEW INSTRUMENT FOR DEEP SEWING

Clifford B. Walker, M.D., Boston
Associate in Surgery, Peter Bent Brigham Hospital

Previous efforts on this problem have resulted in the use of two general principles, first the aneurysm needle type, which is either threaded before or after inserting, or, second, the barbed needle type, in which the needle is dragged through by its barb tip, engaging a spring ratchet in the opposite member. These devices have the disadvantage of sewing in only one direction, of placing one stitch at a time, of tearing large holes, and of usually requiring both hands or assistance in a space already limited in extent.



Deep sewing instrument: *A*, tension wire passing through each tubular member (of *B* and *C*). The length of this wire can be regulated by the ratchet tension burr (*e*). The distal end (*f*) is stirrup shaped, and acts as one side of the needle clamp. *B*, one member with tension wire removed, showing the tension burr spring (*g*), which holds the tension burr against the ratchet (*h*); the ordinary needle holder catch and release (*k*) working against the spring (*j*) and through the fulcrum (*i*) to pull strongly on tension wire (*A*); open joint (*m*); copper tipped end (*n*), which forms the other side of the needle clamp. *C*, the other member with tension wire in place just as it was removed from the open joint (*m*) of *B*. *D*, instrument assembled with double ended needle (*o*) threaded through its central eye and clamped in one member. Both members receive and hold the needle in the same manner, so that continuous sewing back and forth may be accomplished if desired.

The instrument devised to obviate these difficulties consists essentially of two specially designed needle holders hinged together scissors fashion but by means of an "open joint" as shown at *D*. The parts were also photographed to a somewhat larger scale (as in *A, B* and *C*) to show more detail.

Needles varying in length from 0.75 to 3 cm. or even greater lengths can be used. They are tapered and sharpened at both ends, and are curved to an arc of radius equal to the distance from the needle clamp to the open joint. Ordinary sizes of suturing silk, catgut or chromicized catgut may be used; for the most part we have used No. 2 chromic. The needles, while varying in length, are all made heavy and strong about the centrally situated eyelet so that there is never any danger of breaking, thereby losing a portion in the tissue, as has occurred with ordinary curved needles. Further, it is never necessary to let go of the needle and pick it up again, since it is always clamped in one side or the other of the instrument.

This instrument is useful, and a great comfort in controlling hemorrhage both at the operation and afterward, when it is even more difficult to work in the patient's mouth with curved needles because of the pain. In either case two general methods are used and never fail. First, if, as is usually the case, long hemostats can be used to clamp the bleeding points, seldom more than one or two in number, then the needle is quickly passed through the fold of tissue on both sides or even one side of the hemostat, and tied as the hemostat is loosened. Second, if, as rarely happens, there is no bleeding from definite points but rather a general ooze from the tonsillar fossa, the condition is readily handled by packing the fossa with a roll of oiled gauze, when it is extremely easy to pass one or two catgut sutures through the pillars, drawing them together over the gauze. The instrument here shown has been in use over a year without failure or repair. It is well made by Codman & Shurtleff of Boston.

A NEW ANESTHETIC SHIELD

Isabella C. Herb, M.D., Chicago

The chief advantage of this anesthetic shield (Fig. 1) is that it is not attached to the table, and consequently it can be arranged for various operative positions. It consists of a plate of steel 20 inches long, 8 inches wide and one-eighth inch thick with an upright rod 7½ inches high at each end. The shield portion is composed of four bars, separated 3 inches at the highest point, which gradually converge and are inserted in the upright rods by a screw device which enables the adjustment of the shield at various levels to suit the thickness of the patient's chest. The plate is placed under the pillow or between the pillow and the pad covering the table.

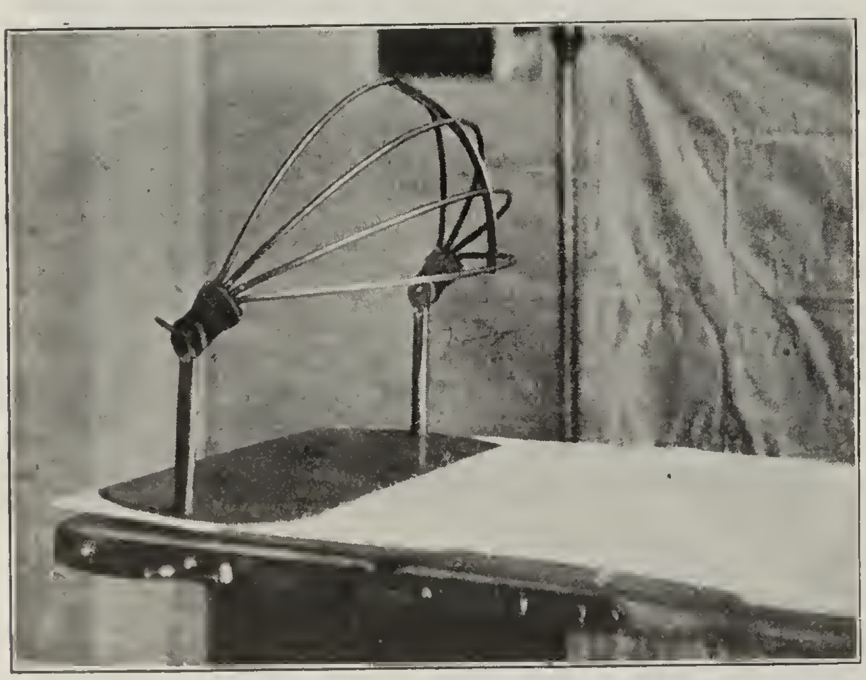


Fig. 1.—New anesthetic shield.

Figure 2 shows the shield in position for the majority of operations.

Figure 3 shows the shield placed diagonally across the corner of the table for breast and shoulder operations.

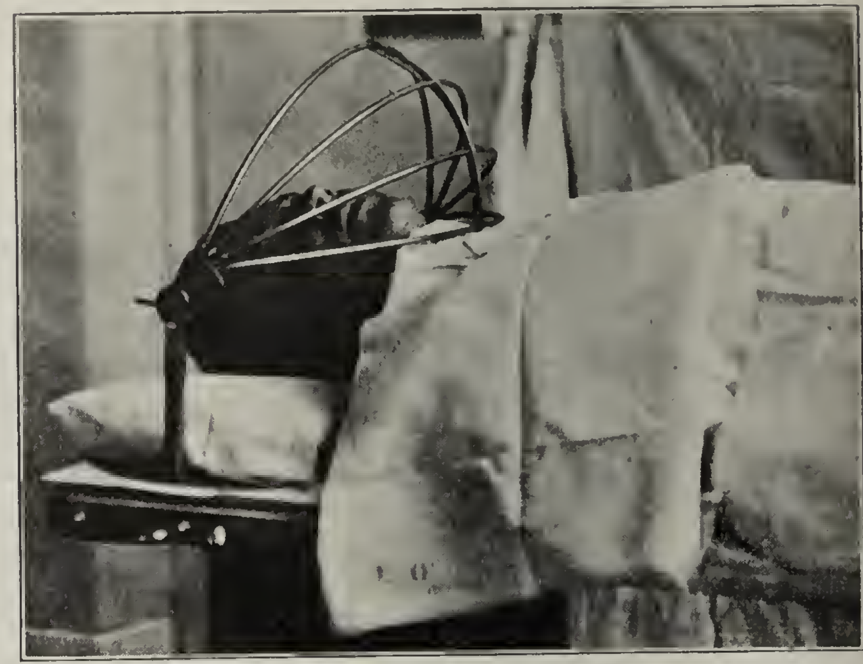


Fig. 2.—Shield in position for majority of operations.

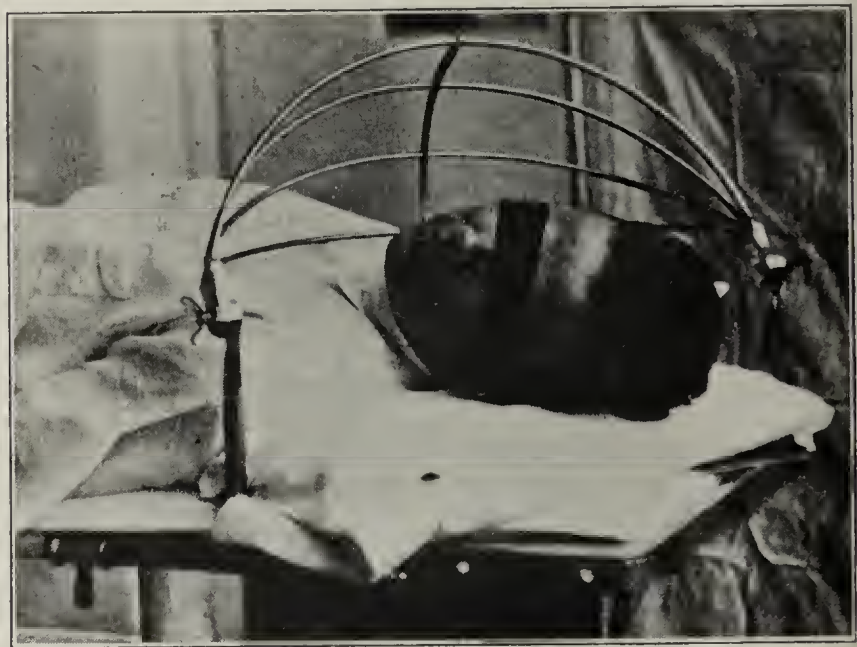


Fig. 3.—Shield placed diagonally across corner of table.

I am indebted to Dr. Gatewood for suggestions for the screw device.

V. Mueller & Co., Chicago, are the makers.

Trade Accidents in 1916.—According to Commissioner James M. Lynch of the New York State Industrial Commission, 1916 showed approximately 60,000 industrial accidents in the state, with approximately 1,500 deaths, 120 permanent total disabilities, 6,180 permanent partial disabilities and 52,200 temporary disabilities with a loss of time of more than two weeks. The amount of compensation provided for by the law for these 60,000 cases would be $11,500,000, $5,000,000 of which would be for deaths, $4,500,000 for permanent injuries and over $2,000,000 for temporary injuries. These sums, it is said, do not represent the total economic loss from accidents during the year. The cost of medical benefits, of administering the compensation law, administering insurance and the wage and medical losses of injured employees not covered by the compensation law should be added. It is believed that the total loss would equal $30,000,000. A review of the results accomplished in nine industrial plants in as many different industries shows that a reduction of 10 per cent. in loss from accidents is possible. Of the nine firms, five in two years reduced their accidents 40 per cent., two 50 per cent., and one other firm with a longer experience had reduced the accident rate 75 per cent. in four years.

INACCURACIES IN THE SIZE OF HEMACYTOMETER CHAMBERS AND PIPETS

M. W. Lyon, Jr., M.D., Ph.D., Washington, D. C.
Professor of Bacteriology and Pathology, George Washington University Medical School

The accidental discovery of a hundred per cent. error in the depth of a recently purchased chamber of the Helber type led to an examination of the accuracy of others and to inquiry at the Bureau of Standards as to the accuracy of hemacytometers in general.

The gross error referred to was discovered by an enthusiastic student who used the Helber chamber in making a count of red blood corpuscles. In calculating the number of corpuscles from the data obtained he found twice the number of corpuscles that one of his companions found in the same blood. He repeated the work with a similar result. The conclusion was obvious that the Helber chamber was about 40 microns deep instead of the labeled 20. Probably other counting chambers are on the market or in use as carelessly labeled as is this one.

Before it was learned that the Bureau of Standards was prepared to test hemacytometers, measuring the depth of chambers was attempted by allowing blood or India ink to dry on the ruled disk and on the surrounding plateau and calculating their difference in focus when viewed with a $\frac{1}{12}$ objective, a microscope with the fine adjustment graduated to indicate depressions or elevations of a micron being used. The results of this crude method are given in Table 1. Measuring the thickness of the ruled disk and slide on which it is mounted, and then the thickness of the plateau and the slide, and taking their difference with an ordinary micrometer caliper was found to be an equally crude method, owing to the fact that the glass slide on which the ruled disk and plateau are mounted does not have its upper and lower surfaces parallel, and probably these surfaces are not perfect planes.

The method employed by the Bureau of Standards in measuring the depth of chambers is to apply a heavy glass disk of known thickness to the counting chamber and to take the combined thickness of that, the plateau surrounding the ruled disk, and the glass slide on which the plateau and ruled disk are mounted, by means of a micrometer measuring machine, and to use the mean of four readings. The mean of four similar measurements for the thickness of the ruled disk and the mounting slide is then ascertained. The difference between these two means, less that of the glass disk of known thickness, gives the depth of the chamber. This method of measuring them is accurate to less than 1 micron. It is the opinion of Mr. D. R. Miller, of the Bureau of Standards, that makers of hemacytometers can with care make chambers accurate to within 2 microns of the labeled depth. This corresponds to an error of 2 per cent. on the ordinary blood counting chamber, of 1 per cent. on a Fuchs-Rosenthal chamber, and of 10 per cent. on a Helber chamber. From Table 1 it will be seen that only one of the five counting chambers measured for me, representing three standard German makes, comes up to these requirements. An error of 10 per cent. in the case of the Helber chamber could not be considered important if it is used in counting the number of organisms in bacterins. If used for cytologic work, it ought to be more accurate. One and 2 per cent. errors in ordinary blood counting are negligible.

TABLE 1.—LABELED AND ACTUAL DEPTHS OF COUNTING CHAMBERS *

	Helber Counting Chamber Maker M.	Fuchs-Rosenthal Counting Chamber, Maker M.	Thoma Counting Chamber Maker N.	Thoma Counting Chamber Maker O.	Thoma Counting Chamber Maker M.
Labeled depth of chamber........	20	200	100	100	100
Depth of chamber as measured by the Bureau of Standards........	**46**	203.4	100.2	104.2	104.4
Estimation of depth by noting change in focus of particles dried on the ruled disk and on the plateau	42	186	101	99	97

* The figures are thousands of a millimeter, or microns.

Another possible source of error in the counting chamber is that the square millimeters on it and the $\frac{1}{400}$ square millimeters on it are not what they are labeled. I have measured some of them by means of a stage micrometer and micrometer eyepiece, and they were found to be as near their alleged size as that method is capable of measuring. It is practically possible to rule the square millimeters to within 1 micron of accuracy, yielding thus an error of 0.1 per cent. Slight variations in the small squares may be tolerated, provided that, in making counts, diagonal blocks are used, for example, by using the twenty-five small squares in the upper left hand corner, then the block immediately and diagonally to the right and below, then the next similarly placed block of twenty-five small squares finally ending up with the block of twenty-five squares in the lower right hand corner. Any slight variations in the spacing of the lines that make up the small squares is thus compensated for, as squares formed by all the lines are involved.

TABLE 2.—CAPACITY OF DILUTING AND MIXING PIPETS EXPRESSED IN CUBIC CENTIMETERS, AND SHOWING LABELED AND ACTUAL CAPACITY RATIOS AS TESTED BY U. S. BUREAU OF STANDARDS

Manufacturer	Capacity of Interval, C.c.				Nominal Capacity Ratio 1:2*	Nominal Capacity Ratio 1:10†	Nominal Capacity Ratio 1:100‡
	0 to 0.5	0 to 1.0	0 to 11	0 to 101	Actual Capacity Ratio		
A	0.0176	0.0348	0.2376	......	1:1.98	1: 5.8	
A	0.0151	0.0313	0.2643	......	1:2.07	1: 7.4	
A	0.0041	0.0090	......	0.6664	1:2.20	......	1: 73
A	0.0025	0.0052	......	0.5428	1:2.08	......	1:103
B	0.0145	0.0279	0.3019	......	1:1.92	1: 9.8	
B	0.0224	0.0436	0.2699		1:1.95	1: 5.2	
B	0.0021	0.0044	......	0.4585	1:2.10	......	1:103
C	0.0125	0.0255	0.2939	......	1:2.04	1:10.5	
C	0.0020	0.0042	......	0.4519	1:2.10	......	1:106
D	0.0124	0.0248	0.2738	......	1:2.00	1:10.0	
D	0.0106	0.0216	0.2518	......	1:2.04	1:10.6	
D	0.0096	0.0196	0.2222	......	1:2.04	1:10.3	
D	0.0036	0.0071	......	0.8003	1:1.97	......	1:112
D	0.0042	0.0084	......	0.8917	1:2.00	......	1:105
D	0.0040	0.0082	......	0.8353	1:2.05	......	1:101

* Actual capacity ratio calculated from intervals 0.5 and 1.0.
† From 0 to 1, and 1 to 11 [i. e., (0 to 11) minus (0 to 1)].
‡ From 0 to 1, and 1 to 101 [i. e., (0 to 101) minus (0 to 1)].

Attention has been previously called to variations in the calibration of the mixing and diluting pipets.[1] I have never had the accuracy of the pipets under my observations tested. The figures in Table 2, supplied by Mr. H. W. Bearce of the Bureau of Standards, are very significant in this connection. The errors range from 50 per cent. down to none. Only six out of the fifteen pipets listed have an error of less than 5 per cent., and two of less than 2 per cent.; one pipet for making counts of white corpuscles is perfect. The most perfect pipet for making red counts is 1 per cent. wrong. Probably the general run of pipets in use is not more accurate. Mr. Bearce is of the opinion that it is practicably possible to calibrate pipets to have an error not greater than 2 per cent.

An error of tolerance of 2 per cent. in the pipets and of 2 per cent. in the counting chambers, with a practically negligible error of 0.1 per cent. in the size of the square millimeter of the ruled disk gives an instrument with an error of 4 per cent. As shown by Emerson,[2] 4 per cent. represents a reasonable error in blood counting. An instrument designed to give counts within 4 per cent. is almost as near perfection as is the user of the instrument, and ought to be satisfactory, at least for clinical purposes. For the highest degree of accuracy as might be demanded in some scientific investigations, cell counts could be calculated on the basis of the actual size of the instrument. Manufacturers, however, if possible ought at the same time to keep the error within 1 per cent. in the case of the counting chamber and the pipets, as Emerson has shown that experts in blood counting are able to keep their errors within 2 per cent.

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[1] Wood, F. C.: Chemical and Microscopical Diagnosis, Ed. 2, 1909, p. 48.

[2] Emerson, C. P.: Clinical Diagnosis, Ed. 4, 1913, p. 469.

The suggestion is offered that the counting chamber of hemacytometers should be made of one solid piece of glass instead of the usual three cemented pieces. Wood[1] has called attention to variations in the depth of chambers due to changes in temperature affecting the cement. In addition to the name of the maker and other information placed on them, the chambers should be given a serial number, as is frequently done with the pipets. Each chamber could then be furnished with a certificate of accuracy. It is possible to number the chambers as made in the usual manner with the ruled disk and the plateau cemented to a heavy plate. This is actually done with those chambers measured by the Bureau of Standards, but there is always the possibility of the cemented pieces of glass coming off, and there would be nothing to interfere with irresponsible parties cementing them on again or even cementing them on other numbered glass plates.

SUMMARY

Several hemacytometers measured by the Bureau of Standards show gross inaccuracies as to the depth of counting chamber and calibration of pipets.

An error of tolerance not exceeding 2 per cent. in the case of the depth of the counting chamber, and in the calibration of the pipets should be adhered to by the manufacturers. If possible this error should be kept to within 1 per cent. in each case. An error of tolerance not exceeding 0.1 per cent. should be allowed for the size of the square millimeters of the chambers.

It would be desirable to have the counting chambers made of a solid piece of glass.

Each hemacytometer should be furnished with a certificate as to its accuracy or as to its errors.

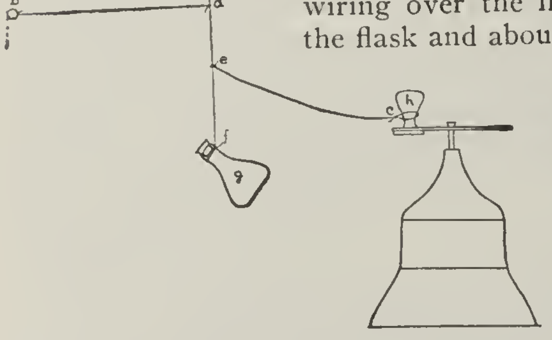
The Bureau of Standards, Washington, D. C., is prepared to test the accuracy of hemacytometers for a nominal fee.

AN IMPROVIZED SHAKING MACHINE

R. M. LeComte, M.D., Washington, D. C.

Pathologist, Washington Asylum Hospital

The essential parts of this contrivance are an electric centrifuge, some heavy twine and two flasks, one of about 50 c.c. capacity and the other large enough to carry the material to be shaken. The shells are removed from the centrifuge arms, one of which is replaced by the inverted 50 c.c. flask (*h*), which is held firmly in place by wiring over the flange at the mouth of the flask and about a thin piece of wood, cut to a suitable size and placed on the under side of the centrifuge arm. The shaking flask, *g*, is suspended by twine from a ring at *a*, the knot about the neck of the flask at *f* being a slip-knot to allow changing the flask without disturbing the whole apparatus. A cord is tied firmly to the cord *af* at *e*, and fastened loosely about the neck of the flask *h* at *c* so that the flask can revolve in the grasp of the knot. This cord, *ec*, is of such length as to reach from the point *c* to the shaft of the centrifuge. The centrifuge is then run at moderate speed. A third cord, *bd*, may be tied at the points indicated in the diagram to control the extent of the motion of the shaking flask, *g*. If a spiral spring is inserted between the points *a* and *f*, an additional vertical motion is obtained.

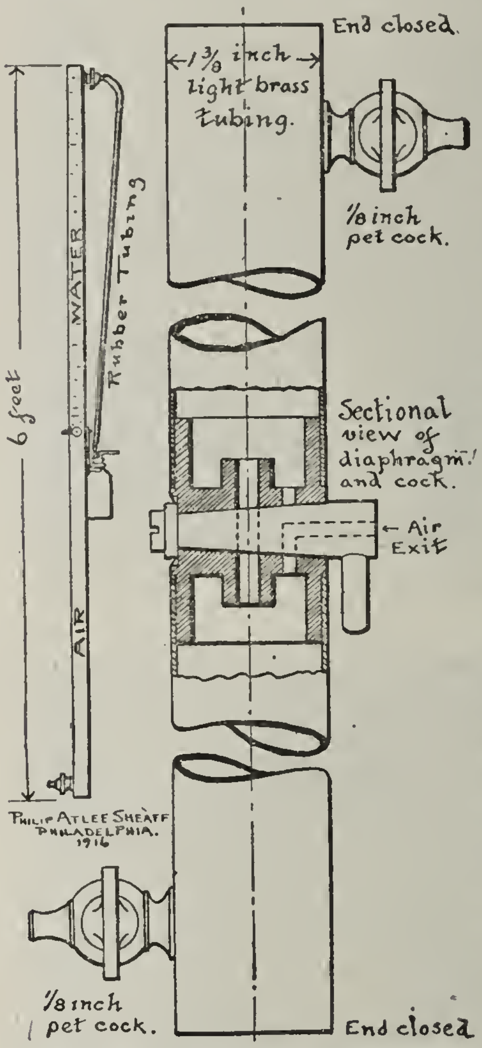


1424 K Street N.W.

IMPROVED ASPIRATING APPARATUS

Philip Atlee Sheaff, M.D., Philadelphia

In The Journal, Sept. 16, 1916, I described an aspirating apparatus for office and hospital use in obtaining gastric contents, and, Dec. 2, 1916, Dr. Harvey G. Beck of Baltimore described an apparatus designed for the use of partial vacuum in diagnosis and treatment. Both of these devices supply a needed want, but are restricted in their usefulness by the fact that Beck's requires a faucet and running water, and mine is a permanent fixture in proximity to the wash-stand.



Improved apparatus for aspirating gastric contents.

I have so modified my apparatus that it is portable, self-contained, always ready for use, and lends itself to various uses in diagnosis and treatment in which a partial vacuum is desirable, and in principle might be spoken of as a "hydrostatic hour-glass." It is brass throughout and consists of a piece of 1⅜ inch light brass tubing closed at each end, near which is a ⅛ inch pet-cock. A diaphragm containing a cock divides the cylinder into two compartments of equal capacity. The upper half is filled with water, the lower half with air. In operation the tube is placed in the vertical position, a rubber tube connects the upper pet-cock with the aspirating bottle (which for convenience is held to the tube by a clip) as shown in the sketch, a cupping glass, or other container for blood or fluid, the pet-cock, is opened, and the diaphragm cock turned with its handle down.

This allows the water in the upper chamber to pass into the lower chamber, thus displacing its contained air, as shown in the sketch, and with a tube of the length shown, generating a negative pressure of 65 mm. of mercury in the aspirating bottle. After the operation is over, any remaining water in the upper chamber is allowed to flow into the lower chamber and all cocks are closed, when the apparatus is instantly ready for use again by turning it upside down and repeating the manipulation after connecting the tubing of the aspirating bottle to the upper pet-cock.

No water is lost, the device is simple, and while somewhat long, can be carried easily; it does not take up much space when not in use, as it can stand in a corner; is easily maintained in the upright position by throwing a bandage around it and the back of a chair; has no valves to get out of order; requires no wash-stand and running water, and the three cocks which it contains need no more attention than an ordinary gas fixture.

4006 Baring Street.

Judgment in Health Expenditures.—To spend the resources of the department on other peoples' pet projects, on things which, even though desirable, are not in given circumstances essential, is to tithe mint, anise and cummin and neglect the weightier matters of the law. These weightier matters are the activities which experience has shown to be fruitful of real results. They follow paths clearly marked, toward a definite goal—the health of the state.—Alice Hamilton, *Survey*, Jan. 20, 1917.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 635)

TREATMENT OF ACUTE NEPHRITIS

The treatment of acute nephritis requires immediate bed rest in a warm, but properly ventilated, room.

During all acute diseases the urine should be frequently examined, and especially in diseases and conditions known frequently to result in nephritis, such as scarlet fever, erysipelas, serious burns, and poisoning, in order that the first indication of kidney inflammation may be noted. In these diseases all irritant foods should be prohibited, and all drugs which may cause irritation should be withheld, such as phenol compounds, synthetic drugs, irritant diuretics, aromatics, coffee, tea and alcohol. Observation of these cautions may prevent many kidney complications.

Cold applications should be used with great care; warm sponging is often as efficient as cold sponging in feverish processes. Whatever measures are taken in the treatment of the patient, chilling of the body should be avoided, although he should have fresh, cool air to breathe.

Baths should be taken in warm or hot water, as anything which promotes normal perspiration tends to relieve congestion of the kidneys; anything which tends to inhibit the secretions of the skin or to cause the skin to become cold and dry increases the congestion of the kidneys.

Meat proteins should be especially avoided as soon as traces of albumin are found in the urine, and the diet should become more and more rigid, according to the extent of the inflammation. The proper diet in acute nephritis is milk, or foods of the same character. If milk is not well tolerated, thin gruels, as oatmeal or malted milk, cereal milk, etc., may be substituted. Barley water is a good beverage and has some nutritive properties. Salt should be almost entirely removed from the diet. Nephritis patients usually suffer greatly from thirst. The amount of water advisable varies with the condition. Theoretically we should allow a considerable quantity, to wash out, if possible, the plugged-up tubules of the kidneys. Practically, however, if edema is extensive, much water should be avoided, although, if the circulation is efficient, pure water in a salt-free diet perhaps does not tend greatly to increase the edema. A refreshing drink may be prepared from a teaspoonful of cream of tartar in a pint of boiling water to which is added the juice of a small lemon, and a little sugar if desired. This beverage, when cold, is very agreeable.

If the patient's stomach is disturbed, a short starvation period is advisable. It is not expedient to continue this treatment long, however, as it tends to acidemia, which would add its quota to the toxins already more or less present. Liberal quantities of hot water may be given to relieve the vomiting, and if this is not sufficient, several 1 gm. doses of bismuth subcarbonate and sodium bicarbonate should be given every three hours until the nausea and vomiting cease.

The indications to meet are:

1. To promote elimination during the time the kidneys are insufficient.
2. To keep the waste metabolism and the metabolism of protein foods at the lowest limit possible.
3. To allay the inflammation, if possible, and to hasten the stage of resolution.
4. To prevent uremia if possible.

1. To meet the first indication the body should be kept very warm, and hot sponge baths should be given. Profuse sweatings are not indicated, except such as may be caused by hot drinks and warm applications to the region of the kidneys.

Unless contraindicated by some previous condition, an active cathartic should be given — a few grains of calomel, a saline purgative, or castor oil — to remove from the intestinal canal all substances which tend to the production of toxins which may be absorbed into the blood and increase the toxemia. If the patient is a child, rhubarb or cascara sagrada may be used. Daily movements of the bowels are necessary, but more than two or three loose movements a day are not indicated, and if the heart is weak, this amount of catharsis is often contraindicated. Enemas for purgation may be substituted for cathartics.

Diuretics should not be given, with the exception of pure water, or possibly a water containing some simple alkali, such as potassium or sodium citrate, or acid fruits which burn to alkali, such as oranges and lemons. The juice of these fruits is acceptable and beneficial to the patient.

2. To meet the second indication, the patient should be kept physically and mentally at rest. The more restless the patient, or the more muscle movements he makes, the more products of muscle metabolism reach the blood and must be excreted. Minimum quantities of all foods, particularly those containing protein, should be consumed, so that the kidneys may have the least possible amount of waste products to care for.

If the patient vomits, for a short time all foods should be withheld. The stomach may be washed out with hot water, or the patient may be given small doses of bismuth subcarbonate and sodium bicarbonate. However, starvation should not be too long continued, as it tends toward the production of acidosis and symptoms similar to uremia; therefore, bland, starchy foods should be given as soon as possible. If the stomach cannot retain them, alkalies, such as sodium bicarbonate or sodium citrate, in weak solutions, should be introduced into the colon.

If during the period of active nephritis the patient is restless and cannot sleep, it may be advisable to give a dose or two of chloral or of bromid, but synthetic drugs, or coal-tar products, or anything that forms hematoporphyrin during its elimination through the kidneys, such as sulphonal, trional, and drugs of that type, should be avoided.

3. The third indication is met by warm applications to the lumbar region, moist warmth in this region being of special benefit to acutely congested kidneys. Hot alcohol and water fomentations bound close to the back by a bandage around the abdomen, kept warm by a hot water bag, and changed as soon as cool, afford a simple method of applying such heat. The old-fashioned flaxseed poultice is also beneficial. Later the moist heat may be changed to the dry heat of an electric pad, which also brings about local hyperemia and in a reflex way gives relief to the kidneys. When the patient is kept warm, fomentations like those mentioned above cause perspiration, although not the profuse perspiration of the Turkish bath, caused by steaming, or by the introduction of dry hot air under the bedclothes. Such profuse sweatings are rarely necessary, and it is a question whether the good they have apparently accomplished was not due to relief of the kidney congestion. Profuse sweating can do little more than

eliminate from the blood large amounts of water, and the toxins retained in the blood in nephritis and in uremic conditions consequently become more concentrated. On the other hand, profuse perspiration sometimes causes the blood to absorb water from edematous tissues, which will counteract the concentration of the poison in the blood caused by the perspiration. If prostrating perspiration is caused by these applications, it is best to stop them and rely on the more modified heat of an electric pad.

This treatment, if successful, finally brings about an increase in the amount of urine passed, then the amount of blood in the urine is diminished, less albumin appears, although the urine may be loaded with casts, the edema and dropsy disappear, and the patient becomes convalescent, although edema may persist for weeks and albumin may not disappear from the urine for weeks or months. However, in kidneys that were normal before the attack of acute nephritis, the albumin and casts generally disappear in five or six weeks.

During this convalescent period the diet is gradually increased, although meat proteins and nuclein foods are still forbidden. In other words, if the edema has disappeared the patient is allowed bread, rice, more liberal amounts of cereals, and potatoes, but less milk. The amount of salt allowed him is gradually increased.

During this long period of abstinence from meat it is advisable to give small doses of iron, such as 5 drops of tincture of ferric chlorid, three times a day, in orangeade or lemonade; and after the albumin has disappeared from the urine, or after two months, although the albumin may not have disappeared, small amounts of meat once a day may be allowed, as a very long period of meatless diet is often not advisable in these cases. Eggs, simple vegetables and fruit should be added to the diet even before the albumin has disappeared; and when meat is allowed (meat includes fish, chicken and fowl) all beef extracts, beef broths and beef stock soups should be prohibited.

During this convalescent stage the patient may begin to sit up, walk around the room, and gradually about the house, but should not be exposed to cold, or allowed to attempt more than moderate muscular efforts. His bowels should move daily, and, if a drug is needed, aloin or cascara should be used. Children may be given milk of magnesia or some other simple laxative. It should be emphasized that a modification in diet is necessary according to the character of the digestion and the condition of the tongue. A liberal consumption of milk is often not well tolerated by adults, but a little careful investigation will determine the diet best adapted to the individual patient.

If the albumin and casts entirely disappear from the urine in six or eight weeks, the patient may be considered cured. However, severe exercise and chilling should be guarded against, lest the injured kidneys again be impaired.

If the albumin and casts continue, or if the twenty-four hour urine shows continued diminished excretion of salts or solids, although the blood may not show retained nonprotein nitrogen, the treatment of the case becomes that of a chronic nephritis.

Gentle massage may be employed as soon as the kidneys are functioning well, but it should not be resorted to if the secretion of the kidneys is insufficient. The amount of exercise the patient may take depends entirely on the efficiency of the kidneys in throwing off the waste material; if there is still danger of nitrogen retention, exercise should be limited. Warm baths and the milder hydrotherapeutic measures (no cold water and no chilling) are of advantage in keeping the skin in a healthy condition and in causing a good circulation of the blood on the surface of the body.

The prognosis of acute nephritis depends on its cause, but a case never should be considered hopeless. The patient may die, but with proper treatment he may recover, even from severe uremia, convulsions and coma. In acute nephritis there is no stage in which every effort possible should not be made to combat the disease and aid recovery.

A scarlatinal nephritis is more serious than that caused by many other conditions, and is apt to be insidious in development, occurring not only days, but weeks after the acute scarlatinal symptoms have subsided. Uremia may not develop even with temporary suppression of the urine; on the other hand, it may develop almost without premonitory symptoms, although ordinarily these symptoms appear hours or days before uremia occurs.

If the kidney secretion contains a great deal of blood, gelatin and lime water may be prescribed. Gallic acid at times apparently diminishes the loss of blood and albumin by the kidneys. If the blood pressure is low and the heart weak, congestion of the kidneys may be due to passive congestion, which may be alleviated by the administration of digitalis. Its action should be watched, as in impaired kidneys it may seriously overact, causing vomiting, headache, too high tension, and sometimes symptoms of uremia. On the other hand, it may be the drug required to relieve some of the congestion and to stop the bleeding. This type of acute nephritis, almost a passive congestion nephritis, not infrequently occurs in cardiac lesions, especially in valvular defects.

If the blood pressure is not very high, suprarenal gland extracts may be of value in stopping the loss of blood by the kidneys, especially in children. A crushed tablet, swallowed with water, every six hours for two or three days is a fair dose.

If the blood pressure is very high, nitroglycerin may be given in doses sufficient to reduce it somewhat; $\frac{1}{100}$ grain given once in three hours to an adult seldom fails to have this desired effect. If the hypertension in an adult is menacing, venesection may be employed; this may also be indicated if severe uremic symptoms, convulsions or coma are in evidence.

As several times stated, diuretics, as such, are generally contraindicated throughout the course of acute nephritis; even in the convalescent stage, if used at all, only the simplest diuretics should be administered with the greatest caution.

If the circulation is poor during convalescence, the amount of urine being insufficient, for this reason alone, and if digitalis is deemed inadvisable or inefficient, caffein in some form is the drug to be preferred, perhaps one of the best forms being theobromin and sodium salicylate, in doses of from 0.5 to 1 gm., in plenty of water. If the patient has reached the stage in which it is advisable to give caffein, there is no reason why a cup of coffee should not be given in the morning, or in the morning and at noon.

Throughout the course of acute nephritis, if the patient is comfortable he will probably sleep well. However, if he is nervous and irritable and cannot sleep, sleep must be induced in order that he may have the bodily and mental rest required. Synthetic hypnotics should rarely be administered, unless the dose is small, such as 0.2 gm. of veronal-sodium, or 0.05 gm. of luminal, since most synthetic drugs irritate the kidneys during excretion. If the patient is irritable, nervous and excited and the circulation is good, an adequate dose of chloral, 0.5 gm. perhaps, or 1 or 2 gm. of sodium bromid, may be used as a hypnotic, provided such strong drugs are deemed advisable.

Opium or any of its alkaloids are generally to be avoided in acute nephritis. However, if pain is acute it may be given, as acute pain can do more harm through circulatory shock, mental anguish and muscle restlessness than can possibly be done by a proper dose of morphin or codein.

If acute nephritis develops in the course of some severe infection, the treatment necessary to combat that infection should be given, modified in the manner suggested by the condition of the kidneys. All vaccine injections would probably be contraindicated.

As soon as the patient is convalescent, warm baths should be taken regularly, to keep the skin in perfect health and to relieve internal congestions. When convalescence is well established, if it is during the cold season of the year, the patient should, if possible, go to a warmer climate, and remain there until the kidneys have again resumed their normal activities.

4. The fourth indication, namely, the prevention of uremia, has frequently been met by proper management of the other indications. The treatment of this condition will be outlined later.

(To be continued)

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

TABLETS SODIUM CHLORIDE AND CITRATE-SQUIBB (DR. MARTIN H. FISCHER).—Each Tablet contains sodium chloride 1 Gm. and sodium citrate 2 Gm.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by E. R. Squibb and Sons, New York.

OPTOCHIN.—Ethyl-hydrocupreine. — Optochin (Base).— $C_{19}H_{22}N_2.OH.O.C_2H_5$.—A synthetic derivative of cupreine, $C_{19}H_{22}O_2N_2$, an alkaloid occurring together with quinine in the bark of *Remijia pedunculata.* Ethyl-hydrocupreine is closely related to quinine, differing from the latter in containing two more hydrogen atoms and an ethoxy in place of a methoxy group.

Actions and Uses.—Ethyl-hydrocupreine has the antimalarial and anesthetic action of quinine. Toxic symptoms, however, such as tympanitis, deafness, amblyopia or amaurosis (retinitis) are more liable to occur than with quinine; while these are generally transient, retinitis may result in permanent impairment of vision (in one case amaurosis resulted from the administration of two 0.25 Gm. doses). This demands caution in the use of the drug. Ethyl-hydrocupreine has a specific bactericidal effect on the pneumococcus in vitro, and it exerts a protective and curative action in animals experimentally infected with virulent strains of pneumococci. Clinical investigation indicates that the drug may be of value in the treatment of lobar pneumonia when the proper dosage is determined. (Owing to the toxicity of the drug, it seems that the amount which can safely be administered to man is limited. For adult males, 1.5 gm. by mouth in twenty-four hours, divided into at least three doses, may be considered safe, but even in this dosage slight toxic effects have been seen. The drug may be given intramuscularly, but it is liable to be irritant. Intravenous administration seems contraindicated.)

While the internal use of ethyl-hydrocupreine is in the experimental stage and the danger of visual disturbance (amaurosis) makes caution in its use important, reports indicate that the drug is of decided value in the treatment of pneumococcic infection of the eye (ulcus corneae serpens). It is too soon to give a definite opinion as to the actual value of the drug in curing pneumonia.

Dosage.—For ophthalmic use a freshly prepared 1 to 2 per cent. ointment or solution in a bland fatty oil.

Manufactured by Vereinigte Chininfabriken, Zimmer and Co., Frankfort a. M., Germany (Merck and Co., New York). U. S. patent No. 1,062,203 (May 20, 1913; expires 1930). U. S. trademark No. 99,822.

Optochin is a white or faintly yellowish, amorphous, odorless powder having a bitter taste.

Optochin is nearly insoluble in water; easily soluble in alcohol, ether and chloroform; easily soluble in dilute acids; very slightly soluble in petroleum ether.

If about 0.1 Gm. of optochin be dissolved in 20 Cc. of water by the aid of a few drops of diluted sulphuric acid, 1 Cc. of bromine water added and the solution made alkaline with ammonia water, a green color should be produced.

If about 0.5 Gm. of optochin be dissolved in 10 Cc. of water by means of a few drops of diluted sulphuric acid, the solution made alkaline with sodium hydroxide solution and the mixture boiled, no odor of ammonia should be produced.

If 0.1 Gm. of optochin be dissolved in 20 Cc. of water by the aid of a few drops of diluted sulphuric acid, a blue, fluorescent solution should be produced; if 0.3 Cc. of tenth-normal potassium permanganate be added to this solution the violet color should persist for at least one minute (*quinine and some other impurities*).

If 0.01 Gm. of optochin be dissolved in 0.2 Cc. of strong sulphuric acid, not more than a slightly greenish-yellow color should be produced (*readily carbonizable organic impurities*).

If from 0.5 to 0.8 Gm. of optochin be weighed and incinerated, not more than 0.1 per cent. of residue should remain.

OPTOCHIN HYDROCHLORIDE. — Ethyl-hydrocupreine hydrochloride.—$C_{19}H_{22}N_2.OH.O.C_2H_5.HCl$.—The hydrochloride of ethyl-hydrocupreine.

Actions and Uses.—The same as those of optochin, which see.

Dosage.—For application to the eye and instillation into the conjunctival sac a freshly prepared 1 to 2 per cent. solution is used.

Manufactured by Vereinigte Chininfabriken, Zimmer and Co., Frankfort a. M., Germany (Merck and Co., New York). U. S. patent No. 1,062,203 (May 20, 1913; expires 1930). U. S. trademark No. 99,822.

Optochin hydrochloride is a white, or faintly yellowish-white, crystalline, odorless powder having a very bitter taste.

Optochin hydrochloride is soluble in two parts of warm water forming a neutral or faintly alkaline solution; soluble in five parts of alcohol; very soluble in chloroform; almost insoluble in ether or petroleum ether.

If to 5 Cc. of the aqueous solution of optochin hydrochloride (1:10) 1 Cc. of silver nitrate solution be added, a white, curdy precipitate should be produced which is insoluble in nitric acid.

If to 5 Cc. of the aqueous solution of optochin hydrochloride (1:10) an excess of sodium hydroxide solution be added, a white, curdy precipitate should be produced (distinction from *cuprein,* which is soluble in an excess of sodium hydroxide).

If 0.1 Gm. of optochin hydrochloride be dissolved in 20 Cc. of water and 0.3 Cc. of tenth-normal potassium permanganate be added, the violet color should persist for at least one minute (*quinine salts and some other impurities*).

If 0.1 Gm. of optochin hydrochloride be dissolved in 0.2 Cc. of sulphuric acid not more than a slightly greenish-yellow color should be produced (*readily carbonizable organic impurities*).

If from 0.5 to 0.8 Gm. of optochin hydrochloride be weighed, the salt dissolved in 20 Cc. of water, the solution made slightly alkaline with ammonia water, the mixture shaken successively with 15, 10 and 5 Cc. of chloroform, the fractions of solvent united, allowed to evaporate spontaneously, the residue treated with 2 Cc. of absolute alcohol, the solution evaporated, the residue dried to constant weight at 100 C. and weighed, the weight of the residue (ethyl-hydrocupreine) should correspond to not less than 90 per cent. of the weight of material taken.

Cuts of Meat and Calorific Value.—The kind or cut of meat used does not usually make much difference in the fuel or calorific value. There is a popular belief that porterhouse steak and other choice cuts of beef represent the highest form of nourishment to be obtained. This is, however, a misconception; the fuel value of brisket or ribs of beef as well as mutton and lamb all exceed the much desired tenderloin steak. According to Langworthy, expert in charge of nutrition investigations of the U. S. Department of Agriculture, "for all practical, every day purposes it may be considered that the protein obtained from a given weight of meat differs very little either with the kind of meat or the cut."—*Weekly Bull. Dept. of Health,* Newark, N. J.

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SATURDAY, MARCH 3, 1917

THE NATURAL IMPERFECTIONS OF THE BODY AND THE LIMITATIONS OF SCIENCE

It is not uncommon to find persons who are confronted with some problem pertaining to the needs of the body making references to "nature," or human instincts, or physiologic habits in explanation of the mysteries of our living organism. The author of one of the once familiar Bridgewater treatises, in which the discoveries of science were considered with reference to "natural theology," wisely remarked that "man not only sees means directed to certain ends; but ends accomplished by means, which he is totally unable to understand. He also sees, everywhere, things, the nature, and the end of which are utterly beyond his comprehension; and respecting which, he is obliged to content himself with simply inferring the existence of design." [1]

Are we bound, in contemplation of this situation, to conclude that whatever nature provides is perfect in construction and function? The human body needs not to be conceived as a haphazard product of chance evolution; on the other hand it is not necessarily a disparagement for even the most devout person to realize that "nature" is often far from perfect. Richard C. Cabot[2] has recently expressed this trenchantly by saying:

> We do not expect that our souls will be perfect. Our bodies are a part of nature and need not be assumed to be perfect. Presumably bodies and souls have a certain amount of freedom whereby they can go wrong. I see the body, like a great deal of the rest of nature, heroically trying to do right, often with extraordinary success, sometimes with pitiful failure; and I find this in no way irreconcilable with a belief in God. But I should find it impossible if I did not recognize that element of freedom to go wrong which I think is present in the whole of nature, and which I think makes nature sometimes beautiful, sometimes cruel, sometimes badly contrived, and sometimes marvelously ingenious.

Nor is instinct such an unerring guide that it can be trusted to direct us inevitably into the safest channel of physiologic behavior, as is often urged, particularly in respect to diet. What is interpreted as instinct is sometimes merely an expression of custom, habit or usage. We are told that a man is a creature of habits; he is quick to acquire new ones when his environment affords the opportunity, and he is prone to cling to the old ones when they minister to his sense of taste. Habits and cravings are far from being reliable indexes of physiologic requirements. Because man has maintained himself through the ages without precisely such scientific guidance as is available today it does not follow, as some are wont to state, that "scientific discoveries in the field of dietetics are academic rather than practical." Dr. Percy G. Stiles[3] has admirably spoken the words of wisdom:

> A judicial mind will mold to a middle course. There need be no discouragement because the requirements are so many; on the other hand, it is not the part of wisdom to discount all that has come from the chemist's patient labor. Even though mankind has survived, we can conceive that human standards may be bettered. If this is true of the race, it is much more conspicuously true of ill nourished individuals. We must consider in what respects the conditions of modern life have modified habits of diet, and whether, in any instances, the changes have been for the worse. The case is paralleled by that of the man who begins to consider the possibilities of disease. There are so many maladies to be thought of that the retention of health seems like keeping one's balance on a tight rope. Yet, if the preservation of health is really a tight rope performance, there is a factor which gives constant support, the remarkable stability of health in the normal subject—his constitution—which is like a gyroscope in its steadying effect. Here, too, it is rational not to ignore the dangers, but at the same time to recognize our relative security.

Let us break away from the assumption that there is anything incongruous in the fact that nature as expressed in the human organism is far from perfect; or that the incompleteness of the information of the present deprives it of any value for the improvement of a tolerably well conducted human mechanism. There is no absolute truth knowable to the human mind.

BETTER PUBLIC HEALTH ADMINISTRATION FOR SMALL COMMUNITIES

It is quite generally conceded that the public health is more carefully safeguarded in metropolitan districts than in small cities, villages and rural communities. As a result we frequently find a higher incidence of contagious diseases, and especially of typhoid fever, in the small villages and on the farm than in the congested districts of large cities. It has been shown also that the health of schoolchildren in cities as a rule is better than that of the children in rural districts. In most rural districts and small cities and villages little or no provision is made for public health work, whereas in most large cities fairly adequate annual appropriations are made for this purpose. Many dwellers in small cities and villages are beginning to realize the failures in this direction. The chief difficulty heretofore has been to find a way to finance an efficient health department for such communities. It is evident that a city of from 2,000 to 3,000 inhabitants hardly would see its way clear to hire a full-time health officer, a school nurse, and a dairy and milk inspector. A small community could hardly make use of all the time of a health officer and school nurse, and hence there would seem to be needless extravagance. This difficulty has recently been overcome by two successful experiments in cooperation of neighboring small cities (at Wellesley, Framingham, Needham and Melrose, Mass., and LaSalle, Peru and Oglesby, Ill.,) whereby it is made possible jointly to support a full-time health officer and assistants and to make proper use of their whole time.

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[1] Prout, W.: Chemistry, Meteorology, and the Function of Digestion, 1834, p. 24.

[2] Cabot, R. C.: A Layman's Handbook of Medicine, 1916, p. 1.

[3] Stiles, P. G.: An Adequate Diet, Harvard University Press, 1916.

The second annual report of the Hygienic Institute, the Department of Health for LaSalle, Peru and Oglesby, Ill., which has just appeared, shows what can be done by cooperative effort. Prior to the establishment of the cooperative health department, these three cities had no more in the way of machinery for proper health administration than most other cities ranging in population from 5,000 to 12,000 inhabitants. Each had a part-time health officer, two of whom received $25 a month and one $35. With such meager salaries not much service could be expected, and no attention was paid to milk and dairy inspection, medical inspection of schoolchildren, epidemiologic investigation or collection of vital statistics. Epidemics of smallpox, diphtheria and scarlet fever were of frequent occurrence, and in many instances the patients were not isolated, but could be seen walking the streets if not too ill to be confined to their beds. Diphtheria patients were practically always released as soon as the membrane disappeared, often in less than one week from the time of onset, and scarlet fever patients were quarantined only from two to three weeks, according to the severity of the case. With the advent of the cooperative health department, these conditions were radically changed. Diphtheria patients are now quarantined until two negative cultures from the throat and nose are obtained on two consecutive days, and scarlet fever patients are quarantined for a minimum of five weeks. A milk inspection ordinance was passed and dairies and milk supplies are being systematically inspected and scored. Nearly all of the milk is now delivered in steam sterilized bottles and over half of it is pasteurized, whereas prior to the establishment of the cooperative health department most of the milk was dipped from cans on wagons and was not pasteurized. All dairy cows have been tuberculin-tested, and all reactors have been disposed of from those herds whose yield is not pasteurized. All grocery stores, meat markets and restaurants are being inspected and scored, and a vigorous campaign has been instituted against the insanitary outdoor privy. A medical school inspector and two school nurses have been employed, and close watch is kept over the schoolchildren lest any may come to school while suffering from a contagious malady. Physical examinations are made of all schoolchildren both in the parochial and the public schools once every two years, and all defects found are recorded on a proper card. All serious defects which might be a handicap to the child are reported to the parents with the suggestion that the child be taken to the family physician or dentist for proper treatment. All cases are followed up by the school nurses, and in many instances in which the parents are unable to provide proper treatment, free treatment has been obtained through charity. A free dental clinic has been established at which all schoolchildren whose parents cannot afford to pay for the services of a dentist receive dental care free of charge. An infant welfare nurse devotes all of her time to the care of infants and of mothers and prospective mothers, and one nurse devotes half her time to antituberculosis work.

The results of these measures are just beginning to be noticeable. During the first year there were forty-seven deaths from diphtheria and scarlet fever, whereas during the second year there were only sixteen deaths from these two diseases. During the first nine months of the third year, up to Feb. 1, 1917, there have been but nine deaths from diphtheria and scarlet fever. The total death rate for the entire district was 15 per thousand during the year ending April 30, 1915, and 13.9 per thousand during the year ending April 30, 1916.

The total expense of the department, which serves approximately 30,000 people, has been $16,350 a year — certainly a profitable investment.

THE VENEREAL DISEASE PROBLEM—V

The Problem in Germany

Interest in the problems of the venereal diseases in Germany has been stimulated by the war, and efforts to control these diseases have redoubled. Venereal diseases among soldiers have increased greatly since the war began, and there has been the usual necessity of war time of combating in every way possible the great amount of disability among soldiers which the venereal diseases cause. The increased efforts for the control of the diseases have been extended not only to the part of the population which is in military service, but also to the civilians both in the military districts and elsewhere. The German efforts have taken two directions: first, the Continental course of regulating prostitution and rendering it as little dangerous as possible, and, second, efforts to combat the venereal diseases directly.

In military districts the most stringent regulation of prostitution has been effected, and outside of the military districts measures for the control of prostitution have been more rigorously enforced. Among German authorities, such as Neisser and Blaschko, there has been marked difference of opinion as to the sanitary value of regulation and examination of prostitutes. These measures are admitted by their advocates to be of only relatively small usefulness — certainly not of sufficient value to rekindle any hope of great benefits from them. German experts give the regulation of prostitution an entirely minor — if not, indeed, a negligible place — among the measures for fighting the venereal diseases.

In Germany, as elsewhere, great stress is being placed on diagnosis and treatment for combating these diseases. The insurance companies, under which so large a proportion of Germany's industrial population are cared for, are furnishing general facilities for treatment of these diseases along the same lines that are being followed elsewhere. Government measures for providing universal opportunities are in process of establishment. These provisions look to the universal care of the venereal diseases — by the state without cost for the poor, or by insurance companies, or at the expense of the individual in case of the prosperous. The general plans are similar to those which have been followed in England.[1] It is recognized that the weak point in this plan of treatment outside of the armies in Germany is the lack of authority to compel patients to continue treatment until they are freed from infectious dangers to others.

The recommendations for combating venereal diseases of a committee appointed to study this question by the Medical Association of Munich were recently reviewed in The Journal.[2] This committee presented a report which proposes to remedy the failure of patients to pursue treatment by requiring compulsory treatment as long as there is need for it. The recommendations of the Munich committee closely conform to the regulations which have recently been put in force in Western Australia. They recommend compulsory treatment along the lines of the Australian act.[3] Patients must seek treatment immediately on the appearance of venereal disease. Suspects may be examined by boards of health and compelled to take treatment. Checks are provided so that patients who fail voluntarily to continue treatment will be compelled to do so, and, as in the Australian act, heavy penalties are provided for the failure of patients or physicians to live up to their responsibility under the plan. The recommendations of the Munich committee go still farther, and urge stringent measures for complete notification of the venereal diseases; but they recommend that the records of such notifications be provided with all possible safeguards of secrecy. The recommendations of this committee go much farther than the general sentiment of the German profession. German medical authorities are agreed on the value of providing opportunities for treatment, and appreciate the need for measures to compel continuance of treatment; but apparently there is wide difference of opinion as to the desirability and practicability of notification of the venereal diseases.

The German efforts differ from others we have considered in placing important emphasis on the value as a sanitary measure of the personal prophylaxis of syphilis. Every effort is made to see that personal prophylaxis is carried out in the armies, and it is also being utilized among the civilian population. Where previously the condom was under legal ban as a means of preventing conception, its use to prevent venereal infection is widely and frankly advocated. Calomel ointment and other medicinal preparations for preventing infection are being distributed to soldiers and the public, and leaflets are being furnished which describe the methods of use of these devices. Neisser took the position before the Deutsche Gesellschaft für Bekämpfung der Geschlechtskrankheiten at its meeting in 1915 that measures of personal prophylaxis were of essential importance in the fight against the venereal diseases.

Much anxiety is being shown in Germany concerning the danger of the spread of the venereal diseases by soldiers after their discharge, and vigorous methods are proposed for combating this danger. Neisser and others have urged that every soldier, officers included, should at the end of the war be given a Wassermann test, and an equally comprehensive plan is suggested for detecting gonorrhea among soldiers before their discharge. Blaschko's proposals, though less extreme, represent the last degree of radicalism when compared with anything of this sort that has ever been done before. He proposes, before discharge, examination of men who have suffered during enlistment from venereal diseases; retention under military control of men with active cases until a cure is effected; transference to the insurance companies for observation, and, if necessity should arise, for treatment, of men who have had venereal diseases during the war, but in whom the disease is no longer active. Many have urged the continuance of the severe restrictive measures which have been instituted and proved valuable under military rule, such as severe penalties for intercourse when persons are infected with venereal disease, and the suppression of quackery. There is the same insistence on the continuance of the thorough military measures for diagnosis and treatment.

Germany has thus become active in efforts at controlling the venereal diseases. She is placing her reliance chiefly on the efficacy of universal provisions for diagnosis and treatment, but is going farther than Anglo-Saxon countries in promoting measures of personal prophylaxis. Drastic measures, which pay no attention to the inclination of the individual, have been carried out among soldiers and in military districts, and there is a call for extension of such measures to the civilian population after the war; but there is evidently difference of opinion among German authorities as to whether such measures will be practicable even among the disciplined citizens of Germany after the stress of war has passed.

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[1] The Venereal Disease Problem, III, The English Venereal Disease Act, editorial, The Journal A. M. A., Feb. 17, 1917, p. 550.

[2] Combating Venereal Diseases, Social Medicine, Medical Economics and Miscellany, The Journal A. M. A., Jan. 27, 1917, p. 306.

[3] The Venereal Disease Problem, IV, Western Australia's Effort to Control the Venereal Diseases, editorial, The Journal A. M. A., Feb. 24, 1917, p. 639.

THE POLLUTION OF STREAMS AND ITS INTERSTATE CONTROL

The obvious difficulties which stand in the way of preventing excessive stream pollution in all thickly settled parts of the world are in some respects peculiarly great in the United States. The volume of water in the large rivers, the rapid growth of population in certain centers, and the extension of water supply and sewerage facilities are factors which explain in part the situation now facing us. For a time the size of American streams made such pollution as existed a matter of apparent insignificance except so far as water supply was concerned. But the amazingly rapid growth of population and manufacturing, combined with the popularity of the American bath room and water closet, has brought into existence an enormous quantity of putrescible fluid that is most easily got rid of by discharge into the nearest body of water, lake, river or sea.

One result of the natural attempt to dispose of sewage by dilution has been the overloading of many streams, large and small. The suddenness with which this has occurred and the glaring evils which have been produced have led almost to a panic in some quarters. It has even been demanded that all sewage be kept out of all water courses or, if admitted, that it be so purified as to be no worse in quality than the water with which it mingles. Extreme action of this sort would be difficult on economic and other grounds, and experienced students of stream pollution are a unit in recognizing the impossibility of restoring our rivers to a state of pristine purity. Even if all practicable measures of protection are put in force, the streams in populous regions can never be regarded as fit sources of water supply without purification.

On the other hand, stream pollution cannot be allowed to proceed unchecked. Not only is the conservation of our natural water courses in an attractive condition highly desirable from the standpoint of recreation and esthetic gratification, but unless pollution is restricted within certain definite limits many streams will become unavailable as sources of water supply. No water purification plant can be expected to function properly if an undue burden is placed on it.

While competent authorities have long recognized the necessity for control of stream pollution, a serious obstacle to such control has existed in the lack of cooperation between the several states and the absence of centralized power to enforce cooperation. A badly polluted stream crossing the boundary from one state into another may reach the citizens of the latter state robbed of its dissolved oxygen and loaded with offensive and even dangerous materials. If the citizens of the state invaded by the polluted river can draw on no other readily available source of water supply, to say nothing of their other interests in the stream, they plainly have a cause of grievance. By no direct act of their own, or of their state or national government, they are deprived of a certain right in the utilization of their natural surroundings.

The methods most suitable for the proper regulation of such interstate relations are not to be settled offhand, but the problem certainly calls for prompt and serious consideration. If nothing is done, if the whole situation is allowed to drift, parts of the country in the near future will suffer acutely, and in the long run remedial measures will prove difficult and costly. Phelps[1] has called attention to the significance possessed by the report of the International Joint Commission on the Pollution of Boundary Waters in pointing a way to the solution of the problem of stream pollution within the United States. It might have been anticipated that the regulation of pollution in the international boundary waters in which both the United States and the Canadian governments are interested would prove especially difficult, but this is apparently not to be the case. In the effort to discover what remedies for preventing injury to health and property are "possible and advisable," the international commission has enlisted eminent expert advice, and under careful supervision has carried on an extensive series of bacterial examinations. It is interesting to note that one outcome of the work undertaken by the commission has been the fixing of a standard of permissible pollution in the international waters. The limit of bacterial contamination is considered to be exceeded if the annual average number of *B. coli* is higher than about 500 per hundred cubic centimeters, or, expressed in other terms, "the limit of permissible bacterial pollution shall be decreed to have been exceeded when the effective dilution . . . shall be less than 4 cubic feet per second per capita of contributing population, based upon mean river stages during the season May to September, inclusive."

The report is important, not merely for its specific practical recommendations, but also, as Phelps points out, for the suggestions which it offers as to the way to conserve and harmonize the interests of the several states in the interstate streams which traverse their territory. Many streams are used and will continue to be used for the diverse purposes of water disposal and water supply. It ought to be possible for the states of the union to cooperate with the national government to obtain information about the numerous, involved and often technically obscure questions, that justice may be done all interests, and especially that the public health shall receive no injury. Purely legal procedures based sometimes on technicalities and often on insufficient knowledge seem hardly adequate. Steps should be taken at once looking toward some sort of coordinated scientific control of stream pollution. In some instances groups of states might conceivably act together, but probably a national commission or some other central federal body, such as the United States Public Health Service, would be more effective. Prompt action is important.

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[1] Phelps, E. B.: Control of Pollution of Streams, Pub. Health Rep., 1917, **32**, 167.

Current Comment

IMPLIED WARRANTY IN THE SALE OF FOOD: A ZOOLOGICAL VIEW OF "DISEASED" MEATS

Elsewhere in this issue appears an article by Stiles[1] in which he discusses, from a zoological point of view, certain phases of the "implied warranty" in the sale of meat. The views advanced are not altogether in harmony with certain legal decisions which have been made by the courts of this country, but these views were not before the courts which made the decisions. If courts generally admit the validity of the views expressed by Professor Stiles, a number of medicolegal precedents, as applied to meats, will be overturned. In brief, Stiles maintains that the terms "diseased meat" and "meat from diseased animals" in the food laws should be interpreted as meaning "likely to produce disease in man," rather than in the popular sense of the terms. Proceeding further, he submits that the "implied warranty" assumed by the vendor is predicated on an implied obligation on the part of the purchaser that the food will be "properly prepared" for reception into the human stomach, and if the purchaser fails in this the vendor cannot be held responsible. Next, the claims that since no method of inspection is known on the basis of which a butcher can say that pork is free from trichinae, fresh, unsafeguarded pork is not a proper article of food unless it is properly cooked, and hence the obligation of preventing trichinosis rests on the purchaser, not on the vendor; if, however, the vendor is assumed to guarantee that pork does not contain trichinae, this assumption implies that the vendor is simply making a bet to this effect, and therefore he is not assuming a legal debt. The United States government has repeatedly issued warnings to the public that pork should be properly cooked in order to safeguard the consumer against trichinosis, but in four or five states in which cases have come to trial, the vendors have lost in the courts. Quite recently several cases have been tried in which the views advanced by Stiles were submitted in the testimony. In one case, part of his testimony was excluded by the trial judge, and the jury decided against the vendor; in other cases in which the judges admitted Stiles' testimony, the juries decided in favor of the vendor. The medicolegal status of trichinosis in this country is now in the making, and it will be important as well as interesting to see the position courts take in regard to the line of testimony recently advanced. Should the courts generally hold in favor of the vendor, it would mean shifting a part of the burden of governmental responsibility for the health of the individual on himself in a greater measure than has heretofore been proposed. Popular education and the facilities of distribution of dependable information relative to personal and public hygiene would have to be further extended to take the place of governmental protection at the source. To steer between the possible dangers of actually harmful food on the one hand and, on the other, the hardships which may result from excluding available foodstuffs which, if properly treated, would be unquestionably wholesome, will call for intelligent consideration rather than hasty generalities, either legal or academic. Without cooperation, the government cannot be expected to guarantee life, health and happiness; with cooperation, it may help the individual intelligently to help himself.

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[1] Stiles, C. W.: Trichinae in Pork and Nematodes in Butterfish, The Journal A. M. A., this issue, p. 685.

LIPEMIA IN DIABETES

Bloor's valuable contribution to our knowledge of blood lipoids ("fats") in diabetes and their probable significance, to which detailed reference has been made in The Journal,[1] has an unanticipated importance for the management of diabetes, and deserves careful study from this point of view. He found that in carefully treated cases, particularly when complete or partial fasting was employed, lipemia in the sense of a milky or cloudy serum never was present. The origin of lipemia, when this occurs, clearly appears to be due to the presence of fat in the diet. Bloor accordingly has this to say regarding the application of his findings in the dietotherapy of diabetes:[2] The dietary treatment of diabetes was until recently to withhold carbohydrate and make up the caloric deficiency with protein and fat. The resulting overwork of the fat-burning mechanism would be expected to cause, in some cases at least, a partial failure of the mechanism with an accumulation of fat and its metabolites in the blood. A contributing factor is the lack of available carbohydrate, without which complete burning of the fatty acids does not seem to be possible. The high lipoid values when there is no lipemia may probably be regarded as an earlier manifestation of the same partial failure of the fat metabolism. The mechanism is still working in an approximately normal manner, since the relations between the lipoids are normal, but the accumulation of the metabolites has begun. In the actual lipemia the mechanism has fallen behind with its work, and the raw materials have accumulated until they can no longer be carried in solution in the plasma. Even at this time not all parts of the mechanism have failed; this is evident from the increase of cholesterol, which keeps pace with the fat. That part of the process, however, which has to do with the formation of lecithin from fat has apparently failed, and possibly this failure may be the underlying cause of the lipemia. Under former conditions of treatment, the chances of recovery of a diabetic with lipemia were generally regarded as poor, as might be expected if the foregoing explanation of the cause of lipemia were true, since the continued diet of fat involved the overloading of an already failing mechanism. No better claims are needed to indicate the importance of a modification of treatment to include the control of fat as well as the carbohydrate in the diet. Considerable attention has recently been given to the plan of fasting the patient until the urine is sugar-free, and then building up a tolerance for carbohydrate and protein.[3] An added novelty in severe, long standing and complicated cases now involves not beginning the fast until after a preliminary dietary treatment consisting in first removing the fat from the diet, then reducing the protein, and leaving the exclusion of the carbohydrate as the final step in the procedure. Fat is not added to the diet subsequently until considerable protein tolerance is established. The value of these innovations based on scientific experience remains to be ascertained in clinical practice.

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[1] Blood Lipoids and Diabetes, editorial, The Journal A. M. A., Nov. 25, 1916, p. 1602.

[2] Bloor, W. R.: The Lipoids ("Fat") of the Blood in Diabetes, Jour. Biol. Chem., 1916, **26**, 428.

THE PHARMACOLOGY AND THERAPY OF THE URETER

The contributions which modern experimental pharmacology can make to practical therapeutics, either by direct transfer of its results or by correction of irrational procedures of treatment, are illustrated by some of D. I. Macht's[4] recent studies on the pharmacology of the ureter. He found that the opium alkaloids in respect to their action on the ureter, in vitro and in corpore, may be divided into two groups, according to their chemical structure — the pyridin-phenanthrene group, of which morphin and codein are the chief representatives, and the benzyl-isoquinolin group, of which the most important members are papaverin and narcotin. According to Macht, morphin and its allied alkaloids increase the contractions and produce a greater tonicity of the ureter, whereas papaverin and other members of its group produce a slowing or total inhibition of the contractions and relaxation of the tonus. In opium or the total alkaloids of opium represented by pantopon (pantopium hydrochloricum), the effect of the benzyl-isoquinolin group preponderates. These statements have been verified for the human ureter by experiments on excised parts obtained after surgical operations in cases of nephrectomy. The pharmacologic findings at once question the wisdom of the conventional administration of morphin to relieve the excruciating pains of renal or ureteral colic. Clinical experience teaches that the ordinary small doses of this drug are almost always ineffectual, and even large ones may be of little avail. Macht's experimental observations on the opium alkaloids now throw light on this subject. Ureteral colic is due to spasmodic contractions of the ureter caused by the irritating calculus. As morphin increases the spasm it is likely to aggravate the condition. The only relief it can be expected to give is through the narcotic action of larger doses centrally on the brain. Chloroform produces relief because it not only quiets the brain but also relaxes the spasm of the ureter. The same is true of the alkaloid mixture in opium and of papaverin — hence the use of opium or papaverin seems more rational than that of morphin in ureteral colic. Furthermore, the slighter toxicity of papaverin, its tonus lowering power, and its local analgesic properties suggest its local application in spasmodic conditions of the ureter. This can be accomplished with a catheter through the cystoscope. A limited experience on man encourages the resort to the plan outlined as a possible remedial innovation of decided merit.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Clinic Opened.—February 16, the San Diego Diagnostic Group Clinic of the John P. Scripps Memorial Foundation invited the medical profession of San Diego and Imperial counties to the opening of the clinic in its new building.

Stanford University Popular Lectures.—The lectures for March in the courses of popular lectures to be given in Lane Hall, San Francisco, under the auspices of the Stanford University Medical School, are as follows:

March 9: "The Problem of Race and Race Prejudice," Prof. Arthur W. Meyer, Professor of Anatomy, Stanford Medical School.

March 23: "Prevention of Blindness" (Illustrated), Dr. Hans Barkan, Clinical Instructor in Ophthalmology, Stanford Medical School.

Personal.—Dr. Sherman T. White, Redding, has been appointed county physician of Shasta County.——Dr. Frederick P. Gay, Berkeley, has been appointed a member of the hygiene committee of the National Research Council.——Dr. William C. Voorsanger has been elected secretary, and Dr. Attilio H. Giannini has been reappointed executive secretary of the San Francisco Association for the Study and Prevention of Tuberculosis.——Dr. Daniel W. Zirker, Merced, has been appointed county physician of Merced County.——Dr. Timothy Lyman has been appointed assistant superintendent of the San Francisco City and County Hospital, succeeding Dr. Harold D. Barnard (resigned).

GEORGIA

Hospital Notes.—The Griffin Hospital is to be managed hereafter by a board of three, one to be selected by the commissioner of Spaulding County, one by the city of Griffin, these two to select a third member of the board.

New Societies Organized.—Physicians of Terrill County met at Dawson, January 30, and reorganized the Terrill County Medical Society, electing Dr. Owen T. Kenyon, Dawson, president, and Claud G. Hooten, Bronwood, secretary-treasurer.——The Second District Medical Association was recently organized at Thomasville, and Dr. Everett Daniel, Moultrie, was elected president; Dr. William J. Jennings, Thomasville, vice president, and Dr. Erle T. Newsom, Camilla, secretary-treasurer.

Personal.—Dr. Charlton C. Whittle has been elected district commissioner of health for Irwin and Tift counties in place of Dr. Arthur G. Fort, Atlanta, resigned.——Dr. Cyrus W. Strickler has been elected president of the medical board of Grady Hospital, Atlanta; Dr. Frank K. Boland, vice president, and Dr. John W. Funke, secretary.——Dr. William N. Adkins has resigned as medical director of the Atlanta public schools.——Dr. George L. Harman has been appointed a member of the board of managers of the Savannah Hospital.——Dr. F. H. Letson has been elected mayor of Grantville.

State Sanatorium Trustees Appointed.—The governor announces that the following physicians have been appointed on the board of trustees of the Georgia Tuberculosis Sanatorium, Alto, for terms of four years, beginning January 29: Drs. Craig Barrow, Savannah; William H. Hendricks, Tifton; Charles H. Richardson, Oglethorp; Charles A. Dexter, Columbus; Thomas R. Whitley, Douglasville; Mallie A. Clark, Macon; Howard E. Felton, Cartersville; Isham H. Goss, Athens; William I. Hailey, Hartwell; Jefferson Davis, Toccoa; W. D. Jennings, Jr., Augusta; David E. McMaster, Tenille; J. P. Prescott, Lake Park; Gordon Burns, Douglas, and Jackson M. Munez, Swainsboro.

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[3] Compare Joslin, E. P.: Am. Jour. Med. Sc., 1915, **150**, 485.

[4] On the Pharmacology of the Ureter, III, The Action of the Opium Alkaloids, Jour. Pharmacol. and Exper. Therap., 1916, **9**, 197.

ILLINOIS

Physicians Swindled.—Indictments were returned, February 21, against six men in DuPage County who are charged with having obtained more than $10,000 from fifty physicians on the representation that if the latter purchased stock in an insurance company they would be made medical examiners of the company.

Personal.—Dr. Joseph E. Huber, Peoria, who has been suffering from cholelithiasis, and under treatment at the Wesley Hospital, Chicago, has returned and will be operated on at Proctor Hospital, in a few days.——Dr. Frederick W. Werner, Joliet, is at Pass-a-Grille, Fla., recuperating after a serious surgical operation performed at Lakeside Hospital, Cleveland, recently.

Paralysis Clinic Opened.—Children who have suffered from infantile paralysis and are crippled were given free treatment at St. John's Hospital, February 20 to 22, at a clinic held under the auspices of the state board of health. This conference was open to physicians and parents of children in the counties of Sangamon, Schuyler, Mason, Cass, Menard, Christian, Morgan, Scott, Green, Montgomery, Macoupin and Logan. A public meeting was held in the Masonic Temple, Springfield, February 20, at which Governor Lowden presided, and an illustrated lecture was given by Dr. C. W. East. Provision has been made for the reception and free care of visiting patients at St. John's Hospital.

Chicago

Red Cross Unit Offered.—Announcement was made, February 24, that the Base Hospital Unit No. 11, of the American Red Cross, was complete. The unit is under the direction of Drs. Albert J. Ochsner and Nelson M. Percy. Drs. C. Hugh McKenna, Edward H. Ochsner, Stephen R. Pietrowicz, Arthur A. Small, David J. Davis and Oscar E. Nadeau are the assistant directors. Dr. Philip Schuyler Doan is adjutant, Dr. Austin A. Hayden, quartermaster, and Frank H. Duebler, registrar. At the meeting it was announced by Dr. John M. Dodson that Rush Medical College has decided to give credits to students for work done by them in training with hospital companies and that credits would also be given junior students of the medical school who take part in field hospital work in time of war.

INDIANA

Tuberculosis Cottage Ready.—The Burr Cottage, Kendallville, which was purchased from the proceeds of the sale of Red Cross seals in Noble County, is ready to receive patients.

Personal.—Dr. Alfred Henry, Indianapolis, has been reelected president of the Marion County Society for the Prevention of Tuberculosis.——Dr. Arthur E. Guedel, Indianapolis, dislocated his right knee recently while cranking his automobile.

IOWA

Hospital Opened.—The new St. Joseph's Hospital, New Hampton, was opened, February 12. The building is three stories in height, and of fireproof construction.

Personal.—Dr. George G. Baker, Spencer, was thrown from his buggy and painfully injured in a runaway accident, February 11.——Dr. Irvin N. Paul, Perry, sustained painful injuries by the overturning of his automobile near Minburn recently.——Dr. Lena A. Beach, formerly of the staff of the Cherokee State Hospital, has been appointed superintendent of the Women's Reformatory, Rockwell City.——Dr. Thomas F. Duhigg, Des Moines, formerly in command of a field hospital, Iowa National Guard, has been commissioned lieutenant in the Medical Reserve Corps of the United States Navy.

KANSAS

Offices for Physicians.—The Salina Clinic, an association of seven physicians, has purchased a corner lot on Iron Avenue and Eighth Street, Salina, on which it will erect a three-story building for the use of the clinic.

Physician Sentenced to Penitentiary.—Dr. Clement L. Katz, a physician of Wichita, was sentenced to two and one-half years in the penitentiary. He was found guilty on eight counts of a charge of selling habit-forming drugs in violation of the Harrison Narcotic Law.

Personal.—Dr. C. Curtis Allen, Cottonwood Falls, recently sailed for Europe to work in hospitals on the western front. ——Dr. Charles F. Menninger, Topeka, has been appointed a member of the State Board of Medical Registration and Examination, to fill the vacancy caused by the death of Dr. Lewis A. Ryder.

Society Activities.—At the meeting, March 5, of the Shawnee County Medical Society, at Topeka, Dr. Philip H. Kreuscher, Chicago, will read a paper on "Metastatic Joint Infection," with lantern slide demonstration.——At the February meeting Dr. William W. Duke, Kansas City, Mo., read a paper on "Dental Sepsis and Its Relation to Systemic Disease."

KENTUCKY

Personal.—Dr. Henry Enos Tuley, Louisville, who has been ill and under treatment in Chicago, is making satisfactory progress toward recovery at Pass-a-Grille, Fla.——Dr. Charles E. Gaupin has been appointed head of the outpatient department of the Louisville City Hospital.——Dr. Charles A. Vance has been selected as a member of the board of health of Lexington, succeeding Dr. Walter O. Bullock (resigned). ——Dr. Philip E. Blackerby, Erlanger, has been appointed registrar of the Kentucky State Board of Health. Dr. John G. South, Frankfort, has been reelected president of the board.

MAINE

Personal.—Major John G. Town, Waterville, Maine, M. C., has been designated chief surgeon on the staff of the commander in chief, succeeding Major Bial F. Bradbury, National Soldiers Home (resigned).——Dr. LeRoi S. Syphers, South Portland, has accepted the position of physician to Chebeague Island, succeeding Dr. Leon L. Hale, who has resided there for thirty years. Dr. Syphers will practice also on Cliff and Littlejohn islands.

MARYLAND

Personal.—Dr. Hugh Hampton Young, director of the James Buchanan Brady Institute of the Johns Hopkins Hospital, has left for a six weeks' trip to California.——Dr. John C. Hemmeter, director of the laboratory of physiology of the University of Maryland, delivered the annual address before the Tristate Medical Association, which opened at Durham, N. C., February 22.——Dr. Clarence J. Erkenbrack, Baltimore, sustained a fracture of the clavicle and a dislocation of the shoulder in a collision between the automobile in which he was riding and a street car, February 15.——Dr. Howard A. Kelly, Baltimore, who has been ill with pneumonia in Jacksonville, Fla., is reported to be convalescent.

Joint Meeting of Medical Societies.—A joint meeting of the Baltimore County Medical Association with the Baltimore City and the Howard County medical societies was held, February 21, when the topic under discussion was the mental defective. The associations passed a resolution strongly indorsing the governor's purpose to appoint a commission to study the problem of the state's mental defectives. To further the work of this commission, which is expected to be named within a week or two, the association will hold meetings, March 13, at the Medical Library. These will include a special meeting in the afternoon for schoolteachers and at night for the medical profession and general public. Mr. Joseph P. Byers, executive secretary of the National Committee for Provision for the Feeble-Minded, made the principal address of the afternoon.

MASSACHUSETTS

Field Ambulance for France.—The Harvard class of 1901 has presented an ambulance for the use of the American Ambulance service in France and will in addition provide for its maintenance for a year.

New Infirmary for Smith College.—Smith College, Northampton, will erect a new infirmary this summer to cost $75,000. The building is to be the gift of the alumni and will accommodate fifty patients. Provisions will be made for the isolation of students suffering from communicable diseases.

Harvard Medical Lectures.—The free public lectures given under the auspices of the faculty of medicine of Harvard University, at the Medical School, Longwood Avenue, Boston, at 4 o'clock on Sunday afternoons during March will be as follows:

March 4: "Diseases of the Teeth and the Use of the X-Ray in Their Diagnosis and Treatment," Dr. L. M. S. Miner.

March 11: "Social Service in Medicine," Miss Ida M. Cannon.

March 18: "Tuberculosis; Its Cause and Prevention," Dr. Cleaveland Floyd.

March 25: "Methods of Medical Progress," Dr. W. B. Cannon.

MICHIGAN

Medical Library for Detroit.—Plans for a municipal medical library were launched, February 14, at a dinner given by Dr. Arthur D. Holmes to the board of trustees of the library committee of the Wayne County Medical Society. It is proposed to create a memorial fund, the income from which can be used for the maintenance of the library.

College Merger Seems Assured.—A report states that on February 23 the regents of the University of Michigan adopted a resolution confirming the union with the University of the Detroit College of Medicine and Surgery. The terms of the merger are that the latter shall turn over its charter, real estate, equipment and hospital privileges to the university and that a fund of a million dollars will be raised for the development by the university of a graduate school of medicine in Detroit.

Personal.—Dr. Walter C. Walker, Highland Park, was thrown from his automobile and seriously injured in a collision with a trolley car, February 2.——Dr. Guy L. Kiefer, Detroit, has been appointed a member of the state board of health, to succeed Dr. John H. Kellogg, Battle Creek, and Dr. William F. English, Saginaw, to succeed Dr. Henry S. Bartholomew, Lansing.——Dr. George L. LeFevre has been elected vice president of the Union National Bank, Muskegon.——Dr. Benjamin F. Black has been elected president of the Holton State Bank.——At a meeting of the stockholders of the Ovid State Savings Bank, Dr. James McGillicuddy was elected vice president.

MINNESOTA

Paralysis and Smallpox.—The first case of infantile paralysis for the season was reported to the health department of St. Paul, February 23.

Sanatoriums Opened.—The tuberculosis sanatorium for the counties of Renville, Chippewa, Lac qui Parle and Yellow Medicine, located southeast of Granite, was opened, March 1. ——Buena Vista Sanatorium, the new sanatorium for Wabasha County, erected at a cost of $45,000, was opened February 1.

Personal.—Dr. Christian S. Reimestadt resigned as health officer of Brainerd, February 13, and was immediately reappointed health officer and the appointment confirmed.——Dr. Julius P. Sedgwick, Minneapolis, has returned after a trip to the West Indies and the Canal Zone.——Dr. Justus O'Hage, Jr., St. Paul, has returned after service with the German Red Cross, on the eastern war front.——Dr. Harry B. Ewens, Virginia, has left for Toronto, for duty with the Canadian Army Medical Corps.

MONTANA

New Hospitals.—The Attix Clinic Hospital, Lewistown, built at a cost of $75,000, will be opened, April 1.——The new building of the Deaconess Hospital, recently erected at Great Falls, at a cost of $125,000, is a four-story, fireproof building, 139 by 39 feet, and contains eighty private rooms.

NEBRASKA

Health Conference.—The annual conference of local and state health officers was held in the Garden Room of the Lincoln Hotel, February 21 and 22. The governor delivered the address of welcome, and response was made by Dr. Robert McConaughy, York.

To Change Laboratory Control.—A bill has been introduced in the state legislature removing the present state bacteriologic laboratory from the control of the state board of health, and placing it under the charge of the University College of Medicine, Omaha. The bill also fixes the maximum salary of the state bacteriologist at $2,400 a year.

Personal.—Dr. William T. Eikner, Sidney, has been appointed county physician of Cheyenne County.——Dr. Joseph V. Hinchman, Blair, has been appointed physician to the Grand Island Soldier's Home, succeeding Dr. William R. Waggener, Humboldt (resigned).——Dr. M. Alace M. Kani, Omaha, suffered a fracture of the skull as a result of a collision between automobiles, February 3, and is in a serious condition.

NEVADA

Payment to Medical Board Disapproved.—The ways and means committee of the state legislature, February 13, made an unfavorable report on assembly bill No. 64, which provides for the payment of $20 a day to each member of the State Board of Medical Examiners while the board is in session.

NEW YORK

Transfer of Quarantine Station.—A concurrent resolution was adopted by the legislature, February 15, recommending the transfer from the state to the federal government of the New York Quarantine Station and calling on members of Congress to pass a measure appropriating $1,395,275 by July 1 to reimburse the state to take over the plant now utilized by the health officer of the port.

Public Health Association Officers Resign.—At a meeting of the executive committee of the Rochester Public Health Association, February 10, the resignations of Medical Director Dr. Edward G. Whipple and of the secretary, Mr. Garret Smith, were placed in the hands of Dr. Henry T. Williams, president of the board. The reason for this action is said to be "in view of the long continued lack of harmony in the present board of directors."

New York City

Personal.—Dr. Emil Mayer has been appointed consulting laryngologist to Mount Sinai Hospital.——Dr. Thomas H. Curtin, Bronx, was knocked down by an automobile at One Hundred and Forty-Fifth Street and Broadway, sustaining a fracture of several ribs.——Dr. Mortimer W. Raynor has been appointed chief psychiatrist of the penal institutions of New York City.

Must Report Occupational Diseases.—The department of health calls the attention of physicians to the fact that in a number of instances they have failed to report cases of occupational disease caused by various chemicals to the department of health, as required by the sanitary code. Physicians and the superintendents and managers of institutions and hospitals are urged to cooperate with the department of health in making prompt report of such cases. Special postal cards for the reporting of occupational diseases are furnished by the Division of Industrial Hygiene of the Bureau of Preventable Diseases on request.

Labor Unions Will Cooperate in Health Work.—A special meeting was held in this city, February 18, for the purpose of discussing questions affecting the health of working people, at which delegates, elected by more than fifty unions affiliated with the Central Federated Union, organized themselves into a permanent labor sanitation committee. Plans are being formulated for the cooperation of this committee with the Health Department's Division of Industrial Hygiene. It is believed that the two forces working together may by educational and other efforts secure the adoption by employers and by employees of industrial methods that may have far reaching effects in diminishing the amount of sickness prevalent in industry.

Free Lectures on Disease Prevention.—During March, the course of free lectures given by the public health education committee of the Medical Society of the County of New York at the New York Academy of Medicine will be as follows:

SOME OF THE ESSENTIALS FOR THE CONTROL OF VENEREAL DISEASES

Tuesday, March 6, 8:15 p. m.
"The Responsibility of Society," Edward L. Keyes, Jr., M.D.,
"The Importance of Gonorrhea," Caroline Finley, M.D.
"Incidence of Syphilis on the Community," Victor Cox Pederson, M.D.

IMPORTANT FACTORS IN THE HEALTH OF WOMEN

Thursday, March 15, 3:30 p. m.
"Habit Posture in Relation to Pelvic Conditions," Eliza M. Mosher, M.D.
"Physical Conditions as Related to Life Insurance," Charles G. Merchant, M.D., Medical Director, Mutual Life Insurance Co.
"The Relation of the Internal Secretions to Gynecology," Lillian P. Farrar, M.D.

MODERN LIFE AS GOVERNED BY NERVES

Wednesday, March 21, 8:15 p. m.
Title to be announced, Frederick Tilney, M.D.
"Fad of Psychanalysis," Beatrice Hinkle, M.D.
"What Every Nervous Woman Should Know," Edward Livingston Hunt, M.D.

RECREATION AS AN AID TO HEALTH

Thursday, March 29, 3:30 p. m.

"Pageantry and Plays in Community Life," Mary Porter Beegle.

"Gymnastics and Dancing Indoors and Out," William Gilbert Anderson, Dr.P.H., M.D., Professor and Director, Yale University Gymnasium.

"Psychical Values of Recreation," Caroline Rickards, M.D.

PENNSYLVANIA

Personal.—Dr. John J. Sullivan, Scranton, suffered severe cuts of the leg in an automobile accident, February 18.——Dr. Edward Ryan, Wilkes-Barre, has returned after two years spent in medical relief work in Serbia.——Dr. William S. Long, Reading, has abandoned his intention of joining the American Physicians' Relief Expedition and serving in the German field hospitals.

To Equip a Base Hospital.—The Pennsylvania Division for National Preparedness on February 23 turned over to the American Red Cross $25,000 for the equipment of a base hospital to be known as Pennsylvania Base Hospital No. 10, Pennsylvania Women's Division for National Preparedness. This money, which was pledged last summer, was given as follows: $10,000 by Mr. E. T. Stotesbury, $10,000 by Cyrus H. K. Curtis and $5,000 by Mrs. George W. Childs Drexel.

Application of Battlefield Lessons.—Advance of surgical methods developed in the European battlefields and their application to the workers in industrial plants were outlined at the Fourth Convention of Industrial Physicians, held at Harrisburg, February 16, at which Dr. William O'Neal Sherman, chief surgeon of the Carnegie Steel Company, discussed "The Dawn of a New Surgical Era"; Major Robert U. Patterson, M. C., U. S. Army, and Dr. Joseph C. Bloodgood, Baltimore, spoke on "The National Standards for First Aid"; Dr. William Estes, South Bethlehem, and Dr. Charles A. E. Codman, Philadelphia, took up "The Relation of the Physician to the Compensation Law and Its Proposed Amendments"; Drs. Frederick L. Hoffman, Newark, N. J., and Alfred Stengel, Philadelphia, considered "Compensation for Industrial Diseases," and Drs. Edward Martin, Philadelphia, and John B. Lowman, Johnstown, discussed "The Treatment of Fractures of the Long Bones from the View Point of Function."

Philadelphia

Lecture Course for Women.—The lecture course for women offered by the Women's Medical College of Pennsylvania, Philadelphia, on "The Health Problems of Every-Day Life," will be as follows during March:

March 7: "Prenatal Care and the Newborn Baby," Dr. Alice Weld Tallant.

March 14: "The Care and Feeding of Children," Dr. Theodore Le Boutillier.

March 21: "The Care of the Eyes," Dr. Mary Buchanan.

March 28: "The Importance of the Common Cold," Dr. Margaret F. Butler.

Personal.—Dr. William G. MacCallum, professor of pathology in the College of Physicians and Surgeons, New York, delivered the seventeenth Rush Society Lecture at the College of Physicians, March 1, on "Prevalent Disease in the East Indies."——Dr. L. Webster Fox has been reelected president of the Pennsylvania Home Teaching Society and Free Circulating Library for the Blind.——Dr. Charles S. Potts has been elected neurologist to the German Hospital.——Dr. Horace Phillips has succeeded Dr. Albert C. Buckley, resigned, as visiting physician in the psychopathic ward of the Philadelphia General Hospital.——Dr. Henry B. Ingle has been elected a member of the board of trustees of the Charity Hospital.——Dr. Eugene Swayne has organized Field Hospital Company No. 3, N. G. Pa.——Dr. Francis C. Abbott has left Philadelphia for another term of service on the French war front.

UTAH

Personal.—Dr. George E. Hyde, Salt Lake City, has been reappointed superintendent of the State Mental Hospital, Provo.——Dr. John J. Galligan has succeeded Dr. Thomas J. Howells (resigned) as assistant health commissioner of Salt Lake City.

New Officers.—Utah County Medical Society: president, Dr. Ephraim G. Hughes, Provo; vice president, Dr. Philemon M. Kelly, American Fork, and secretary-treasurer, Dr. Walter T. Hasler, Provo.——Cache County Medical Society: president, Dr. Thomas B. Budge, Logan; vice president, Dr. Curtis Bland, Preston, and secretary-treasurer, Dr. Frank O. Reynolds, Logan.

Military Program for Medical Society.—At the February meeting of the Salt Lake County Medical Society, Dr. John F. Sharp, Salt Lake City, delivered an address on "The Work of the Medical Department in the Recent Concentration"; Dr. George F. Roberts, Salt Lake City, discussed "Field Hospitals and Ambulance Companies"; Dr. Willard Christopherson, Salt Lake City, spoke on "The Regimental Surgeon," and Dr. Andrew A. Anderson, Brigham, described the work of sanitary inspection.

Bill Regarding Health Department.—A bill was introduced by Representative Greenwood, February 7, creating a health department of the state, combining under one head the work of several individual departments now operated as separate divisions. The new department, in addition to sanitary activities, will embrace the work of the state dairy and food department, the state superintendent of weights and measures, state hotel inspector and the sanitary inspector of barber shops. The board is to be composed of six practicing physicians and one sanitary engineer, and will select from its membership a state health commissioner, who will hold office for four years.

WASHINGTON

Sanatorium Wing Assured.—At a meeting of the Spokane County Antituberculosis Society it was announced that the county commissioners were now ready to help the league erect the children's wing at the Edgecliff Sanatorium. The wing will cost about $10,000, and work will begin in the early spring.

Medical Board Election.—At the annual meeting of the Washington State Board of Medical Examination the following officers were reelected: Dr. Royal A. Gove, Tacoma, president; Dr. Daniel M. Stone, Seattle, vice president; Dr. Conrad N. Suttner, Walla Walla, secretary, and Herbert F. Morse, D.O., Wenatchee, treasurer.

Personal.—Dr. V. Sheldon Smith, Seattle, has sailed for North Borneo, on a mission for the British government.——Dr. J. S. P. Rich, Roy, has been appointed superintendent of the Pearce County Tuberculosis Sanatorium, succeeding Dr. Raymond Cary.——Dr. Edward J. Stubbs, Seattle, who has been on duty on the western war front for more than two years, has returned to the United States.——Dr. Elmer E. Heg, Tacoma, has been reelected president of the state board of health.

Physicians Win Suit.—The supreme court recently handed down a decision in the case of R. D. Smith versus J. P. Driscoll, Pasca, and Henry B. O'Brien, Pasca, affirming the judgment of the lower court in favor of the physicians. The complainant asked for damages of $5,000 on account of an alleged wrongful publication and disclosure of confidential information acquired by the physicians in their professional capacity, and made while testifying as witnesses in a case to recover fees for medical service rendered by them.

WEST VIRGINIA

Personal.—Dr. Edmond D. Wells has been appointed physician in charge of a hospital at Clifton Forge, Va.

Ohio County Medical Society Activities.—At the February meeting of the Ohio County Medical Society, at Wheeling, held in cooperation with the board of education, Dr. Erwin A. Peterson, director of medical inspection and physical education of Cleveland, spoke on "Physical Education."——At the meeting on February 9, the annual banquet was held, presided over by Gov. H. D. Hatfield. Dr. Charles H. Chetwood, New York, and Dr. John A. Bodine, New York, presented papers, illustrated by motion pictures.

CANADA

Hospital News.—The tuberculosis sanatorium at Kentville, N. S., is to be enlarged to provide additional accommodations for 100 returned soldiers.——An addition is to be made to the hospital at Ingersoll, Ont., to cost $10,000.——The Hotel Dieu Hospital, Windsor, Ont., is letting a contract for a new addition, to cost $40,000.——As more room is needed for returned convalescent soldiers in Montreal, one of the newest and biggest public schools in that city is being converted into the uses of a general hospital. Negotiations are proceeding for the transfer to the Canadian Hospitals Commission.

Personal.—Dr. Albert J. Fraleigh, Toronto, is spending the winter in California.——Col. Frederick W. Marlow, Toronto, who recently resigned from the position of A. D. M. S., Military District No. 2, will leave shortly for England.——Col. Herbert A. Bruce, Toronto, has gone to Washington, D. C., by permission of the Canadian Minister of Militia, at the request of Secretary of War Baker, to address a gathering of U. S. Army medical men as to the methods followed in Britain, France and Canada in dealing with sick and wounded soldiers.——Major Kenneth Mundell, Kingston, Ont., is to command the new army medical corps training depot recently established there to replace the field ambulance depot which is going to another point.——Dr. Robert C. MacGregor, London, Ont., has been appointed prison physician at the Jackson Penitentiary, Michigan.——Dr. Herbert W. Wall, Donalda, Alta., is spending the winter with his family in California.

University News.—Hon. Dr. Robert S. Thornton, Deloraine, minister of education of Manitoba, has introduced a bill into the legislature of that province by which the constitution of the University of Manitoba is to be remodeled. The sustaining income of that university is now derived from the province of Manitoba, outside the fees paid by students. By this legislation the university will come under the control of a board of governors, nine in number, appointed by the government, and serving for three years. The purpose of the legislation will bring the university under similar control to that of the University of Toronto.——It has been announced at Queen's University, Kingston, Ont., that more than 1,000 graduates and undergraduates of that institution are serving overseas.——The University of Toronto Base Hospital at Saloniki is to return to England. Since Col. James A. Roberts, Toronto, the officer in command, returned to England and was appointed to command the hospital at Taplow, the command of the Toronto unit has been under Col. William B. Hendry. The latter appointment will probably be made permanent.

GENERAL

Red Cross Base Hospital Offered.—The Eli Lilly Company, Indianapolis, has offered the local chapter of the American Red Cross $25,000, in the event of this country being drawn into war, to establish a base hospital of 500 beds. The offer is made as a memorial to Col. Eli Lilly of Indianapolis. Dr. Carleton B. McCulloch is to be director of the hospital.

Bequests and Donations.—The following bequests and donations have recently been announced:

Abington (Pa.) Hospital, a gift of $5,000 from Mr. and Mrs. Caleb S. Fox, as a memorial to their deceased son.

Dr. Frances R. Sprague, Norristown, Pa., household goods, jewelry, wearing apparel and a bequest of $20,000 by the Alumni Association of the Women's Medical College of Pennsylvania, Philadelphia, and $1,000, by the will of Dr. Bertha Lewis, Bryn Mawr, Pa.

Dr. Carl Brown, Bremen, Ohio, the residue of the estate of James E. Lane, after the payment of $2,000 to his son. The estate is valued at $23,000.

Candidates for Army Medical Corps.—The following applicants who successfully passed the examination, January 2-6, were appointed on the Medical Corps of the Army and have been ordered to the Army Medical School for the term beginning March 1: Drs. Clarke Blance, Norridgewock, Me.; Leon Alexander Fox, Birmingham, Ala.; Charles Elias Hyde, Southport, Conn.; David Dave Paulus, Oklahoma City; Rowland Daniel Wolfe, Fort Monroe, Va., and Max Riebenack Stockton, Swarthmore, Pa.

Safety Association Organized.—The Joseph A. Holmes Safety Association, made up of twenty-three societies, has been organized in Washington. Its objects are the betterment of mining conditions and of relations between operators and miners. The association will award annually one or more medals with honoraria, to be known as the Holmes Award, for the encouragement of more efficient safety devices, appliances or methods in mining, for personal heroism or for distinguished service or saving of life in any branch of the mining industry.

Interstate Quarantine Regulations.—Amendments were made, Feb. 12, 1917, to the interstate quarantine regulations promulgated by the treasury department, Jan. 15, 1916, relating to the following subjects: water for drinking or culinary purposes provided on cars and vessels by interstate carriers; water for drinking purposes provided at stations by interstate carriers; interstate transportation of persons having contagious or infectious diseases; sanitation of camps occupied by migratory workers, and prohibiting the interstate transportation of oysters and clams grown or handled under insanitary conditions. The text of these amendments may be found in *Public Health Reports* for February 23.

Army Medical Corps Examinations.—The surgeon-general announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured on application to the "Surgeon-General, U. S. Army, Washington, D. C."——Those who qualify at their preliminary examination and complete their hospital internship by July 1 will be ordered to the Army Medical School for the special session of the school commencing July 9. The regular session of the school will open on October 1. In order to perfect all arrangements for the examination, applications should be completed at the earliest practicable date. There are at present 230 vacancies in the Army Medical Corps. After July 1, there will be 222 additional vacancies.

Standardization of Supplies.—Previous to the opening of the sessions of the National Defense Committee, in Washington, February 12, the personnel of organization and program for the immediate future of the newly formed committee on the standardization of medical and surgical supplies was announced. The committee is as follows: Drs. George W. Crile, Cleveland; Harvey Cushing, Boston; Lieut.-Col. Carl R. Darnall, M. C., U. S. Army; Charles L. Gibson, New York; Richard H. Harte, Philadelphia; Col. Jefferson R. Kean, M. C., U. S. Army; Surg. Joseph A. Murphy, U. S. Navy; Dr. Henry S. Plummer, Rochester, Minn.; Surg. Theodore W. Richards, U. S. Navy; Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., and Frank F. Simpson, Pittsburgh. The objects of the proposed standardization are: to make it possible to obtain surgical supplies in large volume on short notice; to have definite specifications so that manufacturers of similar articles may divert their activities with a minimum of delay or inconvenience to the production of supplies required by the army and navy; to reduce the cost by enabling manufacturers to produce the various articles in quantity, and to enable civilian practitioners to become familar with the instruments and appliances which they will be expected to use if they are called to the colors.

Lectures on Military Medicine and Camp Sanitation.—The following officers of the Medical Corps of the army have been detailed to deliver a course of lectures on military medicine and camp sanitation at the institutions specified after their names. In addition to this each of the officers named will be expected to interest the students of the colleges and interns of the hospitals in the Medical Corps of the army as a career, to interest practitioners in the Medical Officers' Reserve Corps, to examine applicants for the Medical Officers' Reserve Corps and to organize the Medical Officers' Reserve Corps in sections and to instruct the officers of these sections in the duties of medical officers in peace and war:

Lieut.-Col. Weston P. Chamberlain: Harvard University, Tufts College Medical School and the Boston University, Boston.

Major James I. Mabee: Syracuse (N. Y.) University.

Capt. Robert C. McDonald: University of Texas, Galveston.

Major George F. Juenemann: Medical College of South Carolina, Charleston; University of Georgia, Augusta, and Emory University, Atlanta, Ga.

Lieut.-Col. Frederick M. Hartsock: New York Homeopathic Medical College, and Flower Hospital, Fordham University, and New York City and Long Island College Hospital, Brooklyn.

Lieut.-Col. Henry Page: University of Pennsylvania, and Temple University, Philadelphia.

Capt. Taylor E. Darby: University of Maryland and Johns Hopkins University, Baltimore.

Major Thomas L. Rhoads: University of Arkansas, Little Rock.

Major James Bourke: Marquette University, Milwaukee, Wis.; Detroit (Mich.) Medical College and University of Vermont, Burlington.

Major William N. Bispham: University of Illinois; Loyola University, Rush Medical College, and Hahnemann Medical College, Chicago.

Major Guy V. Rukke: University of Minnesota, Minneapolis, and University of Michigan, Ann Arbor.

Capt. Wibb E. Cooper: Vanderbilt University, Nashville, Tenn., and University of Tennessee, Memphis.

Major Henry F. Pipes: Washington University Medical School, St. Louis University School of Medicine, St. Louis.

Capt. Norman L. McDiarmid: University of Louisville, Ky., and University of Cincinnati, Ohio.

Capt. Thomas C. Austin: University of Alabama, Mobile, and Tulane University, New Orleans, La.

Major Harry L. Gilchrist: University of Pittsburgh.

Capt. John A. Burket: University of Colorado, Boulder.

Major Walter D. Webb (retired): Georgetown University, Washington, D. C., and University of Virginia, Charlottesville.

Col. John M. Banister (retired): John A. Creighton Medical College and University of Nebraska, Omaha.

Col. Louis A. LaGarde (retired): Medical College of Virginia, Richmond.

FOREIGN

Sauerkraut Made from Turnips.—The *Medizinische Klinik* states that white turnips are proving a very acceptable substitute for cabbage in the making of sauerkraut.

Japanese Medical College and Hospital Burns.—February 20, the Osaka Medical College Building and Hospital, the largest in Central Japan, was destroyed by fire. There were 470 patients in the hospital, all of whom are believed to have been removed in safety. The loss exceeds $1,500,000.

Death in the Profession Abroad.—A. Pappenheim, privatdocent at the University of Berlin, noted for his work on the morphology of the blood and the blood diseases, editor of the *Folia haematologica,* recently succumbed to typhus acquired in his professional work. His manual on the chemistry of dyestuffs is an authority.

Institute for Experimental Psychology at Constantinople.—This new institution, founded by Professor Anschütz of Kiel, is now organized, and work has been begun with lectures and demonstrations by himself and his two Turkish assistants. It is a regular department in the University of Constantinople, including experimental psychology and pedagogics.

Leper Asylum on the Island of Sardinia.—A pavillion of the public hospital at Cagliari has been set apart for lepers in the contagious stage, and the provincial authorities have made notification compulsory of leprosy at any and all stages. They have also provided for removal of the children from a family where there is a leper, and for periodical surveillance of conditions in the homes of lepers, sterilization of the rooms, etc.

Births in Prussia in 1914.—The figures for 1914 show 599,728 boys and 566,852 girls born in Prussia. The total is 6,836 less than in 1913, and 19,820 less than in 1912. There were 35,948 stillbirths registered, twenty-one less than in the previous year. The number of illegitimate children totaled 92.2 per thousand born in wedlock. The mortality was 16.4 per cent. of the children born living, against 15 per cent. in 1913.

Medical Care for Soldiers' Families at Berlin.—The city of Berlin last year appropriated 500,000 marks to distribute among the physicians tending the families of soldiers. This was based on the assumption of a 5 mark fee for attendance during a sickness, including four or five consultations. But time has shown that this by no means covers the work, as the number of soldiers' families has materially increased, and Austro-Hungarian soldiers' families have also been coming to Berlin. The organized profession has therefore given notice to the city authorities that the arrangement terminates March 15. They ask for an appropriation of 1,250,000 marks as corresponding better to the customary minimal rates per patient. Negotiations are already under way between the organized profession and the authorities. The middle way has been proposed, namely, that the families unable to pay be given an allowance when sickness comes to them so they can remunerate their medical attendants themselves.

The Outlook for the Year's Food in Germany.—The *Deutsche medizinische Wochenschrift* of January 4 quotes the *Kreuzzeitung* as follows: "The estimation of the crop of bread grains proved to be a million tons too high, but still the crop is better than in 1915. In consequence of the more abundant harvest, barley and oats are to be used more freely for the table, not only in porridge and pudding form but in making bread. The failure of the potato harvest has led to the revoking of the order in regard to addition of potato to bread. Aside from seed potatoes, the total supply of potatoes for the table is only 279,000,000 hundredweights. The scarcity of potatoes is felt more in the cities on account of the lateness of the harvest and the lack of delivery wagons. The lack of potatoes for feed for cattle is bad for the stock of cattle. They are already feeling the effects of the more thorough milling of the grains, reducing the bran to use in feeding cattle, and also of the greater use of turnips and carrots for the table. Every animal ready to be slaughtered should therefore be slaughtered. At present there is no prospect of an increased fat ration. But the ration of meat may be increased by February. Conditions in regard to fruit, green vegetables, fish, eggs, and geese are said to be especially deplorable (*ganz besonders bedauerlich*) and they can scarcely be improved by the intervention of the food regulation board. Established maximal prices without public control have not worked particularly well; in some instances they have merely driven the articles from the market. The food regulation board will therefore not work along these lines, but will seek to improve the intolerable conditions (*unleidliche Zustände*) by delivery contracts, striving to bring the truck gardens, the fish markets and the geese farms into closer communication. It is to be assumed that the troops in the invaded countries, who last year had to be fed from Germany, will be able to raise their own food this year."

PARIS LETTER

Paris, Feb. 1, 1917.

The War

NEW MEDICAL MILITARY RANK

A presidential decree has established a new medical military rank, that of subadjutant, a grade lower than sublieutenant. Medical students presenting written evidence showing that they have attended at least eight quarters of medical study with a year of service at some post at the front in the military health service, as well as six months' service as auxiliary physician, are eligible for appointment to this rank. A successful examination before a special board must be passed. Students presenting six or seven certificates may be nominated to this service after passing a special examination, provided they have served an internship of at least one year in a civil hospital prior to their entrance into the army service. Students possessing only four or five certificates must have served at least eighteen months at a military health service post, and one year as auxiliary physician. They, too, must pass the special examination. Members of the army medical service may be appointed as auxiliary physicians under the following regulations: (*a*) Titular students with but four certificates validated at the time of their enlistment, provided they have attended a period of instruction of three months, served six months in the military health service and passed a practical examination before a special body of examiners; however, students having completed one year in the health service at the promulgation of the present decree can be appointed as auxiliary physicians. (*b*) Students holding but two or three certificates validated at their enlistment, and who comply with the following requirements: (1) three months of instruction supported by practical work and technical conferences; (2) six months' service at a post of the health service at the front; (3) examination before the special board of examiners and (4) six months' sojourn with the army.

ABUSE OF AMPUTATIONS OF THE THIGH IN ARTICULAR WOUNDS OF THE KNEE

Dr. Marquis reported on this subject to the Réunion médico-chirurgicale de la V-e Armée. A large percentage of the amputations made during this war were necessitated by articular wounds. The most frequent amputation was that through the thigh incident to a wound of the knee; in fact, one sixth of all amputations were of this type. For articular wounds with extensive bone lesions, Dr. Marquis suggests the consideration of two methods, resection and arthrotomy. He has found that extensive arthrotomy with suture of the synovial membrane, done shortly after the injury is inflicted, yields marvelous results. The operation must be performed by a competent surgeon under rigid aseptic conditions and with every facility at hand. Primary resection frequently saves a limb. Secondary amputation through the thigh has been resorted to, especially in cases of purulent arthritis, either after failure of arthrotomy or in preference to it. Bilateral arthrotomy, followed by the Carrel method of treatment, has given Marquis five cures in cases of purulent arthritis of the knee. If this treatment is ineffective, then a secondary resection must be done. He reports on twelve cases, three of which, however, are too recent to be included in his analysis. Among the remaining nine, one death occurred six days after operation, the result of a hemorrhage in Scarpa's triangle. One secondary amputation was done in seven cases, and cure was effected with good functional results. In the resection cases the stability of the bone union is increased by wire suture uniting the ends of the femur and tibia.

Death Resulting from Chloroform Anesthesia Administered by a Pharmacist in an Emergency

In June, 1916, Dr. Robert Brunet and Pharmacist Guy were fined 100 francs ($20) for having indirectly caused the death of a boy. The defendants appealed to a higher court, and were acquitted for the following reasons: It was not established that the physician had committed any act in the exercise of his art which would justify condemnation, and he proved that the operation performed on the boy was necessary and urgent; that he made an examination of the patient, and found no contraindication to the use of an anesthetic for the performance of the operation. He himself administered the chloroform in the usual way and with caution, although he entrusted the anesthesia to the pharmacist for a few moments. It could not be said that he was assisted by an incompetent person or that he turned over to the pharmacist the care of the patient. The boy died, it is true, but the court was unable to establish a reason for his death which had any bearing on any act of the attending physician. The court did not think it would be right to attribute the death to a professional error on the part of the physician. As for the pharmacist, who held the chloroform mask over the patient's face for less than two minutes, as directed by the physician, he was released. Both physician and pharmacist were relieved of the penalty inflicted by the lower court.

The Fight Against Syphilis

At the instance of M. Henri Rousselle, the city of Paris has made an appropriation of 60,000 francs ($12,000) for 1917 to the Prophylactic Institute (The Journal, April 15, 1916, p. 1213). The department of the Seine has granted an appropriation of 40,000 francs ($8,000) to be used for the same purpose.

LONDON LETTER

London, Feb. 5, 1917.

The Food Problem

The destruction of merchant vessels by submarines has exercised the government as to the problem of food supply. Though food is nearly double the price it was before the war, there is as yet no shortage and, thanks to abundant employment and high wages, the people are able to buy all that they require. But the future is not without some anxiety. The government has appointed a committee of experts, among whom are leading physiologists, including F. G. Hopkins, D. Noel Paton, and W. H. Thompson, to investigate the question. They have issued an important report, which should be of value to any country engaged in war. The committee finds that the dietary requirements of a nation for the most part engaged in active work cannot be satisfactorily met on a less supply of food as purchased than 100 gm. of protein, 100 gm. of fat and 500 gm. of carbohydrate. The carbohydrates should equal about 3,400 heat units a day. Taking into consideration the requirements of women and children, it has been concluded that 100 men, women and children will equal 77 units, that is to say "men." During the period of 1909-1913 there were available per "man" in the United Kingdom: protein, 113 gm.; fat, 130 gm., and carbohydrates, 571. This, it will be seen, is considerably above the minimum requirement, and allows a margin of waste. There have been either wasted or consumed in excess of requirements: protein, from 11 to 14 per cent.; fats, from 25 to 30 per cent., and carbohydrates, from 10 to 14 per cent.

War involves a redistribution of food into two shares: (1) for military and naval establishments, and (2) for the civilian population. The committee has assumed the former to be 4 millions (2 millions on home service and 2 millions in the field), and the latter to be 31.8 million "men" (42.5 million men, women and children). The available food, then, on the basis of supply before the war is:

	Military (4 millions) Gm.	Civilians (31.8 million "men") Gm.
Protein	140	106
Fat	180	120
Carbohydrates	500	563

This shows that on the basis of supply before the war the food available for the civil population would be more than sufficient as regards the supply both of protein and of energy. The committee finds that with reference to the supplies of meat, wheat, fish and sugar for the total population up to the present time (July 29, 1916), these, taken together, show a small increase in food values during the year ending June, 1916, as compared with conditions existing before the war. They have no evidence that the supplies of other foods have, in the aggregate, been less than in the period prior to the war. But they utter the warning that the needs of the armies, the decreased yield of the harvest at home in 1916, and possible interference with the supplies from abroad may reduce the supply in the future below this level. Up to the present the supply of food has provided a general margin of about 5 per cent. above the minimum necessary for proper nutrition, and rather more as regards the supply of energy. A redistribution could, therefore, be borne without serious injury to the community, but only on the condition that steps are taken to insure the equitable distribution of the available food throughout the population. While the supply of food, up to the present, has been adequate for the population, the rise in prices has accentuated the inequalities of distribution, which reduce the daily ration of many below the level of efficiency. Any curtailment of supplies, even to a limited extent, would result in the poorer classes obtaining less than is needful for safety, should distribution remain unorganized.

The question of killing cattle when 17 months old in place of the present method of slaughtering when 2½ years old is discussed. This production of "baby beef" would produce a large amount of protein and liberate fodder stuffs (hay, grass, straw, roots and oilseed cakes), but not stuffs suitable for human food. A universal application of the scheme is not immediately practicable, however. It would require much organization, especially in the care, purchase and distribution of suitable calves, and in many districts would also involve considerable alterations in the system of farming. On the other hand, it is estimated that about one third of the oxen fattened in winter are overfed to the extent of 2 pounds of "starch equivalent" per head per day. This works out at a loss of 64,000 tons of starch equivalent, which if properly used might produce 8,000 tons more beef. Again, during the last month of the fattening of winter-fed cattle (lasting from four to five months), appearance rather than weight is improved. By cutting out the last month, an obvious economy might be effected. Economy in fodder can also be secured by varying the kind of animal to which it is fed. Thus while $2\frac{9}{10}$ pounds of starch equivalent in fodder will produce 1,000 heat units in the form of milk from a good cow, 9 pounds are required to produce the same amount in "steer" beef. The figures for pig meat are 3 pounds, and for veal $4\frac{7}{10}$ pounds. They justify the agricultural policy of most continental countries which rely on dairy products, pig meat and veal for a large proportion of their supply of animal food.

Another proposal to increase the food supply is that milk should be used for making cheese instead of butter. It is assumed that 2½ gallons of milk make 1 pound of butter, and that 1 gallon of milk makes 1 pound of cheese. The question of energy value is not considered, since both butter and cheese contain practically the same amount of the fat of the milk. But the net gain which might be realized by the general adoption of cheese making in place of butter making is 55,000 tons of protein, or per "man" 4.2 gm. per day. Other suggestions which, as stated in previous letters to The Journal, have been put into force by the government, are the milling of a greater proportion of flour from wheat and the reduction in the amount of barley allowed to be used for brewing.

The food controller has issued an appeal to the whole population, asking people voluntarily to restrict their consumption of the three staple foods per week thus: bread, 4 pounds; meat, 2½ pounds, and sugar, ¾ pounds. These quantities have been arrived at after full examination of the stocks available. Only by this means can an adequate margin to meet contingencies be provided for. It is hoped that, by loyal obedience, compulsory rationing, which would require an elaborate machinery and absorb labor, may be avoided. The consumption of these commodities varies according to age, sex, occupation and other conditions. The indicated allowance, therefore, provides for adjustment or apportionment between members of each household in relation to individual needs. It is recognized that some persons eat more bread and less meat than the quantities indicated, and that others eat more meat and less bread. In all these cases a resolute effort on the part of each consumer to reduce consumption by at least 1 pound of bread or ½ pounds of meat per week, or both, will automatically bring about a saving of over 1,000,000 tons per annum of these foods. As regards bread, especially, the variation in individual consumption is most marked. This is attributable to the fact that the lower the scale of income and of consequent living, the higher the bread consumption, for with many in such circumstances meat is only intermittently comprised in the scale of dietary, whereas bread constitutes the main staple. Although these quantities will form the basis of the dietary scale, they will naturally be supplemented by other food products. The nation is placed on its honor to observe these conditions.

The Great Explosion

The greatest explosion in a munition factory experienced in England took place in a crowded part of London and was attended by many injuries. The majority of the injured were treated at the London Hospital. The house governor, Mr. E. W. Morris, has given in the *Hospital* a graphic picture of how the hospital confronted this catastrophe. Work was proceeding quietly and as usual on that evening. Those who were indoors behind drawn blinds had no warning beforehand. Those, however, who happened to be crossing the grounds from one part of the hospital to another had some warning. The sky was lighted eastward by a red glow which became brighter and brighter, until at last it was like a red twilight at sunset, and the whole of the details of the hospital building could be distinctly seen. A few seconds after the moment of greatest illumination, the explosion occurred. The explosion itself was not a single bang, but more like a short rattling clap of thunder when the storm is close overhead. Certain arrangements had been made in case of aerial attack in the immediate neighborhood. In this contingency the house governor goes to the main entrance, close to the telephone room, and directs proceedings in a general way. The engineers report to him and remain ready for what may happen. Porters who are sleeping in and who have weekly fire drill also report and await orders. Military orderlies, of whom there are about thirty in the hospital, also stand at attention. The orderlies are taught certain duties which they might have to carry out in case the hospital were struck by a bomb, such as the quickest way of emptying a ward of bedridden people.

When the explosion occurred the chief telephone operator was standing at the door of her room; she was certain that a bomb had dropped in the grounds close outside her window, which was broken. She went to her instrument at once and telephoned, as previously arranged, for the engineers; they appeared, however, before the necessary connections were made. An attempt was made to get through to the telephone exchange to obtain some idea of what had happened, but no reply could be elicited for about ten minutes. Meanwhile a somewhat alarming smell of fire was noticed; this, however, was soon traced to the fact that soot had been driven down many of the chimneys into the rooms. Porters were drawn up awaiting orders, as were the orderlies, and the house physicians and house surgeons went to their own wards to steady their patients, also according to plan. A call then came through from the police asking for medical assistance to be sent at once. They reported a fearful explosion at a large chemical works. It was easy enough to procure volunteers for such work, and in a few minutes five male and three female physicians and some dressers were ready to start with a large supply of tourniquets, morphin syringes, and instruments for rendering first aid. Soon the injured began to arrive in every conceivable form of conveyance, the greatest number in huge motor lorries.

Marriages

John F. Spearman, M.D., Sharon, Pa., to Fräulein May von Raczeck of Hannover, Germany, at Preiswitz, Silesia, Germany, October 16.

Lieut. Robert B. Hill, M. R. C., U. S. Army, Fort Sam Houston, Texas, to Miss Lulu M. Dorsey of Clarksville, Md., January 11.

Orville Bruce Moon, M.D., Mills, N. M., to Miss Gwendolyn Hardy of Butte, Mont., at Las Vegas, N. M., February 11.

Elton Aubrey Ratcliffe, M.D., Petersburg, Va., to Miss Agnes M. Grigsby of Scribner, Va., at Elkton, Md., January 25.

Daniel Gish Stine, M.D., Columbia, Mo., to Miss Ellen Wylder of Jacksonville, Ill., at Kansas City, December 23.

John Francis Kenny, M.D., Pawtucket, R. I., to Miss Anne Evangelist Lee of Woonsocket, R. I., February 5.

Edward D. Freeman, M.D., Osgood, Ind., to Mrs. Olive Bevan Townsend of Norwood, Ohio, February 8.

Simon Maimon Samuels, M.D., Seattle, to Miss Sophie Robbins, at Phoenix, Ariz., February 8.

Herman Augustus Helming, M.D., Cusson, Minn.; to Miss Clara G. Jensen of Virginia, Minn., January 11.

Thomas Cook Stelwagen, Jr., M.D., to Miss Elizabeth C. Coane, both of Philadelphia, February 14.

F. Janney Smith, M.D., Detroit, to Miss Jeanie Wilmer Smart, at Lutherville, Md., February 14.

Morris T. Horwitz, M.D., Bridgeport, Conn., to Miss Sabina M. Zinburg of Baltimore, February 21.

Lee Wester Storey, M.D., Cheyenne, Wyo., to Miss Mary Jane Hopkins of Denver, February 14.

Sanford B. Whiting, M.D., to Mrs. Mary Merges, both of Portland, Ore., recently.

Leo John Dretzka, M.D., Detroit, to Miss Doris Moore, at Detroit, February 12.

Deaths

Lieut.-Col. Edwin Bentley, M. C., U. S. Army (retired), Little Rock, Ark.; New York University, New York, 1847; Bellevue Hospital Medical College, 1877; College of Physicians and Surgeon in the city of New York, 1877; aged 92; formerly a Fellow of the American Medical Association; a member and once president of the Arkansas Medical Society; a member of the Association of Military Surgeons of the United States; a member of the Mississippi Valley Medical Association; professor of the principles and practice of surgery in the Medical Department of the University of Arkansas; a pioneer surgeon of Arkansas; who entered the army at the outbreak of the Civil War as assistant surgeon of the Fourth Connecticut Infantry; was later made surgeon of United States Volunteers, and honorably mustered out in 1866 as lieutenant-colonel; then entered the medical corps of the army and after passing through the various grades was retired as major, July 3, 1888, and was given the grade of lieutenant-colonel, retired, April 3, 1904; died at his home, February 5, from the effects of a fall eight weeks before.

George Hudson Makuen, M.D., Philadelphia and Newfield, N. J.; Jefferson Medical College, Philadelphia, 1889; aged 61; a Fellow of the American Medical Association, and chairman of the Section on Laryngology, Otology and Rhinology in 1901-1902; president of the American Academy of Medicine in 1900, of the American Laryngological Association in 1915 and of the American Laryngological, Rhinological and Otological Society in 1912; widely known for his work on defects of speech; professor of defects of speech in the Philadelphia Polyclinic since 1896; laryngologist and otologist to Chester Hospital; laryngologist to St. Mary's and the Douglas Memorial hospitals, Philadelphia; at one time a member of the faculties of Jefferson Medical College, the Centenary Collegiate Institute and National School of Elocution and Oratory; died at his old home in Goshen, N. Y., February 21.

Whitman Vassel White, M.D., New York; Berkshire Medical College, Pittsfield, Mass., 1857; aged 82; surgeon in chief of the First Division of the Ninth Army Corps Field Hospital during the Civil War; for thirty-eight years operating and consulting surgeon to the Manhattan State Hospital, Wards Island; at one time superintendent of the State Insane Hospital, Binghamton, N. Y., and of the Government State Hospital for the Insane, Washington, D. C.; died at the home of his son in Richmond Hill, S. I., February 21, from cerebral hemorrhage.

Bertha Lewis, M.D., Bryn Mawr, Pa.; Women's Medical College of Pennsylvania, Philadelphia, 1893; aged 64; a Fellow of the American Medical Association; a member of the Philadelphia Pediatric Society; assistant orthopedic surgeon to the Philadelphia Polyclinic; orthopedist to the West Philadelphia Hospital for Women; a well known welfare worker and one of the organizers of the Southwark Neighborhood House; was instantly killed in a collision between automobiles at Bryn Mawr, February 11.

Lewis A. Ryder, M.D., Topeka, Kan.; Hahnemann Medical College, Chicago, 1883; aged 55; formerly surgeon of the Third Infantry, Kansas National Guard; once president of the state board of medical examination and registration, state reform school and Topeka city council; medical director of the Kansas Home Mutual Life Insurance Company; died in Stormont Hospital, Topeka, February 5, from gangrene, for which amputation of the foot was performed, January 25.

Albert George Blodgett, M.D., Ware, Mass.; Bellevue Hospital Medical College, 1868; aged 75; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; president of the Hampshire County (Mass.) Medical Society in 1904-1905; founder of the Brookfield Medical Club in 1882; for six years secretary of the board of health of Ware; died at his home, February 10, from arteriosclerosis.

Helen Reynolds Kellogg, M.D., Chicago; Northwestern University Women's Medical School, Chicago, 1886; aged 60; a pioneer worker in social welfare with especial reference to working girls; for many years one of the heads of the Klio Noonday Rest Association, and sponsor of many philanthropies; founder of a free dispensary for girls; died in the Cook County Hospital, February 21, from diabetes.

Robert Alexander Douglas Lithgow, M.D., Boston; University of Edinburgh, Scotland, 1871; University of St. Andrews, Dundee, 1890; aged 70; a member of the Massachusetts Medical Society; a writer of marked ability and a deep student of history, literature and ethnology; died in the Massachusetts General Hospital, February 16, from the effects of injuries received in a fall in December last.

Stephen Clifton Glidden, M.D., Danville, Ill.; University of Michigan, Ann Arbor, 1894; aged 45; a Fellow of the American Medical Association, and formerly president of the Vermilion County Medical Society; formerly chief surgeon of the Illinois Traction System; who had suffered for a long time from the results of Roentgen-ray exposure; died at his home, February 20.

George Meyers, M.D., New York; College of Physicians and Surgeons in the City of New York, 1886; aged 55; a Fellow of the American Medical Association and New York Academy of Medicine; well known as an internist; visiting physician to the Hospital for Deformities and Joint Diseases, New York, and the German Hospital; died at his home, February 14.

George Woodhull Emory, M.D., Bryan, Texas; Tulane University, New Orleans, 1894; University and Bellevue Hospital Medical College, New York, 1899; aged 46; a Fellow of the American Medical Association; who was shot as he stepped from a train in San Antonio, February 12; died from his wounds at the Robert B. Green Memorial Hospital a few hours later.

Robert August Koempel, M.D., New York; New York University, New York, 1887; aged 60; also a graduate in pharmacy and a veterinary surgeon; died in the Botanical Gardens of the New York Zoological Park, February 14, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Irenaeus Maybury Shepherd, M.D., Trenton, N. J.; University of Pennsylvania, Philadelphia, 1892; aged 49; a Fellow of the American Medical Association; a member of the visitink staff of Mercer and St. Francis' hospitals, Trenton; medical inspector of the Trenton Board of Health for several years; died at his home, February 13, from cerebral hemorrhage.

George Miller Shillito, M.D., Pittsburgh; Jefferson Medical College, 1868; aged 76; a Fellow of the American Medical Association; for many years a member of the staff of the Allegheny General and St. Francis' hospitals; physician to the Allegheny City Home, and a director of the Fourth Ward Allegheny public schools; died at his home, February 14.

John Sidney Gray, M.D., Winnipeg, Man.; McGill University, Montreal, 1876; aged 67; secretary of the College of Physicians and Surgeons of Manitoba and professor of gynecology in the Manitoba College of Medicine, Winnipeg; for thirty-five years a member of the staff of the Winnipeg General Hospital; died at his home, February 11.

William G. Jameson, M.D., Palestine, Texas; Missouri Medical College, St. Louis, 1878; aged 60; a Fellow of the American Medical Association; for twenty years chief surgeon of the International and Great Northern Railway; a member of the National Association of Railway Surgeons; died at his home, February 12, from heart disease.

Braxton D. Cox, M.D., Campton, Ky.; Kentucky School of Medicine, Louisville, 1889; aged 72; a Fellow of the American Medical Association and formerly president of the Breathitt County Medical Society and Kentucky Valley Medical Association; a veteran of the Civil War; died at his home, February 13, from disease of the liver.

Edward Woodbridge Avery, M.D., Brooklyn College of Physicians and Surgeons in the City of New York, 1862; aged 76; a veteran of the Civil War, in which he served both in the navy and army, and later in the German service during the Franco-Prussian War; died at his home in Brooklyn, February 13, from pneumonia.

George W. Mitchell, M.D., Denver; Jefferson Medical College, 1860; aged 83; surgeon of the One Hundred and Nineteenth Pennsylvania Infantry, U. S. V., during the Civil War; died at the home of his son in Denver, February 7, from senile debility, following a fracture of the hip which occurred in October last.

James Morris Jenkins, M.D., Auburn, N. Y.; Syracuse (N. Y.) University, 1875; aged 67; a member of the Medical Society of the State of New York, and once president of the Cayuga County Medical Society; physician to the Auburn City Hospital; died at his home, February 3, from heart disease.

Stephen Elmer Palmer, M.D., Elmira, N. Y.; University of Michigan, Ann Arbor, 1872; aged 69; for thirty years a member of the Medical Society of the County of Chemung, N. Y., and of the Elmira Academy of Medicine; also a graduate in pharmacy; died at the home of his son in Elmira, February 9.

Louis Eugene Hollister, M.D., Newark, N. J.; University of Michigan, Ann Arbor, 1873; aged 68; a Fellow of the American Medical Association; local surgeon of the Lehigh Valley Railroad; formerly a member of the board of health and board of education; died at his home, February 15.

Harry F. Williamson, M.D., Paducah, Ky.; University of Louisville, Ky., 1896; aged 55; formerly a Fellow of the American Medical Association and president of the school board of Paducah; for two years city physician; died at the home of his sister in Paducah, February 9.

Minor M. Jacobs, M.D., Hamilton, Ohio; Miami Medical College, Cincinnati, 1888; aged 50; for several years a member of the board of health of Hamilton, and district physician of Lindenwald; also a druggist; died in Mercy Hospital, Hamilton, February 11, from heart disease.

Zadok Thomas Blackwell, M.D., Joplin, Mo.; Kentucky School of Medicine, Louisville, 1888; aged 58; a member of the Missouri State Medical Association; for several terms justice of the peace and for five years postmaster of Preston, Kan.; died at his home, February 10.

Morris Weil Brinkman, M.D., New York; University of Pennsylvania, Philadelphia, 1884; aged 57; a Fellow of the American Medical Association; a specialist on electrotherapeutics and inventor of many appliances in that specialty; died at his home, February 15.

Oscar Samuel Owens, M.D., Richmond, Va.; University of Maryland, Baltimore, 1905; aged 37; a member of the Medical Society of Virginia; for many years local surgeon to the Southern Railroad; died at the Retreat for the Sick, Richmond, February 8.

William H. Barnard, M.D., Anguilla, Miss.; Hospital College of Medicine, Louisville, 1877; aged 67; formerly a member of the Mississippi State Medical Association; treasurer of Sharkey County; was found dead at his home, February 13, from heart disease.

W. S. Harwood, Monroe City, Mo. (license, Missouri, 1883); aged 76; for more than fifty years a practitioner of Monroe County; formerly a member of the Missouri State Medical Association; died at his home, February 12, from heart disease.

John Thomas Parker, M.D., Stockton, Md.; New York University, New York, 1861; aged 77; surgeon in the Confederate service during the Civil War; a member of the legislature from Worcester County in 1870 and 1871; died at his home, February 7.

James R. Dewey, M.D., Chicago; Chicago Homeopathic Medical College, 1888; aged 85; also a lawyer; for forty-one years a teacher of Greek, Latin, geometry and astronomy in the West Division High School, Chicago; died at his home, January 31.

John Lenman Pollock, M.D., New Auburn, Minn.; Memphis (Tenn.) Hospital Medical College, 1911; aged 47; while making a professional call south of Hanley Falls, February 10, was caught in a severe blizzard and was found frozen to death.

Clarence Abbott, M.D., Otwell, Ind.; Kentucky School of Medicine, Louisville, 1898; aged 45; a Fellow of the American Medical Association; formerly trustee of Jefferson Township, Pike County; died at his home, about February 13.

Thomas H. Hallett, M.D., Clyde, N. Y.; University of Buffalo, N. Y., 1890; aged 56; a Fellow of the American Medical Association; president of the village of Clyde in 1890; died at his home, February 11, from pernicious anemia.

William Otho Bennett, M.D., Pittsburg, Kan.; Medical College of Indiana, Indianapolis, 1892; aged 56; formerly a member of the Kansas Medical Society; died in Mount Carmel Hospital, Pittsburg, February 5, from nephritis.

James Cyrus Black, M.D., Harrisburg, N. C.; University of Maryland, Baltimore, 1886; aged 59; a Fellow of the American Medical Association; died at his old home in Pioneer Mills, N. C., February 4, from acute gastritis.

Thomas Tobin, M.D., Tyrone, Pa.; University of Buffalo, N. Y., 1882; aged 61; a member of the Medical Society of the State of Pennsylvania; while making a professional call, February 13, died from cerebral hemorrhage.

W. N. Davis, Meehan Junction, Miss. (license, Mississippi, 1898); aged 54; a Fellow of the American Medical Association; physician to the Cotton States Lumber Company; died at his home, February 14, from pneumonia.

Edward Luther Parks, M.D., Boston; Jefferson Medical College, 1874; aged 67; a Fellow of the American Medical Association, and a specialist on diseases of the eye; died in the Boston City Hospital, February 8.

Robert Marshall White, M.D., Boston; Tufts College Medical School, Boston, 1910; aged 36; a member of the Massachusetts Medical Society; died at his home in Dorchester, Boston, February 13, from pneumonia.

Joseph G. West, M.D., Kemblesville, Pa.; University of Pennsylvania, Philadelphia, 1860; aged 82; a member of the state legislature from 1891 to 1893; school director for fifteen years; died at his home, February 10.

William M. Doores, M.D., Crab Orchard, Ky.; Missouri Medical College, St. Louis, 1851; aged 86; captain in the Confederate army during the Civil War; died in Crab Orchard, February 10, from senile debility.

James E. Robertson, M.D., Midvale, Utah; McGill University, Montreal, 1895; aged 44; a member of the Utah State Medical Association; died from heart disease while making a professional call, February 3.

John Edward Hoole, M.D., Somerville, Mass.; College of Physicians and Surgeons, Baltimore, 1903; aged 49; a Fellow of the American Medical Association; died at his home, February 15, from heart disease.

George Ernest Thomes, M.D., Port Chester, N. Y.; Medical School of Maine, Brunswick, 1886; aged 58; a Fellow of the American Medical Association; died at his home, February 12, from pleuropneumonia.

Udams E. Maulsby, M.D., Beaconsfield, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1887; formerly mayor of Sharpsburg, Iowa; died at his home, about January 18, from pneumonia.

Adelbert Schneider, M.D., Milwaukee, Wis.; University of Strassburg, Germany, 1885; aged 55; formerly a Fellow of the American Medical Association; died recently at his home in Berlin, Germany.

John C. McMillen, M.D., Falconer, N. Y.; Jefferson Medical College, 1879; aged 64; formerly a Fellow of the American Medical Association; died at his home, February 10, from pneumonia.

Charles Edward Barton, M.D., New York; New York University, New York, 1890; aged 59; a member of the Medical Society of the State of New York; died at his home, February 11.

Samuel Vail Wright, M.D., Greensburg, Ind.; Cincinnati College of Medicine and Surgery, 1871; aged 70; who fell a few days before, fracturing his hip; died at his home, February 14.

Carl J. Rollmann, Jr., M.D., Burr Oak, Mich.; Detroit College of Medicine and Surgery, 1906; aged 37; died at his home, January 8, from mitral stenosis.

Sheldon Pitcher, M.D., Detroit; Michigan College of Medicine and Surgery, Detroit, 1890; aged 54; died in Detroit, Nov. 19, 1916, from pleuropneumonia.

Lute Postle Lisle, M.D., Columbus, Ohio; Cincinnati College of Medicine and Surgery, 1878; aged 65; died at his home, February 6, from heart disease.

William Robert Hume, M.D., Oakland, Calif.; Oakland College of Medicine and Surgery, 1915; aged 39; died at his home, January 31, from pneumonia.

Annis Hyman Crawford, M.D., Williamsport, Pa.; Women's Medical College of Pennsylvania, Philadelphia, 1883; aged 60; died at her home, January 29.

Harvey Lindsey Harris, M.D., Bellflower, Ill.; Rush Medical College, 1875; aged 70; died at his home, February 2, from carcinoma of the stomach.

Oscar Joseph Karl Prinzler, Pittsburgh (license, Allegheny County, Pa., 1881); aged 81; a veteran of the Civil War; died at his home, January 16.

Aloysius Hoehn, M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1876; aged 62; an invalid for several years; died at his home, February 3.

William Henry Allen, M.D., Pekin, Ill.; University of Buffalo, N. Y., 1870; aged 67; first health officer of Pekin; died at his home, January 31.

Almus Pratt Evans, M.D., Concord, N. H.; Hahnemann Medical College, 1887; aged 56; died at his home, January 26.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

DATING OF BIOLOGIC PRODUCTS

Report of the Council on Pharmacy and Chemistry

For the protection of the consumer, as well as the manufacturer, the Council on Pharmacy and Chemistry has adopted a rule requiring that serums, vaccines and similar products to be accepted for New and Nonofficial Remedies must bear on each package the date of its manufacture in addition to the date required by federal law. In explanation of this action the Council has authorized publication of the report which appears below. W. A. Puckner, Secretary.

The practice now followed by manufacturers of placing on the containers of biologic products the dates beyond which these agents are not to be regarded as dependable (though in accordance with the federal law governing interstate traffic) has not been uniformly satisfactory to either manufacturer or physician.

For diphtheria and tetanus antitoxins there are definite official potency standards readily determinable by dependable tests. Consequently the dates on packages of these antitoxins mean that the manufacturer vouches for their potency up to the time indicated, assuming that they have been kept under proper conditions. There are no methods, however, for determining the potency of the great majority of serums and vaccines, particularly the bacterial vaccines. Moreover, while we do not know the exact effect of age on these substances, there is sufficient reason for preferring a fresh product to one of uncertain age.

Probably the most important factor in the preservation of such potency as these agents possess is the temperature at which they are kept; low temperatures, such as are obtained in cold storage, favor conservation, while ordinary room temperatures contribute to deterioration of their specific properties. Manufacturers, generally, are careful about the proper keeping of biologic products while in their hands; but they have no control over the preparations after they are placed on the market, though a commendable effort is made on the part of some manufacturers to follow up and safeguard their preparations.

The lack of uniformity in the dating of these products is very striking. For the same material, one manufacturer will fix an expiration date of four months, others, one year or even eighteen months. Obviously this lack of uniformity is unfair to the manufacturer who endeavors to supply a product as fresh as is commercially practicable, and it also may lead the physician to form a false opinion regarding the potency of certain biologic products.

That the physician may know the age of a given product when it reaches him, and that he may be in position to judge whether it has been kept unduly long under conditions which are deemed unfavorable, the Council on Pharmacy and Chemistry has passed a resolution requiring that, in order to be accepted for New and Nonofficial Remedies, biologic products must have placed on the package also the date of manufacture. Since there is no potency standard for biologic products other than for diphtheria and tetanus antitoxins, the term "date of manufacture," or, at the pleasure of the individual manufacturer, "date of issue," "manufactured" or "issued," shall be acceptable in accordance with these conditions:

The terms "Date of Manufacture" or "Manufactured" or "Date of Issue" or "Issued" to be used:

1. For products for which an efficient potency standard exists, the date of testing shall be taken as the date of manufacture. For vaccine virus date of satisfactory potency test shall be taken.

2. For other products of animal origin, the date of removal from the animals (e. g., bleeding, in case of serums) shall be taken as the date of manufacture.

3. For products of bacterial origin, the date of the killing of the bacteria shall be taken as the date of manufacture; while for other products, such as those of plant origin (pollen extracts), the date of completing the preparation of the product shall be taken as the date of manufacture.

The terms "Date of Issue" or "Issued" to be used:

When adequate cold storage facilities are available to indicate date of removal from cold storage in accordance with the following: Product may be kept for not to exceed one year at or below +5°C, or for not to exceed six months at or below +8°C, or for not to exceed three months at or below +15° C. This section does not apply to living viruses excepting that vaccine virus may be stored at or below +5° C for not to exceed three months.

This measure, besides safeguarding the public, will prove helpful alike to the conscientious manufacturer and to the physician.

CLEANER ADVERTISING

The Lexington (Ky.) Leader Takes an Inventory

The movement toward cleaner advertising and especially toward truthful advertising grows apace. The subject of clean advertising cannot be raised without "patent medicine" advertising obtruding itself, for it has long been recognized by advertising men that publicity at its worst is to be found in the "patent medicine" field. It is for this reason that the defenders of the nostrum interests can never discuss the "truth in advertising" movement and especially the activities of the various vigilance committees of the Associated Advertising Clubs of the World without becoming incoherent.

A year and a half ago the Lexington *Leader* decided that it wanted to be a newspaper "which can be read aloud in the family circle, in mixed company, without embarrassment, by any member of the family, young or old, boy or girl." It found that its ambition in this direction "could not be realized if the general run of patent medicine advertising was accepted." The problem thus clarified, the paper determined practically to eliminate all "patent medicine" advertising. On the last day of the old year the *Leader* took a mental inventory of its condition and gave the results in an editorial from which we quote in part:

> "August 1, 1915, a little less than a year and a half ago, it was determined by the management to close the advertising columns of the Lexington *Leader* to the general run of patent medicine advertisements and to advertisements of intoxicating spirits, distilled and fermented.
>
> "Since that date the *Leader* has rejected offers of advertising of this character to the amount of 16,625 inches. This, at the present rate of foreign advertising, would have increased the gross revenue of the newspaper $4,156.25.
>
> "On and after January 1, 1917, the advertising columns of the *Leader* will be absolutely free from all advertising of this nature which does not measure up to the high standard established by the management.
>
> "The management of the *Leader* is ambitious to publish a newspaper which can be read aloud in the family circle, in mixed company, without embarrassment by any member of the family, young or old, boy or girl, this rule to apply to both the news and the advertising columns of the paper.
>
> "It was found that this ambition could not be realized if the general run of patent medicine advertising was accepted, hence it was determined to practically eliminate all of this class of publicity.
>
> "This revolutionary, and at the same time very expensive, change of policy by the Lexington *Leader*, it is confidently believed, will be appreciated by both the home reader and the home advertiser. There is a growing demand for a newspaper that is 'One Hundred Per Cent. Clean—One Hundred Per Cent. Trustworthy'."

In the same editorial the *Leader* gave a list of advertising contracts which had been offered to and rejected by it since it inaugurated its new policy, together with the number of inches of space called for in each contract. The list is too long to reproduce in full but some of the larger items are worth noting. Here they are:

	Inches		Inches
"Nuxated Iron"	500	"Reserve Remedy Company"	2142
"Swamp Root"	500	"Tanlac"	2500
"Wine of Cardui"	1000	"Lydia Pinkham"	3000
"Haarlem Oil"	1071		

There are many other items in the list that are of interest to those who are familiar with the facts concerning various quack remedies. We find, for instance, that the *Leader* rejected advertisements of Charles A. Tyrrell, the exploiter of the "J. B. L. Cascade," a device whose advertisements are accepted by magazines whose pretensions in the interests of the public health are greater than their performances, "Mayr's Stomach Remedy," the "Eckman Alterative" consumption "cure," "Duffy's Malt Whiskey," "King's New Discovery"—these are among many other products which the *Leader* in its desire to publish a newspaper that would not be an embarrassment in the family circle found it desirable to debar from its advertising pages. Nor has this strictness resulted in the commercial ruin of the Lexington *Leader* for in another part of the editorial quoted above we read:

> "It is extremely gratifying to the *Leader* management to be able to state that, notwithstanding the large amount of what this newspaper considers undesirable advertising rejected during 1916, the volume of foreign advertising has steadily increased and will show a net gain for 1916 over 1915."

Above its editorial page the Lexington *Leader* carries this quotation: "The false can never grow into truth by growing into power." Applying it to the "patent medicine" business, one might search far to find a more appropriate sentiment.

Correspondence

Compulsory Health Insurance

To the Editor:—The letter on this topic by Dr. W. D. Chapman (The Journal, Feb. 17, 1917, p. 566) contains one or two errors which I wish to correct.

In this country about one tenth of the 30,000,000 workers are organized, and of the organized workers only about 548,000, or one fourth, are insured for sick benefits through the international trade unions, and not one tenth of all the workers, as your correspondent states. As a matter of fact, voluntary insurance against sickness is far less developed in this country today than it was in Great Britain prior to the passage of the national insurance act.

The free choice of physician, for which German physicians have been contending and which the British doctors gained at the outset, is already a provision of the health insurance bill which is being introduced in the legislatures of the leading industrial states.

Even if preventive medicine and the extended use of medical charities could provide the same medical care as that offered by health insurance, the worker, without insurance, is too often left without resources with which to meet the financial burden of sickness. Both medical and cash assistance are needed by the worker.

John B. Andrews, New York.
Secretary, American Association for Labor Legislation.

Coagulation Time of the Blood in Pneumonia

To the Editor:—The article on this subject by Drs. Minot and Lee (The Journal, Feb. 17, 1917, p. 545) calls for brief comment. Since the observations reported in the paper by Dr. Meeker and myself on "Coagulation Time in Lobar Pneumonia, with Statistics and an Experimental Study of Its Causes" (The Journal, Nov. 25, 1916, p. 1591) were carried out in my hospital service, I hasten to assume all responsibility for errors both as to the method employed and the results obtained. In our paper, the reason the blood was taken from the ear lobes and finger tips was thus stated: "It was feared that an unwarranted degree of discomfort would be caused by venipuncture at intervals of twenty-four hours in patients suffering from lobar pneumonia."

Subsequently, as it was found that it was quite practicable to tap a vein with a platinum needle without an objectionable degree of annoyance to the sufferer from lobar pneumonia, the blood was drawn directly from the vein so as to eliminate the possible interference with the test from admixture of the "tissue juices." So far as the criticism of the method employed in the observations previously recorded is concerned, therefore, I have no fault to find with my critics, but I still feel strongly that science demands future verification of their statement that "the coagulation time of blood in pneumonia is generally prolonged."

The results of daily observations in ten cases made on blood drawn from the veins in my service at the Medico-Chirurgical Hospital, since the publication of the joint paper by Dr. Meeker and himself, show an abbreviation of the coagulation period, and hence confirm those obtained by using blood derived from the ear lobe and finger. These and future findings will be made the basis of another paper at a later date.

J. M. Anders, M.D., Philadelphia.

"A Medical Commission with No Medical Man on It"

To the Editor:—In Current Comment (The Journal, Jan. 27, 1917, p. 292), under this heading, you refer to Mrs. Axtell as follows: "a Mrs. Axtell of Bellingham, Wash., a social worker and a defeated candidate for Congress." I cannot think any reflection was intended or meant to be implied in this comment. I trust you will publish this together with your denial that any reflection on Mrs. Axtell was intended.

W. H. Axtell, M.D., Bellingham, Wash.

[Comment.—It was the principle, not the persons, that was discussed in the comment in The Journal. We are also informed that Mrs. Axtell has had twenty-five years of service in social work, and was formerly a member of the Washington state legislature.]

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEXAMETHYLENAMIN WITH SODIUM ACID PHOSPHATE

To the Editor:—1. Hexamethylenamin when administered in the treatment of cystitis or pyelitis acts as a urinary disinfectant in acid urine. Occasionally the urine in such infections is found alkaline, neutral or only slightly acid to litmus. Would it not be theoretically good therapeutics to prescribe hexamethylenamin in such cases with some drug which renders the urine acid?

2. Bastedo's Materia Medica, Pharmacology and Therapeutics, p. 478, says:

"Jordan (1911) gave 10 grains (0.7 gm.) [hexamethylenamine] three times a day and found that when the urine was alkaline or of low acidity there was no germicidal effect. When the urine was alkaline he could obtain the effect by administering *acid sodium phosphate* to acidify the urine and when the urine was acid he could lessen the effect by administering potassium citrate."

I cannot find the acid sodium phosphate listed as a drug. Is it so used? If so, what is the dosage? Chemically it is a monobasic salt, H_2NaPO_4 plus water. What other drugs acidify the urine?

Please omit my name. K. R.

Answer.—1. Yes.

2. New and Nonofficial Remedies describes sodium acid phosphate, and lists the following brands of this drug:

Sodium Acid Phosphate-M. C. W., Mallinckrodt Chemical Works, St. Louis.
Sodium Phosphate Monobasic-Merck, Merck & Co., New York.
Sodium Acid Phosphate-Squibb, E. R. Squibb and Sons, New York.
Sodium Acid Phosphate, Monobasic-P. W. R., Powers-Weightman-Rosengarten Company, Philadelphia.

The dose of sodium acid phosphate is from 1 to 1.5 gm. repeated frequently until the urine becomes acid. It may be administered in sweetened water like lemonade. It should not be prescribed in solution with hexamethylenamin.

SONDERN'S LINE OF RESISTANCE AS AID TO PROGNOSIS

To the Editor:—What is Sondern's line of resistance mentioned in The Journal, Feb. 10, 1917, p. 496? E. H. B.

Answer.—F. E. Sondern over ten years ago emphasized the importance of the differential leukocyte count in differential diagnosis, but above all in estimating the resisting powers of the organism. He said that the rise in the relative percentage of polymorphonuclears shows the increasing absorption of toxins, and the rise in the numbers of leukocytes shows the fight the body is putting up against the infection. When both rise parallel there is less to fear than when the relative polymorphonuclear percentage outstrips the leukocytes. A chart for the curves, according to the suggestion of C. L. Gibson (*Annals of Surgery,* 1906, **43,** 485), has the leukocyte scale on the left and the polymorphonuclear scale on the right, the chart being divided into 1 sq.cm. squares, each centimeter representing 1,000 leukocytes on the left scale and 1 per cent. polymorphonuclears on the right side, starting from a horizontal line, one end of which represents a leukocytosis of 10,000 and the other end a relative polymorphonuclear proportion of 75 per cent. A line drawn between the corresponding dots showing the leukocyte findings and the polymorphonuclear percentage at each examination gives insight into the processes going on in the body. The vertical difference in centimeters between the levels can be called the index of resistance. The more nearly horizontal, the better the outlook.

SCHLOSS MILK

To the Editor:—Please give me the formula and method of making Schloss milk. I should also appreciate references to detailed articles written concerning it. F. T. Billings, M.D., Pittsburgh.

Answer.—The following is a formula for Schloss whey modified milk:

For infants under 3 months:	
Twenty per cent. cream	140 c.c.
Full milk	140 c.c.
Water	700 c.c.
Potassium chlorid	0.2 gm.
Dextrin and maltose	35 gm.
Flour	15 gm.
Nutrose	5 gm.
For infants over 3 months:	
Twenty per cent. cream	140 c.c.
Full milk	140 c.c.
Water	700 c.c.
Potassium chlorid	0.2 gm.
Dextrin and maltose	50-70 gm.
Nutrose	5 gm.

These are intended to make 1 liter (quart) of the mixture. It contains the same percentage of salts and fats as human milk, but less protein and less sugar, without the dextrin and maltose and the nutrose. If flour is added it must be boiled with the sugar, casein preparation and water for fifteen minutes. If no flour is used the mixture is simply brought to the boiling point.

The details and formula for making Schloss whey modified milk will be found in J. S. Leopold's article in the *American Journal of Diseases of Children,* September, 1914, together with a report on its use in a number of cases. References to the literature on this form of feeding are as follows:

Schloss, E.: Ueber Säuglingsernährung, monograph, Berlin, S. Karger, 1912.
Leopold, J. S.: Experiences with Whey Modified Milk in Infant Feeding. *Am. Jour. Dis. Child.,* September, 1914, p. 196; *Arch. Pediat.,* January, 1914.
Gellhorn, W.: Casein-Milk Feeding in Infancy and Childhood, The Journal, Sept. 4, 1915, p. 853. In this article various methods, including that of Schloss, for modifying milk in infant feeding are discussed.

Legal Status of Nurse as Anesthetist.—As yet the number of court decisions on record is not sufficient to show whether graduate nurses may, with impunity, practice as anesthetists. The opinion of lawyers in New York state is that surgeons may employ women in the capacity named, but that in doing so they, the surgeons, assume liability for the result. If the administration of anesthetics is a part of the practice of medicine, anesthetics may be administered only by responsible licensed physicians. If a surgeon chooses to employ an anesthetist having no legal medical qualification, he thereby tacitly assumes full responsibility for and undertakes to control the anesthesia, the anesthetist being regarded merely as his technical assistant.—S. S. Goldwater, M.D., *Modern Hospital,* November, 1916.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

California: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

Colorado: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

District of Columbia: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Idaho: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

Maine: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Minnesota: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

Missouri: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

Montana: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

Oklahoma: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

Rhode Island: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

Wyoming: Laramie, March 14-16. Sec., Dr. H. E. McCollum, Laramie.

Montana October Report

Dr. William C. Riddell, secretary of the Board of Medical Examiners of the State of Montana, reports the written examination held at Helena, Oct. 3-5, 1916. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 25, of whom 17 passed and 8 failed. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Bennett College of Eclectic Medicine and Surgery	(1907)	75.2
Chicago College of Medicine and Surgery	(1916)	77.1
Hahnemann Med. Coll. and Hosp. of Chicago	(1908)	83.8
Northwestern University Woman's Medical School	(1900)	78.3
Rush Medical College	(1914)	83.5
Baltimore University	(1898)	78.2
Johns Hopkins University	(1914)	84.8
University of Michigan Medical School	(1916)	77.7
University of Minnesota	(1916)	82
Barnes Medical College	(1906) 80.5; (1911)	78.8
Washington University	(1916)	80.7
Dartmouth Medical School	(1891)	79.3
Cleveland College of Physicians and Surgeons	(1910)	82.7
Starling-Ohio Medical College	(1913)	83.9
Marquette University	(1915)	79.2
Milwaukee Medical College	(1909)	77.4
FAILED		
George Washington University	(1916)	74.3
Chicago Coll. of Med. and Surg.	(1915) 71.5; (1916)	71.5
Northwestern University	(1910)	74
Rush Medical College	(1897)	73
Fort Wayne College of Medicine	(1892)	52.4
Ensworth Medical College	(1910)	73.8
Laval University	(1913)	64.7

New Mexico October Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that one candidate was licensed through reciprocity and eleven candidates were licensed on satisfactory credentials, Oct. 9-10, 1916. The following colleges were represented.

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of the South	(1909)	Tennessee

College LICENSED ON SATISFACTORY CREDENTIALS	Year Grad.	Total No. Licensed
Arkansas Industrial University	(1895)	1
University of Colorado	(1916)	1
Atlanta Medical College	(1914)	1
Baltimore University	(1902)	1
John A. Creighton Medical College	(1907)	1
University of the City of New York	(1893)	1
North Carolina Medical College	(1910)	1
Cleveland College of Phys. and Surgs.	(1914)	1
Western Pennsylvania Medical College	(1891)	1
University of Toronto	(1897)	1
National School of Medicine, Mexico	(1897)	1

Book Notices

Feeding the Family. By Mary Swartz Rose, Ph.D., Assistant Professor, Department of Nutrition, Teachers College, Columbia University. Cloth. Price, $2.10. Pp. 449, with illustrations. New York: The Macmillan Company, 1916.

More and more attention is being given to the relation of diet to disease and to health. The requirements of a satisfactory diet are varied: they include not only a sufficient number of calories, but also a variety of food which shall stimulate the appetite, a number of esthetic considerations which make food more attractive, and numerous relations to the health of the body. The author has apparently had in mind all these considerations in the preparation of her book.

The first chapter is devoted to a consideration of the calories necessary to fulfil the fuel requirements of the body and to the mineral content of ordinary foods to fill such requirements. The next chapter is devoted to the digestive organs and the variation of diet to avoid disturbances of intestinal action. The following chapters are classified according to the requirements of the various members of the family; for example, food for the adult man, the adult woman, the baby, the child of 2, 3, 5 and 8 years, of adolescence, and for the aged. The whole is then grouped under the question of food for the family, and this is considered in relation to the menus and cost of food and various special dietaries. The latter part of the book considers food for the sick and the convalescent. Here will be found the answers to many questions which may arise in the mind of the physician who is compelled to supply diets for patients with various conditions.

The book is useful and attractive, and can be employed with advantage in the physician's home as well as to the benefit of his patients.

Blood-Pressure from the Clinical Standpoint. By Francis Ashley Faught, M.D. Second Edition. Cloth. Price, $3.25 net. Pp. 478, with illustrations. Philadelphia: W. B. Saunders Company, 1916.

Dr. Faught's book offers a practical guide to the use of the sphygmomanometer and the clinical determination of blood pressure. It includes also a general discussion of the interpretation to be placed on blood pressure determinations. The author has combed the literature thoroughly, as is evidenced by numerous references to the most recent periodical literature. So much has recently been written concerning blood pressure that many of the observations of yesterday no longer apply. For this reason Dr. Faught suggests that "the purely scientific investigator should not be too critical of the conclusions drawn" as "the chief effort has been to reduce a very large and complicated subject to a practical working basis."

A Treatise on Diseases of the Skin for Advanced Students and Practitioners. By Henry W. Stelwagon, M.D., Ph.D., Professor of Dermatology in the Jefferson Medical College. Eighth Edition. Cloth. Price, $6.50 net. Pp. 1309, with 389 illustrations. Philadelphia: W. B. Saunders Company, 1916.

A number of new subjects, among the most important of which is that of occupational dermatoses, have been added to this standard work. It has been revised by the elimination of some old cuts and the addition of many new ones, the deletion of obsolete matter, and the correction of the text wherever necessary to bring its statements into accord with recent observations. It is, therefore, as in past editions, a dependable work on diseases of the skin, to which the practitioner may refer with the assurance that he is being correctly informed and well guided in this branch of his practice.

Mother's Guide in the Care of Her Children. By Dr. Sigmund A. Agatston, Lecturer on Diseases of Children at the New York Polyclinic Medical School. Cloth. Price, 50 cents. Pp. 85. New York: James T. Dougherty, 1916.

This book is apparently a collection of the author's notes on the care of children. It contains much material of value loosely classified, but well indexed so that the mother may seek out the answer to any question which may arise. The book is not so complete or so well organized and prepared as many others already available. Its chief recommendation is its small price.

Social Medicine, Medical Economics and Miscellany

Confessions of a Chiropractor

An article—actually as an advertisement—in the Ogden (Utah) *Examiner,* Oct. 1, 1916, evidently intended as an argument in favor of chiropractic, contains statements which show how little use "healers" of that branch have for education. Preliminary education is foolish, nay burdensome. Note the following:

> Education which has no relation to the theme or subject under consideration becomes burdensome and therefore detrimental.

Greek and Latin, for example, are

> Both dead tongues and, outside of those engaged in translating manuscripts, are used only to display pedantry; they are of no value to chiropractors.

This is especially worth nothing:

> They would compel us to study bacteriology. This is of no value to the chiropractor. It is not worth while to spend time, energy and money to microscopically examine infinitesimal mites or to group and classify them.

Of course, there is no such thing as blood poisoning, or infections; diphtheria and its cure with antitoxin are fabrications from some overworked anemic intellect, and even if there are contagious diseases, smallpox, spinal meningitis, infantile paralysis or others, all, forsooth, may be cured by the magic touch of the chiropractor applied to the patient's spine. Why bother one's head regarding microbes? As to materia medica, oh, horrors!

> We would also be required to learn "materia medica." What on earth would we do with that ponderous knowledge, we who abhor the very name of drugs and repudiate their use?
>
> There is also chemistry, which has nothing in common with chiropractic and cannot be made an adjunct to it.

Evidently education generally has "nothing in common with chiropractic" or is it that chiropractic has nothing in common with education?

> Greek, Latin, bacteriology, chemistry and materia medica would be of no more use (to chiropractors?) than a whipsocket would be in an automobile or a smoke stack to an aeroplane.

What on earth is the use of spending four years in high school, two years in college, four years in a medical school and a year or more as an intern in a hospital and getting all that "burdensome and detrimental" knowledge, when you can become a full-fledged chiropractor, and after three months or possibly less of correspondence study have the right to treat the sick!

All of this reminds one of the old adage that "A wise man knows a fool because he has once been foolish, but a fool cannot know a wise man because he has never been wise."

Payment for Treatment of Venereal Disease

H. Schönheimer (*Deutsch. med. Wchnschr.,* Oct. 5, 1916, p. 1232) expatiates on the spread of venereal diseases since the war, and the necessity for systematic and thorough treatment, accessible to all who need it, in order to protect others. The treatment should include infected wives. The question now is, Who is to pay for this, and how shall it be paid? Overcrowding and inadequate remuneration will necessarily entail inadequate treatment. The Invaliditätversicherung, or department of social insurance, seems to be the party to pay for the medical work, and a tentative agreement has been made in the Rhine province between this Landesversicherungsanstalt and the organized profession, the Aerztekammer, for treatment of the insured who are not enrolled in the Krankenkassen. According to this agreement, each treatment is to be paid for separately, but the total to be paid for a six weeks' course of treating syphilis is not to exceed 75 marks. For chronic gonorrhea there are to be not more than three treatments a week, with the catheter, rinsing the bladder or massaging. For the first two injections of salvarsan, 10 marks each; the following, 5 marks, and not more than six in the course. For each injection of mercury, 2 marks; for each examination of the urine (including microscopic), 2 marks; written reports, dilatations and massaging the prostate, each 3 marks.

In Berlin there is talk of an agreement by which a lump sum of 7.5 marks is to be paid by the month for the treating of each case. This is less than the social insurance contract rate of 5 marks a year, for this is per capita for all the insured, the well as well as the sick, while effective treatment of venereal disease requires intensive measures for a month. Schönheimer adds: "Of course there have been threats that if the local physicians decline these terms, others will be imported at a fixed salary; but the days are past, thank heaven, when it was possible to intimidate physicians with this threat. The arrangement would be discredited at once before the public if it should be put through exclusively with low-grade. It is for us to watch over the first steps in this comparatively new field. There is much to be done if the evil is to be rooted out. There are other affections, besides the venereal, the combating of which is an urgent task for the public welfare. This should all be done with the glad cooperation of physicians, but it should not be at the cost of their financial ruin."

The Faddist

We are a nation of cultists and faddists—any new doctrine becomes a rallying point for a body of devoted followers who enthusiastically propagate their hobby, even though it be so inordinately ridiculous as to demand the attention of the alienists. Medicine has suffered particularly from these peculiar minded advocates. "Sinapis" in the *Medical Press and Circular,* considering a recently published pamphlet on "Human Temperaments," by Dr. Charles Mercier, says that Mercier is properly scornful about the man who treats a disease and fails to treat his patient. "He pleads for a hearing, if not for honor, for the ancient physicians who studied the mental qualities 'occurring in groups' to which they gave the name temperaments." Particularly pointed are the observations of Mercier on the faddist.

> Of the positive fads, the most numerous are those which are supposed, on very insufficient evidence, to contribute to health. The health faddist eats strange food. He lives on fruit and nuts, or toast and water; his fruit and nuts, or whatever the faddy food is, must come from a particular source of supply and be of a particular brand. His beverage must be measured to the thimbleful. If he drinks tea, it must draw for so many seconds by a stop-watch, and the milk must be sterilized. He wears strange clothes; he must or must not wear certain fabrics next his skin; his clothes must be of special material, of a special brand, and must be made by a certain tailor and no other. He wears no hat, or his hat must be of a faddy shade or faddy material, or both. He has a certain ritual of exercises; breathing exercises, exercises to strengthen the lungs, the heart, the stomach, the liver, the arms, the legs, and the rest of him; and this ritual he performs daily with all the zeal of a religious devotee, for to him it is a religion. He must chew each mouthful so many times, and cannot talk at meals because he is engaged in counting the movements of his jaws. All this he does to preserve a life that is not worth preserving: to keep in health a body that serves no useful purpose. His motto is: *Propter vitam vivendi perdere causas.*

Eclampsia Rare on War Diet in Germany

According to an abstract in a Danish exchange, the statistics from the largest three maternities in Berlin show that eclampsia is comparatively rare at present. The proportion has dropped in one maternity from 2.6 per cent. of 2,004 childbirths in 1913 to 0.8 per cent. of 1,430 in ten months of 1916; in the Charité, from 2.4 per cent. of 3,570 births to 0.57 per cent. of 1,400, and at the Virchow Hospital from 1.2 per cent. of 3,664 childbirths to 1 per cent of 2,462. Warnekros and Ruge ascribe this reduction of the number of cases to the changes in the diet imposed. In the cases in which eclampsia occurred, it was mild and brief, practically abortive. In the one exception, a quite severe case, it was found that the woman's husband, being a diabetic, had secured large extra amounts of meat and butter. The tables given show that the number of cases of eclampsia was less in 1913 than in the year or two before, a gradual decline being evident; but, since the war began, the drop has been at the Charité 75 per cent., and at the women's clinic over 66 per cent. The conclusion seems inevitable that restriction of fat and meat tends to ward off eclampsia.

Medicolegal

Medical Practice Act Constitutional—Herbalists Must Have Certificates

(*Ex parte Chow Juyan* (*U. S.*), *235 Fed. R. 1014*)

The United States District Court, in California, in denying the petitions for writs of habeas corpus of several Chinese who practice the art of healing by the use of herbs, says that the petitioners were convicted in the state courts of practicing without the medical certificate required in California by the act of June, 1913, the conviction was upheld by the district court of appeal, and an application to the Supreme Court of California for a writ of habeas corpus was denied, after which a similar application was made to this court. The basis of the petitions was the alleged unconstitutionality of said act for a number of reasons. It was claimed that the title is defective; but such defect, if it exist, is one solely under the state constitution, and the courts of the state have held the act to be valid. It was further urged that the act is unconsitutional because of its provisions regulating drugless healers, in that it defines the drugless practitioner as one who treats diseases without the use of drugs and without in any manner severing or penetrating any of the tissues of human beings except the severing of the umbilical cord. The argument was that such practitioners do continually by manipulation and adjustment sever the tissues of human beings in using their particular mode of treatment. The district court of appeal disposed of this contention by the statement that it is evident from the whole context that the word "sever" as therein used means a severance by cutting. In addition, it may be said that the petitioners are not drugless practitioners, and the provision in question does not affect them. It was also urged that the act is unconstitutional as applied to the petitioners because it gives to the board of medical examiners the power arbitrarily to determine the fitness of applicants for certificates and the standard of colleges as a matter of mere personal approval, without regard to any standard fixed by the legislature itself, and that such delegation of power is unconstitutional. But such delegation, even if conceded, contravenes no provision of the constitution of the United States, nor any law of Congress, that has been called to this court's attention. Whether or not it contravenes a provision of the state constitution is a matter within the cognizance of the courts of the state, and they have held that it does not. It was also urged that the act interferes with interstate commerce because it prohibits or unduly burdens the sale of imported herbs. But it does not prohibit the sale of such herbs, and, if it burdens such sale, it is only because the seller, in addition to selling the herbs, acts also as a physician in prescribing their use, and the prescribing is burdened to the extent that the prescriber must have the medical certificate required. It is not Chinese herbalists alone who must secure such certificate, but all herbalists; that is to say, all persons who treat others by the use of drugs, whether exclusively herbal drugs, or otherwise. There appears no reason why this court should interfere with the enforcement of the act in question.

Narrowing Construction of Medical Practice Act

(*State vs. Fite* (*Idaho*), *159 Pac. R. 1183*)

The Supreme Court of Idaho reverses, with instructions to dismiss the action, a judgment pronounced against the defendant, a chiropractor, on his conviction of having practiced medicine within the state without having obtained a license so to do. The court says that the practice of medicine in Idaho is regulated by Chapter 17, Title 8, of the political code (Sections 1341 to 1356 inclusive). Section 1353 provides: "Any person shall be regarded as practicing medicine and surgery, or either, who shall advertise in any manner, or hold himself or herself out to the public, as a physician and surgeon, or either, in this state, or who shall investigate or diagnosticate, or offer to investigate or diagnosticate, any physical or mental ailment of any person with a view to relieving the same as is commonly done by physicians and surgeons, or suggest, recommend, prescribe or direct, for the use of any person, sick, injured or deformed, any drug, medicine, means or appliance for the intended relief, palliation or cure of the same, with the intent of receiving therefor, either directly or indirectly, any fee, gift or compensation whatsoever. . . ." The proper interpretation of that section is the court's chief concern in this case. The apparent lack of harmony among the reported cases may be accounted for, to a considerable extent at least, by the difference in the language employed by the different legislatures in formulating statutes on the subject. These statutes may be divided into two classes: (1) Those which seek to prevent the use of drugs, medicines, surgical instruments and appliances by persons unskilled in their use, and (2) those which seek to prevent the practice, or pretended practice, of the healing art, in any manner, by persons who do not possess sufficient educational qualifications to enable them to pass a medical examination such as is prescribed by a board of medical examiners provided for by law. The statute of Idaho here under consideration belongs to the former classification. Constitutional provisions and statutory enactments should be read and construed in the light of conditions of affairs and circumstances existing at the time of their adoption. The law of Idaho regulating the practice of medicine and surgery, of which Section 1353 is a part, was enacted by the legislature in 1899. Up to that time no provision had been made for the appointment of a state board of medical examiners, or for subjecting applicants for a license to practice that learned profession to an examination touching their educational qualifications to do so. At that time chiropractic was unknown in the state, and but little, if anything, was known of osteopathy. Those who offered to heal the afflicted were either graduates of reputable schools of medicine and surgery, or were mere pretenders who assumed to practice that profession without having so graduated. It seems to the court to be perfectly clear that the legislature, recognizing drugs and surgical instruments to be dangerous in the hands of the unskilled, sought, by the enactment of Chapter 17, Title 8, of the political code, to reach and prohibit the pretenders rather than practitioners of branches of the healing art which had not yet come into existence, or were, at least, unknown in Idaho. Subsequent legislatures seem to have adopted this view, for, in 1907, a law regulating the practice of osteopathy was enacted; also one regulating the practice of optometry; and in 1911 an act was passed providing for and regulating the examination and registration of graduate nurses and fixing their qualifications. The legislature has given to the clause contained in Section 1353, "as is commonly done by physicians and surgeons," controlling force, and has limited the prohibition contained in the chapter in question to persons who would attempt to practice medicine and surgery without first having obtained a license so to do by the words "physicians and surgeons," as those words were used and commonly understood by the people of Idaho at the time the law was enacted. The court believes this to be a correct interpretation of that statute, and that it was the intention of the legislature which enacted it that it should be so limited. Wherefore the court concludes that the practice of chiropractic is not the practice of medicine and surgery as defined in Section 1353, and that the defendant was erroneously convicted.

Patient Not Bound to Let Surgeon Failing Once Perform Second Operation

(*Atlas Portland Cement Co. vs. Hagen* (*U. S.*), *233 Fed. R. 24*)

The United States Circuit Court of Appeals, Eighth Circuit, in affirming a judgment in favor of plaintiff Hagen for damages for personal injuries sustained in the service of the defendant company, says that the company asked the giving of an instruction that: "The court instructs the jury that the defendant is not responsible for any injury to plaintiff caused by any act, operation, or conduct of plaintiff's physicians or surgeons." This instruction was refused. It was erroneous on its face, but especially so as shown by the record. The plaintiff testified, and the jury had a right to believe, that the company's surgeon set his limb; that one day, when they were putting him on a bed pan, he felt the bones slip. This was three days after the injury. He called the attention of the surgeon and the nurse to it, but the surgeon did not even make an examination. The plaintiff remained at the hospital six weeks, and was then taken home and remained there a week. At the end of five weeks the bandages were taken off. The surgeon took him home and then pronounced the leg in good shape. In a day or two he came back and the leg was bent, and the next day he again called and wanted to break the leg again. After seven weeks of suffering with this broken leg, more than six weeks after it slipped and the surgeon had been notified, and a bony union had been formed, the plaintiff was justified in declining to let the same surgeon break it again and operate further. The plaintiff simply told the surgeon that he could not break it again, and the surgeon then turned the case over to another physician; but, before this, at a conference of the surgeon and several other physicians, it was agreed by all of them that a second operation was necessary. The plaintiff then employed a prominent surgeon to perform a second operation, assisted by three others. These were all competent physicians and surgeons, and there was no evidence of negligence in their selection. From their testimony it appeared that the union formed under the first surgeon was with the ends of the bones overlapping. The new operation was not a success, but there was no negligence on the plaintiff's part in refusing to let the same surgeon perform the second operation, who had concededly failed in the first, perhaps without fault on his part, nor in the selection of new ones; and, if the defendant was liable at all, it was liable for the entire injury which the plaintiff sustained as the result of its negligence in failing to comply with the statute by safeguarding its machinery.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
California State Medical Society, San Diego, April 17-19.
Georgia Medical Association, Augusta, April 18-20.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

February, CLIII, No. 2

1 Epidemic Poliomyelitis; Its Nature and Mode of Infection. S. Flexner, New York.—p. 157.
2 Administrative Control of Epidemic Poliomyelitis. H. Emerson, New York.—p. 160.
3 Poliomyelitis; Preparalytic Stage and Diagnosis. J. Ruhräh, Baltimore.—p. 178.
4 Clinical Aspects and Treatment of Acute Poliomyelitis. T. Le Boutillier, Philadelphia.—p. 188.
5 Epidemic Vaginitis in Children. B. K. Rachford, Cincinnati.—p. 207.
6 How Closely Do Wassermann Reaction and Placental Histology Agree in Diagnosis of Syphilis? J. M. Slemons, New Haven, Conn.—p. 212.
*7 Von Jaksch's Anemia; Report of Cases. R. G. Stillman, New York.—p. 218.
8 Case of Yeast (Monilia) Infection of Lung. C. E. Simon, Baltimore.—p. 231.
9 Rôle of Leukocytes in Viridans Endocarditis and Effect of Nuclein Injections. H. Fox and F. B. Lynch, Philadelphia.—p. 235.
10 Interpretation of Certain Blood Pressure Ratios. W. J. Stone, Toledo.—p. 240.
11 Vincent's Angina; Report of Cases. A. T. McClintock, Wilkes-Barre, Pa.—p. 256.
12 Some Facts and Fallacies Concerning Abdominal Adhesions and Bands. G. G. Ross and J. B. Mencke, Philadelphia.—p. 261.
13 Treatment of Syphilis of Central Nervous System with Intraspinal Injections of Mercurialized Serum; Report of Cases. J. M. Wolfsohn, San Francisco.—p. 265.
14 *Hematemesis Due to Chronic Appendicitis, with Explanation of Its Pathologic Physiology. J. H. Outland and L. Clendening, Kansas City, Mo.—p. 273.

14. **Hematemesis Due to Appendicitis.**—In the case cited by Outland and Clendening a true inflammation of the appendix was present. Innumerable small glands in the omentum and mesentery, hard and universally distributed, pointed to a stream of infection carried up the omentum and deposited at the pylorus. The appearance of the stomach, mottled and covered with fine veins, was the evidence of the result of this bombardment of septic material. The hemorrhage of the stomach was almost certainly due to the seepage from this inflamed gastric mucosa and serosa rather than any rupture of an enlarged vessel. The dyspepsia, the hyperacidity, and the epigastric pain were the reaction of the stomach to this continuous stream of irritation passing from the appendix up the omentum. The authors believe that this explains not only this case but the many cases of dyspepsia exactly simulating the symptoms of gastric and duodenal ulcer in which no ulcer is found, but which in many cases, when the appendix looks innocent enough, are cured by an appendectomy.

American Journal of Syphilis, St. Louis

January, I, No. 1

15 *Chemotherapy of Mercurial Compounds. J. F. Schamberg, J. A. Kolmer and G. W. Raiziss, Philadelphia.—p. 1.
16 *Bladder in Diseases of Central Nervous System; Analytical Study of One Hundred and Seventeen Cases. J. R. Caulk and H. G. Greditzer, St. Louis.—p. 42.
17 Subconjunctival Injections of Salvarsanized Serum in Management of Ocular Syphilis. R. S. Lamb, Washington, D. C.—p. 58.
18 Gumma of Nose. T. J. Harris, New York.—p. 60.
19 Unusual Forms of Syphilis of Nervous System with Particular Reference to Their Diagnosis. J. Collins, New York.—p. 63.
20 Spirochetal Content of Spinal Fluid of Tabes, General Paresis and Cerebrospinal Syphilis. U. J. Wile, Ann Arbor, Mich.—p. 84.
21 Syphilis of Stomach; Report of Cases. H. L. McNeil, Galveston, Texas.—p. 91.
22 Id. Thirty-Five Instances of Organic Gastric Lesions Associated with Positive Wassermann-Noguchi Reactions. F. Smithies, Chicago.—p. 100.
23 Syphilis of Stomach in Its Roentgenologic Aspects. R. D. Carman, Rochester, Minn.—p. 111.
24 *Syphilis and Baby. L. R. DeBuys, New Orleans.—p. 117.
25 Sanitary Attack on Syphilis. W. A. Pusey, Chicago.—p. 125.
26 *Teaching of Syphilis. H. H. Hazen, Washington, D. C.—p. 135.
27 Place of Syphilis in Our Medical Schools and Hospitals. C. J. White, Boston.—p. 144.
28 Importance of Knowledge of Syphilis and Especially of Visceral Syphilis for General Medical Diagnosis. L. F. Barker, Baltimore.—p. 149.
29 Syphilis of Thyroid; Report of Probable Case. L. Thompson, Hot Springs, Ark.—p. 179.
30 Practical Application of Wassermann Test in Diagnosis and Control of Treatament of Syphilis. C. F. Craig, U. S. Army.—p. 192.
31 Plea for Routine Wassermann Examinations for Obstetric and Gynecologic Patients in Hospital and General Practice. R. Peterson, Ann Arbor, Mich.—p. 211.
32 Rabelais' Conception of Syphilis. D. W. Montgomery, San Francisco.—p. 221.

15. **Chemotherapy of Mercurial Compounds.**—The authors' laboratory experiments on trypanosomes and spirochetes point to a greater selective affinity of salvarsan for the *Spirochaeta pallida* than is possessed by mercury. Mercuric chlorid has a much greater organotropic effect than salvarsan; in their experiments mercury was fifty times more toxic for white rats than salvarsan. Some new organic mercury compounds by the authors which far transcend mercuric chlorid in their bactericidal power in the test tube have been prepared. One new compound has shown itself to be over thirty times more powerful in this respect, both by the Rideal-Walker and the "antiseptic" test. These new mercury compounds also exhibit a greater destructive influence on trypanosomes than does mercuric chlorid. Some of these compounds have shown a lower toxicity than mercuric chlorid.

16. **Bladder in Diseases of Central Nervous System.**—Of the 117 cases tabulated by Caulk and Greditzer seven patients have died. Of these, two were tabetics; one had a spinal cord tumor; the other four were unconfirmed cases, or practically 6 per cent. mortality. This mortality has been contributed to chiefly by renal insufficiency, as in the case of the

cord tumor, and one tabetic died of uremia; three patients of the unconfirmed cases died of uremia; one of the tabetics died suddenly of collapse, after being comparatively in good condition. One of the unconfirmed patients died of ruptured bladder from carcinoma.

24. **Syphilis and Baby.**—As soon as it is ascertained that a woman, known to be or to have been syphilitic, is pregnant, treatment is advised to be instituted at once, combining salvarsan or neosalvarsan with mercury and the iodids, and when the baby is born it is determined, as soon as possible, by clinical and laboratory evidences, employing both the Wassermann and syphilitic tests, whether or not he is syphilitic. If the baby's reaction is negative he is closely watched and subsequent examinations are made. If the baby's reaction is positive the baby and mother are both given salvarsan or neosalvarsan, and the mother mixed treatment, and the baby mercurial rubs. There are times, however, when because of the surroundings, medication by mouth is employed instead of the rubs, in which instances calomel or mercury with chalk is given. Occasional Wassermann tests are made to determine when the patient becomes inactive or apparently cured, at which time the treatment is stopped but observations continued. There are times when it becomes necessary to discontinue medication in the baby owing to the overaction of the mercury, because of gastro-intestinal symptoms or loss of weight. After the symptoms subside, the treatment is begun again. It has been DeBuys' custom for many years to employ the rubs in the same place, namely, over the belly, without producing any skin irritation. The plan is to bathe the baby with soap and water, thoroughly rinse the skin, particularly over the belly, dry it thoroughly, rub in the ointment, and put on a flannel binder. This procedure goes on daily, employing the same binder. At the end of a week's time the dose of the ointment is increased and the binder changed. In this way it can readily be seen that the daily dose of the mercury is increased. This is done until the point of tolerance is reached.

26. **Teaching of Syphilis.**—Hazen emphasizes the fact that it is essential to have better teaching of syphilis. This teaching should be essentially clinical, and should be done both in the dispensary and at the bedside. To teach syphilis properly the patients must be well handled, as example is the best teacher. The teaching can be done by one department alone, provided that it has a special corps of select men. In the vast majority of instances one man should head the department, and he should work in harmony with the other departments, so that the whole subject can be handled systematically. The dermatologist is usually the proper man to head this department.

Annals of Surgery, Philadelphia

February, LXV, No. 2

33 *Choice of Operative Procedure in Cancer of Rectum and Pelvic Colon. C. H. Mayo, Rochester, Minn.—p. 129.
34 *Influence of Acidosis on Surgical Procedures. W. A. Lincoln, Calgary, Alberta.—p. 135.
35 Chemotherapy of Experimental Bacterial Infections. J. A. Kolmer, Philadelphia.—p. 142.
36 *Acute Osteomyelitis of Spine; Report of Cases. D. N. Eisendrath and D. L. Schram, Chicago.—p. 147.
37 *Significance of Giant Cells in Bone Lesions. G. Barrie, New York.—p. 151.
38 Composite Study of Celiac Axis Artery. B. Lipshutz, Philadelphia.—p. 159.
39 *Comparison of Permanence of Free Transplants of Bone and Cartilage. J. S. Davis, Baltimore.—p. 170.
40 *Paget's Disease of Nipple and Its Extramammary Occurrence. S. Sekiguchi, Tokyo, Japan.—p. 175.
41 Papilloma of Umbilicus; Report of Case. N. B. Carson, St. Louis.—p. 199.
42 *Healing of Gastro-Intestinal Anastomoses. J. M. Flint, New Haven, Conn.—p. 202.
43 Case of Traumatic Extraperitoneal Rupture of Bladder with Fracture of Pelvis. C. E. Hawkes, Providence, R. I.—p. 222.
44 *Indications for Iodoform Wax Bone Filling of Mosetig-Moorhof; Report of Cases. A. P. C. Ashhurst, Philadelphia.—p. 227.

33. Abstracted in The Journal, January 20, p. 222.

34. **Influence of Acidosis on Surgical Procedures.**—The points particularly emphasized by Lincoln are the possibility of acidosis occurring in many conditions besides diabetes, and the necessity of a proper and continued examination of the urine for acid by-products. Surgeons should have their eyes open to the danger in the preparation of patients for operations of a too prolonged starvation, especially in the case of children or those suffering from any form of exhaustion. The treatment in most cases reduces itself into supplying sufficient carbohydrate and to the neutralization of those acid by-products present by the administration of alkali. Sodium bicarbonate may be administered until the urine is faintly alkaline. Wakefulness and nervousness should be controlled, if possible, and all forms of exertion prohibited. The operation should be performed as rapidly as consistent with proper technic and under local anesthesia if any degree of acidosis be present.

36. **Acute Osteomyelitis of Spine.**—A man, aged 23, was admitted to the hospital on account of acute urinary retention. The patient looked very septic, the temperature was 104.2 F. (rectal) and pulse 120. He complained of pain over the lumbar region of the spine of a diffuse character. He had always enjoyed excellent health except for an infection of the right index finger, requiring operation one month before. Present illness began suddenly with pain in the back, radiating to the left side, and accompanied by high fever and severe night sweats for twelve days before admission. Examination of the spine at first had shown only diffuse tenderness over the lumbar and sacral regions, but during the last half of the first twenty-four hours there was retraction of the neck with marked rigidity of the entire spine and symptoms of meningeal irritation. No eye changes were found. Leukocytosis was 14,000. Lumbar puncture was done and pure pus escaped from the spinal canal. The *Staphylococcus aureus* was found in pure culture in the fluid. The roentgenograms showed an area of osteoporosis in the body of the third lumbar vertebra. The possible presence of an acute osteomyelitis of the spine in the lumbar region, secondary to the infection of his index finger was suggested and a laminectomy for drainage of the epidural abscess was done. The cauda equina was covered with reddish, fibrinous material and completely enveloped in thick pus lying in the epidural space. There was an apparent walling off of the suppuration in an upward direction, but toward the sacrum there was free pus around the cauda. The patient recovered.

37. **Significance of Giant Cells in Bone Lesions.**—The presence of numerous giant cells within the pathologic mass, on which great stress has heretofore been made as evidence of neoplastic growth, Barrie says, is really the index of a mild inflammatory process. No proof has ever been given that the giant cells, per se, have any effect on true tumor growth. Abundant evidence is to be had regarding their connection with processes of a mild inflammatory character. It is only necessary to bear in mind that the pathology of a localized so-called rarefying ostitis gives a picture similar to the early stage of what has been named giant cell sarcoma. It is not difficult to produce experimentally a lesion in the long bones that exactly resembles a so-called medullary giant cell sarcoma, or tumor, both in its gross and histologic aspects. As it seems impossible of proof that the giant cells have anything to do with tumor growth or tumor formation and all evidence points to their function as scavengers, or foreign body cells, brought forth for a definite purpose, and disappearing when that purpose is fulfilled, it does not seem to Barrie that they may be effectively classed as tumor cells. Neither can the granulation tissue masses that compose these lesions rightly be termed tumors or neoplasms. Barrie emphasizes the opinion expressed in earlier papers that this bone lesion should be grouped with the surgical diseases classified as inflammations. From the clinical picture and gross and microscopic pathology it presents, the term "chronic (proliferative) hemorrhagic osteomyelitis" is, perhaps, more exact and correct than the other terms now in use.

39. **Free Transplants of Bone and Cartilage.**—Experiments made by Davis show that transplants of free cartilage are unchanged during the length of time under observation, while free bone transplants under exactly the same conditions had either disappeared or showed marked degenerative processes.

40. **Paget's Disease of Nipple.**—Sekiguchi is of the opinion that Paget's disease is primary carcinoma of the orifices of the lactiferous or the sudoriferous ducts.

42. **Healing of Gastro-Intestinal Anastomoses.**—The healing of gastro-enterostomies, Flint found, may in parts of the anastomosis, take place by what we are accustomed to call "first intention," that is to say, with a minimum of inflammatory reaction. This occurs when there has been only a slight interference with the circulation of the gastric and intestinal mucosa. The more usual and slower method of healing occurs when there has been more or less interference with the circulation of the mucous membrane of the stomach and intestine. The regeneration of the intestinal mucosa takes place from the crypts which, in the neighborhood of the exudate, have returned to their embryonic form. The regeneration of the gastric mucosa generally begins from the less differentiated epithelium about the mouths of the gastric glands or from tubules that have returned to their embryonic form. The muscularis mucosae begins to regenerate about the second week. It may be repaired from its cut ends or may be, in part, compensated for by means of muscle tissue derived from the severed ends of the tunica muscularis of either the intestine or the stomach. At times the tunica muscularis does not regenerate at all, the infolded muscular layers being held together by new formed connective tissue. In other instances there is considerable regeneration of the muscular layers. After the gastro-enterostomy there is no modification of the intestinal epithelium. The cells appear perfectly normal.

The clinical bearing of Flint's studies emphasizes the fact that it is well to know not only the reaction of the stomach and intestine to the operative traumatism inflicted in performing a gastro-enterostomy but also the reparative process through which the organs pass during the period of healing. One should remember that the new formed anastomosis is the site of a healing ulcerated surface for a period of fourteen days and that, for the first five or seven days, the process is largely destructive, at least so far as the mucosa is concerned. Sight of this fact ought not to be lost in feeding these patients for the first two weeks, during which period the diet should be as light as is compatible with the maintenance of the strength of the patient.

44. **Indications for Mosetig-Moorhof Bone Filling.**—The iodoform wax filling, Ashhurst points out, is most easily applied and proved most satisfactory in cases of bone cavities which are sterile or nearly so at the time of operation. Thus, in cases of bone cysts or early and localized tuberculous disease, primary healing usually may be expected; and even in cases of bone abscess with attenuated infection, healing usually will occur without further interference, though a sinus may persist for some months. But even in cases not as promising as those just mentioned, *Plombierung* is frequently of inestimable advantage.

Archives of Pediatrics, New York

January, XXXIV, No. 1

45 History of Pediatrics in New York. A. Jacobi, New York.—p. 1.
46 Problem of Cardiac Child in New York. L. E. Holt, New York.—p. 12.
47 Diatheses in Their Clinical Aspect. A. Caillé, New York.—p. 16.
48 Hospital Care of Premature Infants. L. E. La Fétra, New York.—p. 22.
49 Communicability of Poliomyelitis. C. G. Kerley, New York.—p. 32.
50 Measles. C. Herrman, New York.—p. 38.
51 Country Care of Cardiac Child; What May Be Accomplished. H. B. Wilcox, New York.—p. 43.
52 Ocular Work and Rest in Childhood. C. W. Cutler, New York.—p. 50.
53 Pediatric Center in New York. H. D. Chapin, New York.—p. 61.

Boston Medical and Surgical Journal

February 8, CLXXVI, No. 6

54 Principles Underlying Surgery of Pancreas. J. B. Deaver, Philadelphia.—p. 187.
55 *Sensory Evidence of Nerve Regeneration. I. H. Coriat, Boston.—p. 192.
56 Possibilities in Social Service for Psychopathic Patients. M. C. Jarrett, Boston.—p. 201.
57 Inebriety from Medical Viewpoint. I. H. Neff, Norfolk.—p. 204.
58 Framingham Health and Tuberculosis Demonstration. D. B. Armstrong, Framingham.—p. 206.
59 Drug Treatment of Morphinism. F. H. Carlisle, Norfolk.—p. 209.
60 Case of Congenital Alopecia. J. H. Blaisdell and A. R. Cunningham, Boston.—p. 210.

February 15, No. 7

61 Acidosis; Summary of Recent Knowledge. J. L. Whitney, San Francisco.—p. 225.
62 Chronic Carbon Monoxid Inhalation and Some of Its Untoward Results. W. J. McGurn, Boston.—p. 231.
63 Epidemiology of Anterior Poliomyelitis Epidemica, 1916. D. M. Lewis, New Haven, Conn.—p. 234.
64 Medical Services and Medical and Hospital Fees Under Workmen's Compensation. F. D. Donoghue, Boston.—p. 235.
65 Physical Examination and Medical Supervision of Factory Employees. W. I. Clark, Worcester.—p. 239.
66 Fallacious Social Philosophy of Health Insurance. F. F. Dresser, Worcester.—p. 244.
67 *Fat Embolism Cause of Shock. W. T. Porter, Boston.—p. 248.
68 Shockless Surgery. Paravertebral Anesthesia with Scopolamin and Narcophin. A. R. Kimpton, Boston.—p. 248.
69 Tonsil Abscess. J. Prenn, Boston.—p. 249.

55. **Sensory Evidence of Nerve Regeneration.**—On the basis of clinical and neuropathologic data the following conclusions are drawn by Coriat: The nerve supply of the skin is not only different for the various receptors for pain and touch, but each of these regenerates at varying periods after a primary or secondary nerve suture. The time necessary for the beginning of the regenerative processes varies, although definite evidence of regeneration could be found within less than a month after suture of a nerve. The best evidence of regeneration, both from the standpoint of time and of successful nerve suture, is seen in the protopathic system. Here, when the tests are carefully made, pain points of various intensity and number can be demonstrated in the midst of an area otherwise completely analgesic. That these pain points are evidences of a regenerative process in the nerve was demonstrated, not only clinically, but was corroborated in one case histologically after a secondary nerve suture. The decrease in the threshold sensibility of these pain points seems to run parallel with the time and success of the nerve suture. As the process of regeneration proceeds, these pain points become less and less sensitive, finally disappearing altogether when regeneration is complete. It seems, also that the true source of regenerative processes in the nerve trunks is to be found in the neurilemma cells of the nerve trunk itself. It is in the presence of the neurilemma cells, or rather on their very active proliferation, that the possibility of regeneration and recovery after injury or suture is based.

67. **Fat Embolism Cause of Shock.**—An attempt was made by Porter to demonstrate by measurements of the blood pressure a causal relation between fat embolism and traumatic shock. He found that by injecting the officinal emulsion of olive oil, thick cream, neutral olive oil into the jugular vein of cats he could reproduce a clinical picture essentially similar to that of traumatic shock in human beings. The essential feature of the traumatic shock is a characteristic fall of blood pressure. Fat in the blood stream is not injurious per se; its injurious effects are the product of fat embolism. Shock is most frequent after shell fractures, especially of the femur; therefore, Porter concludes that fat embolism is a cause, though not necessarily the only cause, of shock after fracture of the bones.

Bulletin of Johns Hopkins Hospital, Baltimore

February, XXVIII, No. 312

70 *Regeneration in Peripheral Nerves. E. G. Kirk and D. D. Lewis, Chicago.—p. 71.
71 *Significance of Xanthochromia of Cerebrospinal Fluid. T. P. Sprunt and J. E. Walker, Baltimore.—p. 80.
72 *Multiple Spontaneous Intracerebral Hemorrhages. P. Greenacre, Baltimore.—p. 86.

70. **Regeneration in Peripheral Nerves.**—Forty-one specimens were studied by Kirk and Lewis. It was noted that in the immediate vicinity of nerve trauma associated with break of continuity there occurs an accelerated hyperplasia of the neurilemmal elements which results in the early formation of protoplasmic bands. These develop in both proximal and distal stump and tend to bridge the defect. Along these

protoplasmic pathways the regenerating axis-cylinders from the central stump pass. Whether they reach the distal stump and neurotise it depends largely on the extent to which these preformed conduits have successfully prepared the way. All efficient regeneration of nerve fibers (axis-cylinders) is from the central stump. All regenerating nerve fibers, whether the outgrowth of medullated or of nonmedullated axones, are in their early stages nonmedullated. All medullation begins proximally and proceeds distally, appearing only in those parts of the new axis-cylinder which have acquired an age of 5 or 5½ weeks (in the dog).

71. **Significance of Xanthochromia of Cerebrospinal Fluid.**—Five clinical cases and an analysis of 100 cases from the literature form the basis of this report. Sprunt and Walker have previously called attention to the clear, yellow spinal fluids occasionally observed at lumbar puncture. These fluids are divided into two main groups: 1. Those in which the color is due to dissolved hemoglobin or its derivatives, and which as a rule do not coagulate spontaneously and contain only a small amount of globulin. Such fluids usually are associated with brain tumors in contact with the meninges or ventricles. 2. The larger and more important group comprises those cases showing the so-called Froin's syndrome, in which the fluid is transparently clear, yellow, coagulates spontaneously, contains large amounts of globulin, may or may not show pleocytosis, and gives no positive tests for hemoglobin. This is a "compression syndrome," its main determinants being the isolation of a lumbar culdesac, in which the spinal fluid stagnates, and probably some vascular changes within its walls. Clinically, with negative roentgenogram of the vertebral column, it is strongly suggestive of a tumor of the spinal cord, although it may also be associated with intradural inflammatory processes.

72. **Multiple Spontaneous Intracerebral Hemorrhages.**—Out of 128 cases of intracerebral hemorrhage analyzed by Greenacre in twenty-four (about 18 per cent.) the brain showed discrete multiple hemorrhages, none of them being traumatic. Plurality of hemorrhages was represented in three brains by three distinct sites of hemorrhage, and in the remaining twenty-one by two. The combination of one hemorrhage into the internal capsule or basal ganglia and one into the pons was most frequent, occurring in fifteen brains (63 per cent.). Of the seven brains (32 per cent.) in which both hemorrhages were into the cerebral hemispheres, five presented bilateral symmetrical hemorrhages implicating both internal capsules or basal ganglia. One brain contained hemorrhages into the cerebrum and the cerebellum, and one hemorrhage into the cerebellum and pons. In one brain only did the pontine hemorrhage appear to be primary, a single large clot in the center of the pons being associated with multiple punctate hemorrhages in the left internal capsule. The appearance of the pontine lesions varied greatly. In eight brains they were numerous and small, scattered irregularly throughout the pontine substance. In seven brains, moderately large hemorrhages occupied the center of the pons, filling the fourth ventricle and surrounding tissue.

Records of fifteen cases of traumatic pontine hemorrhages were examined for the purposes of comparison. Twelve of the fifteen (80 per cent.) occurred with basal skull fracture of the posterior and middle fossae. In only four (28 per cent.) was there a degree of arteriosclerosis sufficient to be detected grossly, in contrast to 67 per cent. of the group of secondary spontaneous pontine hemorrhages. The traumatic hemorrhages are almost uniformly punctate, frequently grouped around the periphery of the pons, and connected with small subpial extravasations and numerous lacerations, whereas the spontaneous pontine hemorrhages are remarkably free from such obvious contusions. These differences are frequently of great medicolegal importance. Greenacre suggests that the liability of the pontine arteries to secondary rupture is due probably to their anatomic peculiarities (in that they are short, small, terminal branches given off nearly at right angles from a large trunk), and possibly to a disturbance of blood pressure in the circle of Willis with a back flow into the posterior branches.

Illinois Medical Journal, Chicago

February, XXXI, No. 2

73 Some Objections to Health Insurance Legislation. E. H. Ochsner, Chicago.—p. 77.
74 Some Interesting Laboratory Investigations in Tuberculosis. H. J. Corper, Chicago.—p. 81.
75 Clinical Application of These Problems. W. A. Gekler, Chicago.—p. 86.
76 Influence of Mixed and Secondary Infection on Pulmonary Tuberculosis in Man. R. T. Pettit, Ottawa.—p. 88.
77 Tuberculin Therapy. L. J. Quillin, Streator.—p. 91.
78 Therapeutic Value of U. S. P. Tincture of Iodin in Treatment of Tuberculosis and Other Infectious Diseases when Properly Administered and Given in Progressively Increasing Doses. J. Ritter, Chicago.—p. 94.
79 Chemotherapy in Tuberculosis. M. W. Harrison, Collinsville.—p. 99.
80 Pregnancy in Tuberculous. E. M. Heacock, Chicago.—p. 100.
81 Diagnosis of Early Pulmonary Tuberculosis. G. Halperin, Chicago.—p. 103.
82 Radical Cure of Osteomyelitis of Ribs. E. G. Beck, Chicago.—p. 107.
83 Some Painful Affections of Feet. J. L. Porter, Chicago.—p. 110.

Iowa State Medical Society Journal, Des Moines

February, VII, No. 2

84 Typhus in Iowa. M. F. Boyd, Iowa City.—p. 45.
85 Conservation of Vision. T. U. McManus, Waterloo.—p. 51.
86 Occlusion of Nasopharynx. F. W. Bailey, Cedar Rapids.—p. 57.
87 Drainage for Empyemic Conditions of Chest. F. E. Bellinger, Council Bluffs.—p. 58.
88 Renal Infections and Their Treatment. A. G. Fleischman, Des Moines.—p. 64.
89 Origin of Psychopathic Hospital. G. H. Hill, Des Moines.— p. 67.
90 Sliding Hernia; Report of Case of Double Sliding Hernia. T. F. Thornton, Waterloo.—p. 71.

Journal of Abnormal Psychology, Boston

December, 1916-January, XI, No. 5

91 World Consciousness and Future Peace. M. Prince, Boston.—p. 287.
92 Is Dementia Praecox Properly Described as Infantile Mode of Reaction? H. D. Singer, Chicago.—p. 305.
93 Case of Psychasthenia. M. Solomon, Chicago.—p. 309.
94 *Unusual Case of Speech Inhibition. S. Blanton, Madison, Wis.—p. 325.
95 Variations in Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. G. P. Grabfield, Boston.—p. 328.

94. **Case of Speech Inhibition.**—The case reported by Blanton was one of a psychoneurosis due to some mental conflict. It was an accentuation of the fear and timidity which many high-strung and neurotic children suffer from when they first leave home for school. The boy's vocal cords and hearing were normal. At home he talked in a good loud tone when he was playing with his brothers. However, when on the playground with other children, he would not speak, even when playing games. At home, he speaks much less than do his brothers. He seems to try to avoid speaking. For example, if he desires something at the table, instead of asking for it, he gets it himself. However, he sometimes sings after he has gone to bed, and then his voice is full-toned and pleasant. He appeared to be suffering from mental conflict resulting in an inhibition of his speech. Blanton points out that this case shows that parents and teachers should not neglect to take notice of cases of excessive timidity in children that prevents them from speaking when in school or with strangers. This excessive fear is due to infantile conflicts and repressions and lack of adjustment, and unless these conditions are removed, a serious neurosis may develop.

Journal-Lancet, Minneapolis

February 1, XXXVII, No. 3

96 *Occurrence of Urobilinogen and Urobilin in Urine of Pregnant and Nonpregnant Women. E. Barnard, Minneapolis.—p. 80.
97 Spontaneous or Nontraumatic Rupture of Left Kidney. G. J. Thomas, Minneapolis.—p. 84.
98 Value of Fundus Examination in General Diagnosis. M. E. Trainor, Williston, N. D.—p. 86.

96. **Urobilinogen and Urobilin in Urine of Pregnant and Nonpregnant Women.**—A total of 1,005 examinations were made by Barnard for urobilin in the urine of 244 women. Of these 160 were pregnant, and eighty-four nonpregnant. Of the pregnant women, 148, or 92.5 per cent., showed urobilinuria at one time or another. Subtracting those in which increased hemocytolysis or liver disease could not be excluded, reduces the number to 115, or 71.9 per cent. Of the nonpregnant

women, 22, or 26.2 per cent., had urobilinuria. Seventeen of these had diseases which might produce changes in the liver or blood cells, leaving five, or 0.2 per cent. In the pregnant, indican was present in eighty-three, or 51.25 per cent., of the cases. In the nonpregnant, indican occurred in twenty-six, or 30.9 per cent. In the pregnant, urobilin and indican were present in seventy-two cases, indican occurring in 48.6 per cent. of the cases in which urobilin was present. In the nonpregnant, urobilin and indican were present in twelve cases, indican occurring in 54.5 per cent. of the cases in which urobilin was present.

Kansas Medical Society Journal, Topeka

February, XVII, No. 2

99 Function of Suprarenal Glands. J. S. Sutcliff, Iola.—p. 31.
100 Industrial Occupation and Recreation Among Insane. B. F. Frazer, Osawatomie.—p. 35.
101 Epidemic of Typhoid at University of Kansas. J. Sundwall, Lawrence.—p. 37.

Laryngoscope, St. Louis

January, XXVII, No. 1

102 Treatment of Frontal Sinus Suppuration. H. A. Lothrop, Boston.—p. 1.
103 Relation of Obstruction of Eustachian Tube to Local and Systemic Conditions and to Prognosis Regarding Restoration of Hearing. C. E. Ide, Los Angeles.—p. 14.
104 Bilateral Polypoid Hemangioma of Nasal Septum. J. G. Callison, New York.—p. 33.
105 Primary Epithelioma of Frontal Sinus; Report of Two Cases. D. S. Dougherty, New York.—p. 37.
106 Hemiplegia Following Tonsillectomy. G. F. Gracey, Plainfield, N. J.—p. 40.
107 Case of Septicemia with Polyarthritis and Pulmonary Infarct Following Tonsillectomy. W. A. Scruton, New York.—p. 43.
108 Diagnosis of Serous Labyrinthitis. H. B. Graham, San Francisco.—p. 46.
109 Nasal Refracture. L. L. Stanley, San Quentin, Calif.—p. 49.
110 Improved Aural Curet. J. A. Hagemann, Pittsburgh.—p. 52.
111 Responsibility and Nonsuccess in Nasopharyngeal Surgery. J. E. Reeder, Sioux City, Iowa.—p. 53.

Medical Record, New York

February 10, XCI, No. 6

112 The Hand in Health and Disease. W. P. Cunningham, New York.—p. 223.
113 Histopathologic Changes in Case of Amyotrophic Lateral Sclerosis. G. B. Hassin, Chicago.—p. 228.
114 Tuberculin Actions and Reactions. P. H. Ringer, Asheville, N. C.—p. 233.
115 Prognosis of Duodenal Ulcer. M. Einhorn, New York.—p. 236.
116 Some of Activities of Medicoliterary Service. E. Preble, New York.—p. 237.
117 Elective Localization of Streptococci from Autotherapeutic Point of View. C. H. Duncan, New York.—p. 329.

Missouri State Medical Association Journal, St. Louis

February, XIV, No. 2

118 Case of Gaucher Type of Splenomegaly with Splenectomy. B. S. Veeder and M. B. Clopton, St. Louis.—p. 49.
119 Medical Service of Life Insurance. S. B. Scholz, Jr., St. Louis.—p. 51.
120 Physical Phenomena in Pleural Effusions. J. C. Lyter, St. Louis.—p. 55.
121 Right Thing at Wrong Time in Vaccine Therapy. W. F. Grinstead, Cairo, Ill.—p. 57.
122 Two-V Flap—Practical Circumcision for Children. E. D. Twyman, Independence.—p. 59.
123 *Uncinariasis. A. H. Thornburgh, West Plains.—p. 62.
124 *Vaccination in Smallpox. F. M. Vessells, Perryville.—p. 67.
125 Relation of Laboratory to Practice of Medicine. E. L. Spence, Fulton.—p. 69.
126 Carcinoma of Prostate. E. G. Mark and H. E. McCarthy, Kansas City.—p. 71.

123 and 124. Abstracted in The Journal, June 24, 1916, p. 2121.

New York Medical Journal

February 10, CV, No. 6

127 Rights of Unborn Child. B. C. Hirst, Philadelphia.—p. 241.
128 Vicious Circle in Oral Sepsis. N. B. Potter, New York.—p. 243.
129 After-Treatment of Anterior Poliomyelitis. H. W. Frauenthal, New York.—p. 247.
130 Treatment of Prostatic Obstruction. H. G. Bugbee, New York.—p. 251.
131 Prompt Removal of Exudate from Trauma. A. B. Hirsh, Philadelphia.—p. 255.
132 Improved Stock Binder for Enteroptotic Men and Children. A. E. Gallant, New York.—p. 257.
133 Birth Control. E. C. Podvin, New York.—p. 258.
134 Injection Method of Treating Hemorrhoids. A. L. Sherman, Newark, N. J.—p. 260.

Northwest Medicine, Seattle

January, XVI, No. 1

135 Fat Dystrophies of Endocrinous Origin. H. G. Beek, Baltimore.—p. 1.
136 Relation of Blood Pressure to Anesthesia. M. V. Madigan, Portland, Ore.—p. 3.
137 Poliomyelitis. E. E. Laubaugh, Boise, Ida.—p. 7.
138 Acute Anterior Poliomyelitis; Report of Cases. J. R. Morrell, Ogden, Utah.—p. 9.
139 Heliotherapy in Skin Lesions; Report of Cases. A. Jordan, Seattle.—p. 12.
140 State's Wards. M. H. Cardwell, Portland, Ore.—p. 16.
141 Writing of Medical Papers. C. A. Smith, Seattle.—p. 20.

Ophthalmic Record, Chicago

February, XXVI, No. 2

142 Iridotasis in Glaucoma. E. Stieren, Pittsburgh.—p. 57.
143 Visual Fields in Pellagra. F. P. Calhoun, Atlanta, Ga.—p. 63.
144 Sudden Obstruction to Retinal Circulation in Case of Cardiorenal Disease. G. O. Ring, Philadelphia.—p. 70.
145 Complete Bilateral Ophthalmoplegia with Choked Disks. E. M. Blake, New Haven, Conn.—p. 74.
146 New Cataract Knife and Knife for Dacryorhinostomy. M. Black, Denver.—p. 77.
147 Campimeter vs. Arc Perimeter. L. C. Peter, Philadelphia.—p. 79.
148 Method of Operation in Complete Obliteration of Anterior Chamber; Report of Case of Corneal Staphyloma. C. G. Darling, Chicago.—p. 83.

Southern Medical Journal, Birmingham

February, X, No. 2

149 Relation of Medical Profession to Medical Preparedness. R. E. Noble, Washington, D. C.—p. 91.
150 *Rôle of Food in Etiology of Cardiovascular Renal Disease. A. Eustis, New Orleans.—p. 96.
151 Syphilis as Factor in Production of Cardiovascular Renal Disease. D. VanderHoof, Richmond, Va.—p. 100.
152 *Simplified Technic in Application of Schick's Reaction for Testing Immunity to Diphtheria. W. Litterer, Nashville, Tenn.—p. 103.
153 Artificial Pneumothorax Plea for Partial Compression. C. M. Hendricks; El Paso, Texas.—p. 107.
154 Report of Committee on Uniformity in Wassermann Reaction. W. Litterer and Others.—p. 110.
155 Evolution Under Way in Public Health Activities. J. A. Ferrell, New York.—p. 116.
156 Importance of Control of Childhood Infection in Crusade for Eradication of Tuberculosis. C. L. Minor, Asheville, N. C.—p. 122.
157 Trachoma; What the Government is Doing to Eradicate and Prevent Its Spread. J. McMullen, Lexington, Ky.—p. 130.
158 Surgery of Chronic Ulcer of Stomach and Duodenum. W. D. Haggard, Nashville, Tenn.—p. 137.
159 *Suction Drainage in Empyema. A. McGlannan, Baltimore.—p. 143.
160 *Meckel's Diverticulum; Umbilical Disorders of Infancy. R. M. Harbin, Rome, Ga.—p. 148.
161 Case of Fracture of Pelvis. D. Z. Dunott, Baltimore.—p. 150.
162 Case of Superfetation Occurring in Uterus Subseptus. W. T. Pride, Memphis, Tenn.—p. 159.
163 Operative Treatment of Chronic Frontal Sinusitis. T. W. Moore, Huntington, W. Va.—p. 161.
164 Laryngeal Diphtheria. J. B. Greene, Asheville, N. C.—p. 164.

150. Abstracted in The Journal, Dec. 23, 1916, p. 1967.

152. **Schick's Reaction for Testing Immunity to Diphtheria.**—Litterer's method of applying the test requires no special technic that is not easily acquired by any physician. The necessary articles are a 1 c.c. hypodermic syringe graduated in tenths, a No. 26 or 27 gage needle, a vial each of sterile normal salt solution, and diphtheria toxin. All the physician has to do is to pour the salt solution into the vial and shake it. Two tenths of a cubic centimeter of this solution is the proper dose for the test. The injection should be made into the skin (intradermal) and not subcutaneously. This is easily accomplished if a small bit of the skin is held tightly between the thumb and forefinger of one hand and the barrel of the syringe in the other is held lower than the needle point. The reaction, if positive, is shown by an area of inflammation varying in extent from 2 to 5 cm. in diameter. It is more intense in the center and lasts for about ten to fourteen days, when it gradually disappears, leaving a brown desquamating surface. Those giving such reaction, are susceptible to diphtheria while those who do not, have a natural immunity which is adequate to protect them.

159 and 160. Abstracted in The Journal, Dec. 23, 1916, pp. 1966 and 1967.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

December, 1916, XXXIV, No. 131

1 Art of Medicine in Age of Homer. F. H. Edgeworth.—p. 105.
2 Effect of General Conditions on Quality of Teeth. W. R. Ackland.—p. 118.
3 Some Aspects of British Surgery in France. J. Swain.—p. 128.
4 Medicine and Surgery in Mesopotamia. C. F. Coombs.—p. 136.
5 Ten Months in France with a Field Service Roentgen Ray Outfit. W. Cotton.—p. 144.
6 Operation for Drainage of Sphenoidal Sinus. P. Watson-Williams.—p. 157.

British Medical Journal, London

January 27, I, No. 2926

7 Contractures and Allied Conditions; Their Cause and Treatment. G. Cooper.—p. 109.
8 Diseases of Male Urethra. F. S. Kidd.—p. 114.
9 *Nerve Grafting as Means of Restoring Function in Limbs Paralyzed by Gunshot or Other Injuries. A. W. Mayo-Robson.—p. 117.
10 *Incidence of Tetanus Among Wounded Soldiers. D. Bruce.—p. 118.
11 Three Cases of Tetanus. R. I. Douglas and C. H. Corbett.—p. 119.
12 Sodium Salicylate in Treatment of Trench Feet. W. Gordon.—p. 121.

9. **Nerve Grafting in Paralyzed Limbs.**—A case is cited by Mayo-Robson which shows that in the absence of recently removed nerve, such a structure as the spinal cord of a rabbit may be successfully used as a graft. There had been a complete division of the median, ulnar and internal cutaneous nerves. The internal cutaneous nerve ends were united by a catgut suture. The fibrous tissue between the ends of the ulnar nerve was excised, and the two healthy portions were united by grafting strands of the sciatic nerve of a rabbit so as to fill up the gap and produce continuity. It was quite impossible to bring the divided ends of the median nerve nearer than 2½ inches. All the available nerve tissue having been exhausted in uniting the ulnar nerve. The spinal cord of a rabbit just killed was used as a graft to connect the ends of the median nerve, the inserted cord lying loose and quite free from tension when finally placed in position. Fine catgut sutures were used throughout. Six months after the operation the patient could pick up small objects, and although the grasp was not powerful, it was much improved. The powers of flexion of the wrist and adduction of the thumb were considerably increased, but there was no sensation as yet over the ulnar distribution. Six years after the operation the muscles had almost completely returned to their former volume, and in the hand all the muscles except the abductor of the thumb were as well developed as in the left; this was quite as well marked in the interossei as in the other muscles. The movements of the arm were completely restored and almost as perfect as in the left. Flexion of the fingers and the grasp had completely returned, and the only weak muscle was the abductor of the thumb, which had no perceptible power. Sensation was completely restored. All the muscles of the arm and hand reacted to faradism except the abductor of the thumb.

10. **Tetanus Among Wounded Soldiers.** — The principal object of Bruce's paper is to draw attention to the effect of prophylactic injections of antitetanic serum in lowering the incidence of tetanus among wounded men. The ratio in September, 1914, was 16 per 1,000; in October, 32 per 1,000; and in November it was 2 per 1,000, about which figure it remains until the present date. This remarkably sudden fall is attributed to the introduction of prophylactic injections of antitetanic serum.

Journal of Laryngology, Rhinology and Otology, London

January, XXXII, No. 1

13 Pathology of Congenital Syphilitic Disease of Ear. J. S. Fraser and R. Muir.—p. 8.

Lancet, London

January 27, I, No. 4874

14 *Recent Cases of Tetanus in British Expeditionary Force. W. B. Leishman and A. B. Smallman.—p. 131.
15 Modified Tetanus. H. Burrows.—p. 139.
16 Weil's Disease (Spirochetosis Ictero Hemorrhagica) in British Army in Flanders. A. Stokes, J. A. Ryle and W. H. Tytler.—p. 142.
17 Toxic Jaundice in Munition Workers. M. J. Stewart.—p. 153.

14. **Treatment of Tetanus.**—The authors place the alternative channels of administration of tetanus antitoxin in the following order of merit: intramuscular, subcutaneous, intrathecal and intravenous. The intravenous route should not be used; not only does it introduce a risk of anaphylactic shock, from which other methods are practically free, but it has done little, if any, good in treatment. As to the intrathecal route, the evidence obtained by the authors is pretty strongly against its employment. They feel that the intrathecal route may be a dangerous one and that its theoretical foundations are not as secure as one would like. It formed a part of the treatment in twenty-seven cases in which the patients recovered. The subcutaneous and intramuscular routes are essentially similar in action, each being a comparatively slow and continuous method of dosage as distinguished from the rapid introduction involved in the venous and thecal methods. When these two paths of introduction have been utilized freely, and where the dosage has been sufficient, the results as regards saving life have been more satisfactory than when they were not utilized or were used in altogether too restricted a fashion. Should the wound be a single one, and especially if it is on a limb, the authors believe it would be sound practice to introduce antitoxin, both subcutaneously and intramuscularly, somewhere astride the path which the toxin must travel on its way to the spinal cord. To do this effectually it would appear better to divide the dose and inject portions on each surface of the limb and also at different depths amid the muscles. Somewhere among these tissues run the nerves along which the poison is traveling, and the more evenly distributed the antitoxin the better would appear the chance that it may attain effective contact with the toxin and achieve the desired object. If the combined subcutaneous and intramuscular routes be used, the daily dosage for the first few days should not fall below 10,000 units. If it be desired to supplement this by intrathecal injections, it would appear wise to limit these to such a number of units as could be contained in 10 or 15 c.c.

Medical Journal of Australia, Sydney

December 30, 1916, II, No. 27

18 *Skin Eruption Associated with Presence of Great Numbers of Demodex Folliculorum. H. Lawrence.—p. 555.
19 Left Side Pelvic Pain. J. A. G. Hamilton.—p. 556.
20 Case of Bone Transplantation for Osteitis Fibrosa Cystica; Excision, Transplantation. D. M. Morton.—p. 557.

January 6, I, No. 1

21 Bacilli and Immunity. J. C. Verco.—p. 1.
22 *Fatal Hemorrhagic Dengue. J. A. Goldsmid.—p. 7.
23 Case of Epithelioma Adenoides Cysticum (Brooke). N. Paul.—p. 8.

January 13, No. 2

24 Localization of Foreign Bodies in Eye. J. G. Edwards.—p. 25.
25 Treatment of Intracapsular Fracture of Femur. C. E. Todd.—p. 27.
26 Fibroid Tumor of Broad Ligament. J. A. G. Hamilton.—p. 28.
27 Technic of Rectal Oil-Ether Anesthesia. W. Ray.—p. 29.
28 Resection of Intussusception in Child of Seven Months; Recovery. P. L. Hipsley.—p. 30.
29 Cesarean Section for Eclamptic Convulsions. H. H. Lee.—p. 30.

18. **Skin Eruption and Acarus.**—Lawrence is of the opinion that cases of an impetiginous eruption in adults associated with the presence of great numbers of these parasites have been on the increase. So familiar has the clinical picture become that it is generally possible to predict that great numbers of demodex will be found. These cases have occurred in adults, and resemble an impetigo contagiosa, but there would seem to be some difference from that affection. The lesions have a greater tendency to form rings, and the border of the skin is more definitely raised than in ordinary impetigo contagiosa. The pustulation is not so severe as in impetigo, nor do these cases respond so rapidly to the usual simple antiparasitic remedies as might be expected. Some patients have thought the eruptions followed on shaving, but the

lesions may be situated away from the hairy region, and be found on the forehead, neck, or on the nose. The feature common to all these cases is the extraordinary numbers of the *Demodex folliculorum* which are demonstrable in the most simple scraping from the skin. Five or more may be seen in a microscopic field, and their size varies in quite a remarkable degree, possibly representing successive generations.

22. **Fatal Hemorrhagic Dengue.**—Experience has convinced Goldsmid that jaundice of a moderately severe type is not uncommon, and, in addition to this, he has seen three severe cases of purpuric complications. When seen, two of the children had been ill for five days. They had hematemesis and hemorrhage from the bowels. One was moribund when brought in, and died within twenty-four hours. The other recovered after a tedious illness, with frequent relapses of her fever, though when once thoroughly checked the hemorrhages did not recur. A third case terminated fatally. A man, aged 26 years, had hemorrhagic effusions into the tongue, hands, wrists and forearms. The legs and body were also affected. He had had malaria two or three years before, and had taken large quantities of quinin. There was no history of hemophilia in the family. Dengue had been present in the household of his employer, and May 17, he became ill with pains in the back and limbs, headache and soreness of the eyes on movement. He had slight fever, but did not notice any rash. The condition was evidently dengue. May 23, he was back at work, and noticed that some slight scratches bled very freely and persistently. After a time, small, very dark spots came out on the hands and spread all over the body. Some of the spots became large, and his gums began to bleed. There was no vomiting and no purging. He was "light-headed" for one night. He passed bloody urine. He had taken no drugs except a dose of magnesium sulphate. May 26, the urine contained much more blood. The patient was spitting blood from his mouth continually. May 28, hemorrhage from the nose occurred. The patient vomited blood, and also coughed it up. He complained of pain in his head. The petechiae on the hands were much larger. At 9:15 a. m. he was unconscious, and at 1:45 p. m. he died. A full postmortem report is given.

Quarterly Journal of Medicine, London

October, 1916-January, X, Nos. 37-38

30 Septicemia Due to Micrococcus Tetragenus as Cause of Pyrexia at Front. A. H. Birks, R. T. Thornley and R. A. Fawcus.—p. 1.
31 *Study of Metabolism in Case of Amyotonia Congenita. F. Powis and H. S. Raper.—p. 7.
32 Records of Speech in General Paralysis. E. W. Scripture.—p. 20.
33 *Retinitis of Arteriosclerosis and Its Relation to Renal Retinitis and to Cerebral Vascular Disease. R. F. Moore.—p. 29.
34 Early Stage of Wounds of Chest. W. P. Herringham.—p. 79.
35 Jaundice of Infective Origin. B. Dawson and W. E. Hume.—p. 90.
36 Lipodystrophia Progressiva. F. P. Weber.—p. 131.

31. **Metabolism in Amyotonia Congenita.**—The chief findings obtained by Powis and Raper from a study of one case of amyotonia congenita (associated also with some nutritional disturbance) may be summarized as follows: 1. A diminution of hepatic functional activity as manifested by the presence of acholia. 2. A normal calcium retention associated with a relatively high potassium retention. 3. A low creatinin excretion, and accompanying this a relatively high creatin excretion. 4. Treatment of the case with bile salts or dried ox bile produced some improvement, as manifested by an increase in strength of the muscles, and a change toward the normal in the ratio of the potassium to the calcium retention, the normal values, owing to a lack of other data, being deduced from the ash analyses of young animals.

33. **Retinitis of Arteriosclerosis.**—Of forty-four patients suffering from a gross cerebral vascular lesion, thirty-one (70 per cent.) exhibited evidence of retinal vascular disease, and in 19 of them (43 per cent.) it was severe in degree. Twenty-seven are known to have died and the cause of death has been ascertained in twenty-six instances. Of these twenty-six cases a gross vascular cerebral lesion has been the cause of death in twelve (46 per cent.). Of forty-six patients in whom retinal vascular disease was sufficiently severe to give rise to symptoms, twenty-one (46 per cent.) had either suffered from such a lesion or developed one in the course of about three years.

Archives de Médecine des Enfants, Paris

January, XX, No. 1, pp. 1-56

37 *Prophylaxis of Contagion in Children's Hospitals. (Les conditions d'hospitalisation des enfants.) H. Barbier.—p. 1.
38 *Emetin in Treatment of Subacute or Chronic Follicular Enterocolitis. L. A. Azcoitia (Oviedo).—p. 23.
39 Fulminating Pneumonia of Right Lung in Girl of Five. J. Comby.—p. 25.
40 Addison's Disease in Girl of Thirteen with Necropsy. J. Comby.—p. 28.
41 Infectiousness of Febrile Jaundice. (Maladie de Weil.) J. Comby.—p. 30.

37. **Prophylaxis of Infection in Infant Wards.**—Barbier describes the methods in vogue at the Hérold hospital at Paris to prevent contagion in the infant ward. The latest improvement is to have the nurses wear a veil like the veil worn in the operating room. This adds the finishing touch to the glass box system by preventing the carrying of infection in the hair from one box to another. The little caps worn by nurses are no protection in this line. He expatiates further on the importance of a well trained and experienced set of nurses. The constant necessity for having to break in new nurses for the care of the isolated infants is discouraging. Sterilized folded cloths under the infant's heads have done away with the infections of the head which used to be common. One nurse has charge of the food for all the infants, written directions being given for each. She collects the directions and prepares the food, and this is her entire work, in a room apart. Each wire basket is marked with the number of the bed, and the bottles are thus prepared at 11 a. m. for the twenty-four hours. Infants unable to take cow's milk have thriven on ass's milk, when breast feeding could not be obtained for them. Many of the children in advanced marasmus were thus restored to health in the course of several months. Among the 1,238 infants in the hospital, 1909 to 1913, the mortality was 35 per cent., and 29.5 per cent. of the 442 deaths were from typical tuberculosis, confirmed by necropsy.

He adds that of the 141 deaths among the 311 marasmic infants, 62 per cent. were from septicemia. Only 15.1 per cent. succumbed to the marasmus. These children were in the crèche ward where two or more with or without the mothers, were in each box. All the septicemia infants except about 30 per cent. were under 6 months. In many of them, but not all, hospital contagion was unmistakably responsible. Marasmic children have so little resisting power that their skin and mucous membranes are predisposed to infections of all kinds. Sometimes a series of such cases occurred in the crèche. These experiences have convinced him of the absolute necessity of a separate cubicle for each infant. The infants already infected should be kept entirely separate from the others, and nurses tending the infected ones should never have anything to do with the other marasmic infants. Another feature of which he complains is that there is no provision made for taking convalescent infants and older children out of the hospital atmosphere at the earliest possible moment. He has to keep them on in the hospital. His experiences with measles, whooping cough and typhoid are related in detail. None of the forty-six cases of typhoid terminated fatally, and he ascribes this in large part to the avoidance of milk. No milk is given the typhoid children except in the form of yoghurt. Under this the intestinal symptoms are mild, the tongue is moist, and the general symptoms attenuated.

38. **Emetin in Chronic Follicular Enteritis.**—When the dysenteriform bowel trouble had passed into a subacute or chronic phase, rebellious to other measures, Azcoitia found emetin effectual. In the four children over a year old there were no signs of intolerance, and convalescence was well under way by the twelfth day in all under the daily small doses by subcutaneous injection. He does not venture to explain the action of the emetin in these cases, as there was no question of the ameba being involved.

Paris Médical

January 20, VII, No. 3, pp. 54-68

42 *Syphilis after Two Years of War. Gaucher and Bizard.—p. 54.
43 *Typhoid Bacilli in the Bile from the Duodenum. (La biliculture chez les typhiques.) M. Labbé and G. Canat.—p. 57.
44 Walking Devices after Injury of the Leg. (Appareils de marche avec étrier de décharge pour diverses lésions du membre inférieur.) J. Regnault.—p. 59.
45 *Patch of Anesthesia on the Chin as Sign of Fracture of Lower Jaw. (Sur un signe peu connu des fractures du maxillaire inférieur.) L. Imbert and L. Gauthier.—p. 65.
46 Various Manifestations of Fatigue in Soldiers on Active Duty. (Quelques formes de la fatigue à l'avant.) M. Lelong.—p. 66.

42. **Syphilis After Two Years of War.**—Gaucher's address was summarized in these columns Feb. 10, p. 492.

43. **Typhoid Bacilli in Bile from Duodenum.**—The bile was obtained with the duodenal catheter or with the stomach tube an hour after injection of oil. The tests were made on thirty-five typhoid or paratyphoid patients at various stages of their disease. The findings are tabulated. The bacilli found in the bile were always of the same species as those found in the patient's blood or stools or both. The findings were positive in the bile in 43 per cent. but only in 36 per cent. in the stools, and there was no simultaneous parallelism between the two. It is possible that the typhoid bacilli get killed off before they reach the rectum. In one case the blood seemed to be sterile as also the stools, and serodiagnosis tests were negative, but the symptoms suggested typhoid, and twelve days after defervescence bile from the duodenum disclosed paratyphoid B bacilli.

45. **Localized Anesthesia as Sign of Fracture of Lower Jaw.**—Imbert gives an illustration of the round patch on the chin and lower lip, close to the median line, which he has found constantly anesthetic with fracture of the lower jaw. The patch is over an inch in diameter, being the region innervated by the end branch of the inferior dental nerve.

Presse Médicale, Paris

January 18, XXV, No. 4, pp. 33-40

47 *Toxicity of Emetin Hydrochlorid. (Toxicité du chlorhydrate d'émétine.) R. Dalimier.—p. 33.
48 Repairing the Lower Jaw after War Wounds. Pierre-Robin.—p. 35.

47. **Toxicity of Emetin.**—Dalimier tabulates the findings with tentative doses of emetin hydrochlorid in rabbits and guinea-pigs, which established as the toxic dose per kilogram of body weight 0.002 gm. by intravenous injection and 0.03 gm. subcutaneously for the rabbit, and 0.007 and 0.09 gm., respectively, for the guinea-pig. He used a 2 per cent. solution of emetin hydrochlorid for his tests. Maurel has reported similar research on vertebrates but he found the toxic dose much larger than those obtained by Dalimier. The latter repeated Maurel's experiments and the animals died before he had even reached Maurel's dose claimed to be merely toxic.

Applying to man the figures obtained on animals, Dalimier computes the dose which would induce symptoms of toxic action in a man weighing 60 kg. as 0.12 gm. by intravenous injection, and 1.8 gm. by subcutaneous injection. The maximal safe dose would be 0.06 by intravenous injection and 1.2 by subcutaneous injection. Of course, he admits, it is incorrect to apply directly to man the results of experimental research, but the two cases of intoxication from emetin which he has found on record showed a surprising harmony in respect to the doses followed by symptoms of intoxication. The first was published by Spehl and Colard of Brussels. A man of 28 was given a subcutaneous injection of 0.03 gm. of emetin hydrochlorid in a 3 per cent. solution twice daily for six days and then three times daily for twelve days, the total administered being thus 1.44 gm. in eighteen days. When this total was reached there was first flaccid paralysis of all the musculature, most pronounced in the neck, so he could not hold his head up. Then came disturbances in swallowing, chewing and speech, followed by edema of the face, attenuation of the reflexes and rapid and weak heart action, with reduction of the urea and chlorid content of the urine. Paralysis of the respiratory muscles was feared but did not develop, and on suppression of the drug and treatment with tannin, camphorated oil, diuretics, etc., the toxic phenomena subsided. By the twentieth day nothing was left of the symptoms of intoxication except a certain weakness of some muscles. In Lagane's case the patient was given 0.08 gm. of the emetin by subcutaneous injection for fourteen days, a total of 1.12 gm. in the two weeks. The blood pressure then was found abnormally low with weakness of the heart contractions. In Dalimier's experimental work the corresponding toxic dose for the rabbit might be calculated at 1.8 gm. and the dose tolerated 1.2 gm. In Lagane's case the toxic dose proved to be 1.12 and in Spehl's case 1.44. Lagane's patient had not reached the actual toxic dose and the drug was stopped in time to avert trouble, but Spehl's patient had passed the danger mark. The harmony between the experimental and the clinical experiences related is the more remarkable as the animals were given the whole dose practically at once while in the clinical cases it was spread over two weeks and more. This suggests, Dalimier remarks, that emetin has a cumulative action. The total dose of 1 gm. of the emetin seems to be the limit of safety. He is convinced that in certain cases of dysentery in which emetin has been given, some of the symptoms that have been ascribed to the disease were in fact the work of the emetin.

Berliner klinische Wochenschrift

December 18, 1916, LIII, No. 51, pp. 1357-1380

49 *Improved Technic for Detection of Occult Blood. (Neue Beiträge zur Methodik des okkulten Blutnachweises.) I. Boas.—p. 1357.
50 Gastrohydrorrhea in Cirrhosis of the Liver Accompanied by Pyloric Stenosis. M. Einhorn (New York).—p. 1361.
51 *Myasthenic Bulbar Paralysis in Two Chronic Diphtheria Bacilli Carriers. M. Gerson.—p. 1364.
52 Sugar Preparation as Substitute for Glycerin. (Mollphorus als Glycerinersatz.) Meirowsky.—p. 1366.
53 Therapeutic Influencing of the Metabolic Disturbances in Rachitis. (Ueber Rachitis. IV.) E. Schloss.—p. 1366.

49. **Improved Technic for Detection of Occult Blood.**—Boas says that all efforts to detect hemin crystals in the excreta have proved futile when it is a question of invisible blood, while spectroscopic examination requires skill and an equipment which not all practitioners possess. This restricts us, he continues, to the catalytic methods of examination, and benzidin and phenolphthalein are such excellent catalyzers that when the findings with both are negative the absence of blood is practically certain. They are both so sensitive, however, that a positive reaction may be obtained even in certainly nonpathologic cases. Boiling the extract of feces does not alter the findings. The question is now what substances, besides blood, are able to induce the reaction. Schumm's modification of the guaiac test is reliable as he removes pigments, fats and all the organic and inorganic catalyzers before applying the guaiac technic. But this requires such quantities of the alcohol-ether and takes so much time that it can never become a routine procedure. The trouble with the usual guaiac test is that the chemicals hitherto used to make the extract of the feces do not dissolve out all the blood in them, but chloral hydrate, in a 70 per cent. alcoholic or ethereal solution, has proved in Boas' research an ideal means for extracting the hematin of the feces. When chloral is used, the guaiac test may give positive findings when the reaction is negative with all other technics except Schumm's, while the procedure is simple and requires only a few minutes. For the stomach content he prefers the usual guaiac technic, merely neutralizing the stomach content with sodium carbonate. This is sufficiently exact for stomach content. He has also confirmed that thymolphthalein can serve to reveal occult blood and is very useful to control other tests. It is used for the blood test in the same way as the phenolphthalein technic, both for feces and stomach content. By applying both the chloral and the thymolphthalin technics, to control each other, much better insight can be obtained in dubious cases.

He rubs up the piece of feces the size of a bean or cherry, with 5 or 10 c.c. of a 70 per cent. solution of chloral hydrate in 96 per cent. alcohol, and adds 20 drops of glacial acetic acid, blending the whole thoroughly. Then he dissolves in 2 c.c. of the chloral solution as much pulverized gum guaiac as he can take up on the tip of a spatula; adds 20 or 25 drops of 3 per cent. hydrogen dioxid and shakes vigorously. The chloral extract of fecal material is then slowly filtered into this mixture of guaiac and H_2O_2. In the presence of blood the upper layer soon turns blue, but this blue tint is transient. It is not necessary to shake the fluid.

For the thymolphthalin test he rubs a scrap of feces as large as a cherry with 5 or 10 gm. alcohol and 10 drops glacial acetic acid, and sets it aside for a short time. Then 20 drops of the thymolphthalin reagent are mixed with 15 drops of 3 per cent. hydrogen dioxid. Then 25 or 30 drops of the feces extract are filtered into the reagent. On shaking up the whole, a grayish blue opaque precipitate is thrown down which in a few seconds, on the floor of the test tube, shows first a violet and then an increasing blue tint which, if there is much blood present, soon spreads throughout all the fluid. The blue tint persists for hours or even days. In the absence of blood the precipitate is colorless or a grayish white. With stomach content the test is applied to 5 c.c. of the well mixed stomach content first mixed with 10 drops of 10 per cent. sodium carbonate solution and then 10 drops of glacial acetic acid are added. After waiting to allow the carbon dioxid to escape, then an equal volume of alcohol is added, the whole well shaken several times and filtered. Then 15 or 20 drops of the filtrate are added to the reagent. In the presence of blood there is a distinct zone reaction; on shaking, a more or less pronounced blue tint. There is no change of tint unless there is blood present.

As thymolphthalin is not to be procured at present, he produces it by dissolving 1 gm. thymolphthalein and 25 gm. potassium hydroxid in 100 gm. water and adding 10 gm. zinc powder. The blue fluid resulting is boiled over a small flame, constantly stirring or shaking until completely decolored. It is then filtered hot and brought up to the original volume with distilled water. Zinc filings are then placed in the solution to a height of 0.5 cm. Thus prepared the reagent will keep for weeks. The colorless thymolphthalin becomes transformed back into blue thymolphthalein in the presence of oxidizing substances, such as that in the occult blood with the catalyzer hydrogen dioxid.

51. **Myasthenic Bulbar Paralysis.**—Gerson reports two cases, both in chronic diphtheria bacilli carriers, and he calls attention to this coincidence as possibly explaining the etiology of the affection. The prolonged chronic action of the diphtheria toxins seems to have been responsible for the peculiar course of the myasthenic paralysis which increased and became abated in waves, the whole forming a mitigated form of a chronic toxic paralysis rising and falling with the waves of toxin production. During the two or three months to date in his cases there has been no change in the condition. The symptoms were first noted two or three years ago. There was a history of diphtheria nine years before in one case but none in the other, although both the young patients had been subject to infectious sore throat.

Deutsche medizinische Wochenschrift, Berlin

December 21, 1916, XLII, No. 51, pp. 1565-1596

54 *Treatment of Continuous Vomiting. (Behandlung des bedrohlichen Erbrechens.) J. A. Grober.—p. 1565.
55 *Traumatic Neuroses. H. Oppenheim.—p. 1567.
56 *Agglutination of Proteus in Diagnosis of Typhus; the Weil-Felix Reaction. (Weil-Felixsche Reaktion beim Fleckfieber.) Dietrich.—p. 1570.
57 Tubercle Bacilli Fat as Antigen. (Antigene Eigenschaften der Tuberkelbazillenfette.) M. Bürger and B. Möllers.—p. 1573.
58 *Incision in Occiput and Puncture of Lateral Ventricle to Drain in Meningitis and Chronic Suppuration and Hydrocephalus. M. Westenhöfer and R. Mühsam.—p. 1574.
59 *The Wassermann Reaction with Cancer. (Zur Frage der Spezifizität der Wassermannschen Reaktion: Tumor- und Narkosensera.) E. Sonntag.—p. 1577.
60 Interdigital Mycosis. (Hartnäckige Pilzerkrankung der Interdigitalräume mit familiärer Uebertragung.) E. Hoffmann.—p. 1579.
61 *Dakin's Solution in Treatment of Wounds. (Zur Wundbehandlung mit Dakinscher Lösung. Physiologische Antisepsis.) O. Hirschberg.—p. 1581.
62 *Dangers from Inadequately Treated Syphilis under Salvarsan. W. Lüth.—p. 1582.
63 The Blood Findings in Tetanus. Arneth.—p. 1585.
64 *Treatment of Purpura and Hemophilia. R. Klinger.—p. 1585.

54. **Treatment of Severe Vomiting.**—Grober describes three cases of continuous vomiting which illustrate the variety of causes liable to keep up the vomiting. Removal of the cause is the main thing, but in the meantime the quiet and warmth of the bed are always useful and the patient belongs in bed, with extra heat applied to the stomach region with something light, a woolen cloth, fur, or a flat sack with hay, using nothing heavy. No food or drink should be allowed by the mouth for at least twenty-four hours. Thirst should be relieved by way of the rectum. Later, scraps of ice can be taken in the mouth; as they melt the fluid must be expelled, not swallowed. Patients usually fail to do this, so it is safer to refrain from the ice. Changes of position should be avoided, even for examination; the patient should keep absolutely still. Sedatives can be given by the rectum; he has found 2 or 2.5 gm. chloral in 30 c.c. water very useful, as also codein suppositories. When the sedative can be given by the mouth, he has found most excellent a solution of 1 gm. menthol in 100 c.c. water with 20 or 30 c.c. brandy, giving a teaspoonful three or four times a day, especially when there is much exhaustion. A few drops of chloroform on a scrap of ice may prove useful. Potassium bromid may be indicated when the patient is very restless, or in case of hysteria or pregnancy. If the vagus system seems particularly involved, suppositories made with 0.02 or 0.03 gm. extract of belladonna sometimes give relief. Morphin or its equivalent ensures the needed rest for patient and family and rests the stomach, but it is dangerous if there is a tendency to collapse. In conclusion Grober warns that household remedies may have been taken which directly promote the vomiting, and this should always be enquired into. Worry and physical exhaustion may bring on continuous vomiting; in one of the cases described uremia was responsible for it, the system trying thus to throw off the toxins. Venesection is indicated here, with lumbar puncture and tapping. In another case the vomiting was traced to compression of the vagus center by a cerebral tumor. In a third case hysteria was responsible; the woman looked rosy and well nourished and only part of the food ingested was vomited up. Suggestion and some bitter tincture by the mouth were indicated here.

55. **Traumatic Neuroses.**—Oppenheim's views were summarized in the Berlin Letter, Feb. 24, 1917, p. 647.

56. **The Weil-Felix Reaction in Typhus.**—Dietrich's experiences with eighty-one typhus patients have confirmed the constancy of agglutination of a certain strain of proteus bacilli by typhus serum. Agglutination was characteristic in every case, and constantly negative in the controls.

58. **Incision in Occiput and Puncture of Lateral Ventricle for Drainage.**—Westenhöfer and Mühsam give an illustration to show the extremely simple technic and the advantage of this procedure in treatment of meningitis, suppurative processes in the brain and hydrocephalus. Evacuation of fluid in the subarachnoid space is ensured by an opening into the lowest part of the lateral ventricle, with or without a counter opening in the occipital region. The site for the operation is about the same as for gasserectomy. A hole is drilled in the temporal bone about 1 cm. above the junction of the malar process with the temporal bone. The trocar is inserted not deeper than 3 cm. in children and 4 cm. in adults. A metal retention drain can be introduced and the skin sutured over it. The puncture has been applied in three cases reported in detail. The first patient was a girl of 17 with an acute encephalomyelitis with various complications. Improvement followed puncture of the lateral ventricle releasing 15 c.c. of fluid, and the patient recovered completely except that the right arm is still weak. The other patients were suffering from hydrocephalus left by meningitis, and the puncture of the lateral ventricle, while it relieved, was unable to arrest the advanced process and both patients died. Necropsy showed hemorrhage in one case for which the puncture may have been responsible.

59. **The Wassermann Test with Cancer.**—Sonntag reviews the literature on this subject and his own experience. In 125 cases of cancer he obtained a positive reaction only in two cases, and in both of these necropsy revealed syphilitic lesions

in addition to the malignant disease. Cancer thus in itself does not induce a positive Wassermann reaction as some have maintained.

61. **Dakin's Solution in Treatment of Wounds.**—Hirschberg reports success in treatment of the wounded according to the Carrel-Dakin technic. He says it conforms to the principles of lymph lavage, cytophylaxis and physiologic antisepsis in general, but adds that now that this field of physiologic antisepsis has been opened up, it may be possible to find still more effectual means in this line.

62. **Inadequate Salvarsan Treatment of Syphilis.**—Lüth remarks that tertiary manifestations of syphilis are being encountered now of a severer character than before the days of salvarsan. The latter is not responsible for this, but the fact that the course of treatment was inadequate. He explains why inadequate salvarsan treatment entails more serious results than inadequate mercurial treatment, saying that insufficient doses of salvarsan, too small to destroy the spirochetes, actually breed a strain of more resistant spirochetes, according to the biologic laws of immunology. The patient is thus worse off than if he had been given no treatment at all. The spirochetes are more resistant and more virulent, and thus conditions for their attacking the nervous system are rendered more favorable. In the meanwhile the patient has been losing strength and may not then be able to produce antibodies enough to give a positive Wassermann reaction. The danger of breeding an extraresistant strain of spirochetes, by inadequate salvarsan treatment, is materially reduced when mercury is given with it from the beginning. He makes a practice of this, as he describes in detail. There is no doubt, he adds, that insufficiently treated syphilis runs a much severer course under salvarsan than in the old days of mercury alone. He warns further that treatment with salvarsan requires specialist skill and experience, guided by the blood findings and the entire course of the disease and the results of treatment, possibly calling on the neurologist and ophthalmologist, if we are to ward off indescribable misery from the present and the next generation.

64. **Blood-Platelet Extract by the Mouth Does Not Affect Coagulating Time of Blood.**—Klinger declares that it is practically impossible to influence the coagulating time of the blood by any substances ingested. With hemorrhage in the stomach or bowel, gelatin may aid in arresting hemorrhage by its direct contact with the bleeding substance. With severe and recurring hemorrhages in purpura and hemophilia it is better not to waste time with such measures but resort at once to transfusion of 50 or 150 c.c. of blood.

Medizinische Klinik, Berlin

December 24, 1916, XII, No. 52, pp. 1355-1384

65 Nature and Treatment of War Neuroses. (Wesen und Behandlung der Kriegsneurosen.) R. Wollenberg.—p. 1355.
66 *Advantages of Massage and Exercise in Treatment of Gout, both During and Between Attacks. (Mechanotherapie bei Gicht.) F. Kirchberg.—p. 1358.
67 *Clinical Diagnosis of Contracted Kidney. (Zur klinischen Diagnose der Schrumpfniere.) F. Munk.—p. 1360. Commenced in No. 51, p. 1341.
68 Impact of Two Bullets in the Tissues. (Merkwürdiger Geschossbefund.) Küll.—p. 1364.
69 Unreliability of Dungern Technic for the Wassermann Test. (Ueber die Brauchbarkeit der v. Dungernschen vereinfachten Methode der Wassermannschen Reaktion für die Syphilisdiagnostik.) E. Sonntag.—p. 1365.
70 *To Remove Drug Stains from Skin and Linen. (Entfernung von durch Arzneistoffe verursachten Flecken an der Haut und an der Wäsche.) O. Mankiewicz.—p. 1370.

66. **Massage and Exercise in Treatment of Gout.**—Kirchberg is chief of the Berlin Ambulatorium für Massage, and he advocates both local and general massage as a potent factor in treating and, above all, in warding off gouty attacks. He says that even with podagra the pain from local massage is not enough to prevent the application of this beneficial measure. Even sensitive women bear it well. His course of treatment includes colchicin, hyperemia from intensive application of heat, and the massage. He has found mechanotherapy very useful also for tophi, his assumption being that they are deposited where the circulation of blood and lymph is most sluggish, and hence, while massaging the whole body, he pays special attention to these points. Everything that tends to make the movements of the body juices more active reduces the tendency to manifestations of gout. Superheated air and massage were found particularly useful for gouty eczema. He advises this on the slightest suspicion of gout as a factor in eczema. The relief from itching under the superheated air seems to be constant. Measures to induce sweating are beneficial in gout, as the skin is usually dry and signs of disturbance in the capillary circulation are frequent. Members of gouty families are liable to present this inherited weakness of the skin functioning, especially of the musculature of the capillaries in the skin. This can be regarded as an early symptom of gout, and it calls for prompt training of the skin. Massage increases the ability to sweat and thus renders the gouty better able to take part in sports, a most desirable thing for them.

67. **Contracted Kidney.**—Munk discusses the possibility of differentiating pure hypertrophy of the heart from that with contracted kidney, and the present status of our knowledge as to the causes of hypertonia. He asserts that to assume a contracted kidney from a certain stage of arterial hypertension and hypertrophy of the heart is a mistake in many cases; in certain others it is premature. In three cases reported in detail the clinical diagnosis of contracted kidney was not confirmed by necropsy. The kidneys were practically intact, but the suprarenals were the seat of a tumor. This had evidently entailed hyperfunction of the chromaffin substance, with epinephrinemia. This had induced hypertrophy of the heart, the clinical picture being that of a "chronic nephritis." Munk examined the suprarenals in over 100 cases of chronic nephritis, and found the cortical substance inclined to hyperplasia, especially of the normal fat zone. The findings resembled those in guinea-pig suprarenals after treatment with ovarian substance.

Study of the kidneys of all the cadavers during a recent year at the pathologic institute of the Charité at Berlin showed that in many cases of supposed chronic kidney disease the kidneys were very little, if at all affected, or only secondarily to the hypertrophy of the heart. These were the cases in which the general symptoms, especially the heart disturbances preceded all symptoms on the part of the kidneys. The heart is hypertrophied, the blood pressure 200 mm. mercury or more, but there are no evidences of arteriosclerosis, and albumin or tube-casts are not found in the urine. In one such case in a man of 47 the diagnosis of contracted kidney was changed three years later to myocarditis, and a year later back to contracted kidney. Necropsy showed but slight changes and these only secondary in the kidneys, but there was considerable arteriosclerosis in the brain and coronary vessels. This and two other typical cases are reported in detail out of Munk's extensive experience in this line, all tending to prove that we have as yet no convincing proof that arterial hypertension is the consequence of anatomic changes in the kidneys. The data presented confirm the assumption that the high pressure and even to a certain degree the hypertrophy of the heart are the primary anomaly. This may entail secondarily the sclerosis of the fine blood vessels in the kidneys, Gull and Sutton's arteriocapillary fibrosis. And this may occur alone; in the late stages it may be accompanied by inflammatory or degenerative processes.

Munk refers to recent communications from Umber's clinic (summarized in these columns, February 3, p. 406), which make a similar distinction, but they go only halfway with him, he says. They cling to the kidneys as responsible for the clinical picture, admitting a benign and a malignant form instead of, with Munk, leaving the kidneys out of consideration altogether as not involved, or only secondarily, in the cases with primary hypertension and hypertrophy of the heart. The earliest phase corresponds to an essential hypertrophy of the heart, but this term is no longer used as the kidneys are held responsible; by the time the second phase is reached, the diagnosis of myocarditis is made.

Daily examination of the urine sediment with the polarization microscope is the most reliable means for detecting the earliest involvement of the kidneys. The discovery of highly refractive bodies, leukocytes with anisotropic properties, and double refractive lipoids points to degenerative processes. This method of examination is more instructive for the purpose than any of the functional tests, he declares. It confirms that the condition and behavior of the heart and the rest of the vascular system have a decisive influence on the quantitative elimination through the kidneys and its duration, in the same way as other purely individual factors beyond our control which may affect the test elimination of an alien substance. The tests for the elimination of fluids and of the concentration power of the kidneys, and the effect of a regular mode of life on the behavior of the kidneys—these give really instructive insight into conditions in the kidneys. Determination of the residual nitrogen in the blood gives almost decisive information as to any insufficiency on the part of the kidneys. Tests with salt and urea are of lesser import. In any event, functional tests of the kidneys should be preceded by a few days of rest or administration of digitalis, with daily weighings, in order to eliminate the heart factors as much as possible.

70. **To Remove Drug Stains from Skin and Linen.**—Mankiewicz mentions, for iodin, moistening with ammonium or sodium thiosulphate. For silver nitrate, washing with a 10 per cent. solution of potassium cyanid or 10 per cent. potassium iodid. The yellow silver iodid spots are removed with sulphurous acid. He says that 10 parts each of mercuric chlorid and ammonium chlorid in 80 parts water will clear the skin of silver nitrate spots. For chrysarobin, rub with benzol (benzene). For resorcin, weak citric acid. For picric acid, leave the spot in contact with potassium sulphate for one minute then wash with abundance of soap and water. Or apply a paste of magnesium carbonate in water to the spot and after a time rub it off. Old pyrogallol spots cannot be removed. More recent spots can be treated by warming in contact with a 10 per cent. solution of iron sulphate until it turns a bluish black; then apply water freely and afterward a solution of an oxalate, rinsing abundantly. The procedure has to be repeated. For coal tar colors, spirit of soap.

Therapeutische Monatshefte, Berlin

December, 1916, XXX, No. 12, pp. 561-604

71 The Declining Birth Rate and Quack Abortifacients. (Geburtenrückgang und Kurpfuscherei.) Kantor.—p. 561. Conclusion.
72 *Digitalis and Water as Diuretics. (Ueber Diurese und Diuretika, I.) L. Lichtwitz and G. Zachariae.—p. 568.
73 *Treatment of Certain Gastro-Intestinal Disturbances in Children. (Therapeutische Vorschläge aus dem Gebiete der Kinderheilkunde.) F. Göppert.—p. 574.
74 *Sugar as Dressing for Wounds. (Ueber Wundbehandlung mit Zucker.) G. Magnus.—p. 578.
75 *Heat in Treatment of Gonorrheal Vulvovaginitis in Little Girls. (Ueber die "Fieberbehandlung" der Vulvovaginitis gonorrhoica bei kleinen Mädchen.) A. Ylppö.—p. 580.

72. **Diuresis and Diuretics.**—Lichtwitz and Zachariae tabulate the urine findings in eighteen cases of various kidney affections tested with ingestion of urea, salt or merely water, or all in turn. Of course these can serve as diuretics only when the kidney is capable of eliminating them. The elimination of water is not a mere passive process, they reiterate, but requires active work on the part of the kidneys. The separation of water from the blood serum is more than a simple filtering. Hence when it is necessary to spare pathologic kidneys, ingestion of water is by no means an indifferent matter. When given for diuretic purposes, the amounts, frequency and duration of the water giving should be carefully supervised. Persons with dropsy and those with sclerosis of the kidneys should not be given courses of water drinking. They are adapted more for cases of postacute and chronic nephritis, but a test ingestion of ¾ liter water should always precede it to determine the water-eliminating power of the kidneys. It is most useful in the phase of polyuria following an attack of acute nephritis with edema. Determination of the specific gravity of the urine generally affords sufficient insight into the action of the water drinking on the elimination of the other elements of the urine. Whether mineral or plain water is best in the individual case can be ascertained only by trial. Of all the available tests of kidney functioning, the test ingestion of ¾ liter of water is most instructive as it gives insight into one of the most important functions of the kidneys, while it can be applied anywhere and by any one. The findings are more instructive than slight fluctuations in the albumin content of the urine, and more instructive than the results of most of the newer functional tests.

73. **Treatment of Vomiting of Sick Infants.**—Göppert refers to the vomiting which keeps up even on restriction to tea in severe gastro-intestinal trouble. He has found it possible to arrest this vomiting by pouring into the stomach through a tube 200 c.c. or more of a hot salt solution. He introduces the tube through the nose and has the fluid at a temperature of 39 or 40 C. (102.2 or 104 F.). The children need the fluid, and often a marked change for the better is noted in fifteen or thirty minutes after the intake of fluid, especially in summer, even if there is no vomiting at the time. The benefit excludes the really malignant type. He supplements this intake of hot saline with irrigation of the rectum, the fluid heated likewise to 38 or 39. The flushing of the bowel can be done with 2 or 3 liters of hot Russian tea. In case of serious intoxication, the stomach has to be reserved for its true task, the digesting every two hours of 5 c.c. of breast milk, albumin milk, buttermilk or whey. These small amounts must be given undiluted, and at most a very little water (not tea) given with them. The needed fluid is given by the drop method in the rectum. The Ringer solution for the purpose can be made with a heaping teaspoonful of salt to a liter of water with from four to ten tablespoonfuls of lime water. In emergencies 100 gm. of this solution can be injected every four hours into the rectum.

73. **Treatment of Collapse with Cyanosis in the Newly Born.**—Healthy babes in the first week of life sometimes present a sudden serious condition of collapse with cyanosis. The night before the child did not nurse much, and the hastily summoned physician finds it gasping for breath, as with acute bronchitis or bronchopneumonia, without a cough. Acute sepsis may likewise present a similar picture. Before assuming either of these conditions, however, Göppert insists that the child should be given 100 or 150 gm. tea to drink. Within an hour it seems to be quite well again when the trouble was due merely to drying out of the system from lack of water, which is often responsible for it. The balance of water is very unstable in young breast-fed babies, and reluctance to take the breast even for one night or day may entail such a deficit in the normal fluid balance that severe disturbances with cyanosis and collapse are liable to follow, even in quite healthy children, and prove a serious aggravation of existing pathologic conditions. The recognition and correction of this "thirst damage" may save the infant's life in some cases.

73. **Periodical Vomiting in Children.**—Göppert affirms that it is in our power to arrest at once this periodical vomiting with the odor of acetone in the breath and acetonuria. All that is necessary is to distend the stomach with warm water. He gives the child 250 or 300 gm. of warmed mineral water, Carlsbad or an alkaline-saline carbonated water. The addition of sugar may induce the child to take it more readily. The child must be urged to refrain from vomiting the ingested fluid. As soon as the stomach gets distended, the tendency to vomiting stops at once. The rinsing of the fluid out of the stomach perpetuates the benefit. A liter or two of hot tea injected into the rectum and retained may likewise answer the purpose.

73. **Acute Insufficiency of the Stomach in Infants.**—Göppert refers to the stomach disturbances liable to develop in children between 6 and 12 months old who have been debilitated by chronic intestinal trouble or recurring acute trouble of this kind. The infant loses its appetite and may vomit a few times, and if the derangement is not promptly corrected, dangerous collapse may ensue. He rinses out the stomach and leaves 100 or 150 c.c. of the rinsing fluid, preferably some alkaline-saline mineral water, and gives merely minute amounts of water for eight or twelve hours, and then gives every three hours 30 gm. buttermilk with 1 or 2 per cent. flour, or the same amount of whey alone twice in the twenty-four hours. He increases the amount of buttermilk by 100 or 150

c.c. a day until he is giving 0.5 liter. As soon as 700 c.c. is reached, he reduces the number of feedings to six and gives instead of the buttermilk at noon a strained vegetable broth or gruel. By the end of the sixth week ordinary milk mixtures can be resumed, not going over 500 or 600 c.c. as the maximum of milk. Whey can be used instead of buttermilk, commencing with seven feedings of 60 c.c. whey, increasing to 70 c.c. whey and 40 c.c. gruel, and gradually reaching 500 c.c. whey and 200 c.c. gruel (for the older infants) and then substituting 50 c.c. milk for the same amount of whey. This acute gastric insufficiency of children with chronic bowel trouble does not get the attention in time which it deserves, and too often is allowed to progress into an almost irreparable condition.

74. **Sugar as Dressing for Wounds.**—Magnus admits the value of sugar in warding off fermentations and sterilizing the wound, but thinks that its chief value for treatment of wounds lies in the powerful osmosis which it sets up. The osmotic current floods the wound with secretions and thus self-cleanses it in the most healing-producing way. But this lasts only until the sugar has been so diluted with the secretions that the physiologic point has been reached, and the osmotic tension has been equalized. Market sugar was found sterile in 89 per cent. of a number of bacteriologic tests made with it, and no germs except ordinary saprophytes were found in any of the samples. It is possible, however, that resistant spores might retain their vitality in market sugar if they got into it. He strews the cleansed and dried wound with a thick layer of sugar and applies a dry dressing over this, renewing the dressing daily. Another great advantage of the sugar dressing is that the dressing never sticks to the wound. The powerful secretion flushes out the depths of the wound, and the profuse suppuration softens and aids in casting off all crusts, necrotic tissues, etc., giving a chance for healthy granulation below. When this stage is reached, salves or transplantation supersede the sugar treatment.

75. **"Fever Treatment" of Gonorrheal Vulvovaginitis.**—Ylppö describes in detail the case of a child nearly 5, previously healthy, who had recently grown thin and weak, with a profuse discharge from the vagina. Gonococci were found in smears from vagina and rectum. Then treatment with heat was begun. The child was placed in a bathtub with water at 102 F. and then hotter water was poured in until the temperature of the water was 41 or 42 C. (105 or 107 F.). The water at first reached only to the umbilicus, but later to the nipples. The bath was an hour long each time, and toward the end the temperature in the child's axilla approximated that of the water. No change was apparent for five days, but then the secretion became much less and had ceased entirely by the end of the eighth day and no gonococci could be detected, but the baths were kept up during a second week. The child at first was excited and restless and the pulse ran up to 200 by the end of the hour, but later the child grew more tranquil and sat quieter; sometimes there was slight irregularity of the pulse. After the bath she seemed exhausted and slept for an hour, but on waking she seemed refreshed and was hungry. The weight increased during the two weeks from 11,500 to 12,300 gm. Ylppö will continue this "fever treatment" in suitable cases although aware that this method of treating may be fraught with certain dangers, especially for spasmophilic children who are prone to convulsions, to say nothing of the possibility of collapse in case of disease of the circulatory or respiratory apparatus.

Riforma Medica, Naples

1916, XXXII, No. 42, pp. 1145-1172

76 Action of Toxins of Fatigue on the Circulatory Apparatus. (L'azione delle tossine della fatica sull'apparecchio circolatorio.) L. Ferrannini and S. Fichera.—p. 1145. Commenced in No. 41, p. 1117.

77 *Rapid Staining Method for Organic Fluids, Especially for Blood. (Un nuovo metodo pratico per la colorazione rapida del sangue, suoi parassiti e sedimenti cellulari di altri liquidi organici.) A. Martiri.—p. 1158.

No. 43, pp. 1173-1200

78 Oxaluria is not a Derangement of the Metabolism. (L'ossaluria non e una malattia del ricambio materiale.) E. U. Fittipaldi.—p. 1173.

79 Etiology of Smallpox, Measles and Scarlet Fever. (Vaiolo-Morbillo-Scarlatina.) R. Campana.—p. 1178.

80 Alcoholism in Italy. L. Bianchi.—p. 1191.

81 Zinc Chlorid in Treatment of Carbuncle. (Un' antica cura del favo.) S. Marmo.—p. 1195.

77. **Staining Technic for Body Fluids and Their Sediments.**—Martiri treats the specimen first with an acid and then with a basic stain, without rinsing. Both the reagents are durable and the findings are reliable, he says, even with quite old specimens. The first reagent is a 0.20 per cent. solution of eosin in absolute methyl alcohol. The other is a mixture of 8 parts methylene blue (Unna's polychrome) with 2 parts neutral glycerin. Both solutions are filtered and kept in wide mouthed bottles. The specimen fluid is allowed to dry on an object glass, protected from dust. A few drops of the eosin solution are poured on it, and after a few seconds the object glass is tilted so that all the excess fluid runs off. When quite dry, a small drop of the basic stain is deposited on the specimen with a glass stirrer. A cover glass is then placed over the specimen to spread the stain evenly over it. Any excess of fluid squeezed out can be dried off at the edges with blotting paper. By avoiding rinsing, the cellular elements in the specimen are left intact. He modifies the basic stain when the eosinophil granulations are to be shown up particularly, the formula then being 1 part of the methylene blue; 1 part of a 0.3 per cent. alcohol solution of marine blue to 2 parts glycerin. Specimens on the cover glasses can be collected and the stain applied at a leisure hour. The method is adapted for blood, for its parasites and for the cellular sediments of other organic fluids.

Semana Medica, Buenos Aires

1916, XXIII, No. 44, pp. 431-456

82 Vaccine Treatment of Pneumococcus Infections. (Estadistica y resultados obtenidos en el tratamiento de las neumococcicas por el Haptinogeno Neumo.) L. A. Garcia.—p. 431.

83 Forensic Case of Sclerosis in Patches. (Cerebro-esclerosis lagunar.) P. B. Aquino.—p. 436.

84 Importance of Base Hospitals. (La zona de etapas del punto de vista sanitario militar.) P. I. Acuña.—p. 438.

85 The Meat Supply. (Medios para producir carne higienica y abaratar su precio actual. Su trasporte a los grandes centros urbanos. Su conservacion.) J. G. Ruiz.—p. 442.

86 Etiology and Treatment of Tuberculosis. G. Escobar.—p. 446.

87 Care of the Teeth of Children in Asylums. (La terapeutica dentaria en los asilados.) E. Zawels.—p. 450.

Siglo Medico, Madrid

December 30, 1916, LXIII, No. 3290, pp. 833-848

88 *Sclerosis in Patches in Boy of Fifteen. (Esclerosis multiple juvenil.) G. R. Lafora.—p. 833.

89 *Croup Simulating Membranous Croup Due Exclusively to Bronchial-Pneumonic Process. (Relaciones entre el crup y la broncopneumonia en los niños.) E. Suñer y Ordonez.—p. 844. Commenced in No. 3289, p. 829.

88. **Juvenile Sclerosis in Patches.**—The first symptoms, pains in the legs, appeared early and by the age of 11 vision became impaired. Four years after this spastic paralysis developed, with headache and slight fever. Both arms and legs were totally paralyzed but the sphincters were apparently intact. The Wassermann reaction was positive and benefit was realized under mercurial treatment, but symptoms of sclerosis in patches, involving especially the medulla oblongata, became superposed on the clinical picture with convulsions and fatal aspiration pneumonia. No necropsy. There was no history of syphilis or neuropathies in the family.

89. **Relations between Croup and Pneumonia.**—Suñer describes a number of cases which show that an inflammatory process in the lower air passages may cause the symptoms of true croup. In one such case a child of 7 had a mild tracheitis but nothing to suggest diphtheria at the time or later. In the night the child seemed to be suffocating with diphtheric croup. Examination confirmed the absence of diphtheria but showed intense capillary bronchitis and the child soon died. Eight similar cases have been encountered since, all confirming the possibility of phenomena suggesting stenosis of the larynx but induced merely by bronchopneumonic processes. Intubation will show that the larynx is quite permeable after waiting a few moments to allow the reflex contraction from contact with the foreign body to subside. The larynx in these cases is not so red or inflamed

as in the usual cases of laryngitis, and reflex contraction of the larynx from local irritation seems scarcely likely. He explains the obstruction in the larynx by assuming that the bronchopneumonia, causing intense dyspnea, compels labored respiration with the consequence that there is at times a tendency to a vacuum in the lower air passages and rarefaction of air. This induces the entrance of air from without with greater velocity and under atmospheric pressure above that prevailing in the air passages. If the walls of the air passages are not strong enough to support this pressure, they may be forced together, thus actually closing the lumen more or less, and thus giving rise to the symptoms from organic stenosis. The fact that all his patients in this category were quite young, between 21 months and 6 years old, sustains the assumption that the tender walls of the larynx may be forced together by the pressure from the incoming air under higher pressure than ordinary. In the five cases that came to necropsy the larynx was found practically normal. He gives a number of physiologic tests and tests with rubber tubes, the results of which show the plausibility of this assumption as to the mechanism of nondiphtheric croup with severe derangement of the bronchial passages. The closure of the larynx under these conditions may be increased and facilitated by reflex contracture of the larynx under the influence of the irritation from the impact of the overpressure air, acting like a foreign body to induce reflex contracture. He calls attention to one case in particular in which a diphtheric pseudomembrane was found in one of the finer ramifications of the bronchi but nowhere else. This was evidently a primary diphtheric bronchopneumonia inducing croup although no pseudomembranes had formed in the air passages above this remote focus. Necropsy in the other cases showed the staphylococcus or streptococcus and pneumococcus as responsible for the trouble. Only in one case necropsy showed chronic interstitial laryngitis which may have cooperated or been alone responsible for the croup; it probably antedated the latter. Treatment should include that for the bronchopneumonia as well as relief from the stenosis of the larynx. For the former he commends physical measures as the most active at our command, with intubation to relieve the suffocation. No benefit was derived from diphtheria antitoxin in these bronchopneumonic croup cases.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 16, 1916, II, No. 25, pp. 2133-2200

90 *Selection of Professors for the Medical Department of Universities. (Een en ander over hooger onderwijs in de geneeskunde. VIII.) G. van Rijnberk.—p. 2133.
91 The Teaching of Pediatrics in the Netherlands. (Bijdrage tot de geschiedenis van het klinisch onderwijs in de Nederlanden.) E. C. van Leersum.—p. 2139.
92 Cases of Mycosis in Inguinal Region. (Epidermomycosis inguinalis, veroorzaakt door de Endomyces albicans.) D. Muijs.—p. 2150.
93 *Inherited Sclerosis in Patches. (Een geval van sclerosis multiplex hereditaria?) J. J. van Straaten.—p. 2156.

90. **Selection of Medical Teachers.**—Van Rijnberk emphasizes the extreme importance of selecting the medical professor as he is to serve as model and inspiration for thirty or more yearly classes of students, and his direct influence will extend over more than one generation. He discusses the properties and qualities that the man must have in order to offer some probability of availability, and ways and means for securing the right man for the vacancy.

93. **Inherited Sclerosis in Patches.**—Van Straaten describes the case of a woman of 33 with two little daughters of 8 and 10, all of whom present visual disturbances such as are typical of multiple sclerosis. For twelve years the mother has presented pronounced symptoms of multiple sclerosis; the first symptom was sudden decline in vision to 0.2/60. Some of the symptoms were comparatively transient and yielded place to others. The Wassermann reaction is negative. The oldest child has now atrophy of the optic nerve, and the course of the eye disturbances cannot be explained by any local or general affection other than multiple sclerosis. The other child sees everything green and yellow as she reads but no anatomic changes are perceptible in the eye or elsewhere.

Upsala Läkareförenings Förhandlingar

November 23, 1916, XXII, No. 1-2, pp. 1-140. Last indexed Dec. 16, 1916, p. 1884

94 *The Gastric Proteolytic Enzymes. (Om de proteolytiska enzymen i ventrikeln.) O. Hammarsten.—p. 1.
95 *Improved Methods for Examining for Color Blindness. (Förslag till ändrade bestämmelser vid undersökning rörande färgblindhet.) C. G. Boström, G. F. Göthlin and H. J. Ohrvall.—p. 23.
96 *The Blood Sugar Content in Case of Juvenile Myxedema. (Blodsockerbestämningar vid ett fall af infantilt myxödem.) N. O. Nilsson.—p. 107.
97 Auscultation Diagnosis of Cavity in Lung Tissue: "Paracavity Râles." (Ett bidrag till kaverndiagnostiken.) A. Wallgren.—p. 116.
98 *Influence of Kind of Infant Feeding on State of Nourishment and Development of Muscles in Late Childhood. (Om spädbarnsuppfödningens inflytande på utvecklingen af hull och muskler under uppväxtåldern.) K. Wedholm.—p. 129.

94. **The Proteolytic Enzymes of the Stomach.**—Hammarsten adds to his historical review of this subject an account of his own extensive research in this line. He calls attention to the great difference between the enzyme production in the stomach of the calf compared with that in dogs and other animals. Nothing elicited in his experiments seems to sustain the single rather than the dualistic theory in regard to the gastric enzymes.

95. **Tests for Color Blindness.**—The eighty-five pages of this monograph on color blindness discuss the present status of the question in Sweden, and this is compared with other lands, especially the tests for color blindness in vogue in Austria, England, France, Germany, Holland, Russia and the United States. The tests used in certain of their railroads and corporations are specified. The drawbacks of the various test methods are pointed out, and a method is described which promises to overcome all drawbacks. The main test is made with a chart on which are evenly scattered patches of color. The patches are of irregular outline, like a layer of tiny pebbles, showing the white background between them all. They are in three colors, a light and a dark reddish lavender and a dull cherry red. All the dull red patches are arranged in such a way that they form a large figure, 3 or 6, but as the red and the lighter lavender are of the same depth of tone, it would be impossible to distinguish the figures unless one was certain as to the difference in color between the red and the lavender. Two of the charts are reproduced in color, and the tentative work with other colors is described as one after the other various colors and tints were tested. None were found so instructive as the ones here adopted for these so-called pseudo-isochromatic tables. The figures on the charts are to be spoken aloud as read, and only from twenty to forty seconds are allowed for the reading of each chart. As the figure is read and named aloud, its outline is traced with a pointer. The feature of these charts is that the colors are all very much alike and two of them differ only in being a little lighter or darker. The advantages of a standard system for testing for color blindness are emphasized, and a model equipment for the purpose is described, with a general outline of the preferable procedure.

96. **The Blood Sugar Content in Myxedema.**—Nilsson's patient was a girl of 17. The sugar content of the blood was about 0.09 per cent. After ingestion of 100 gm. glucose, it ran up to 0.14 per cent. by the fifteenth minute after all the glucose had been taken in the course of forty-five minutes. After a course of thyroid treatment, the increase was higher in proportion and lasted much longer although there was no glycosuria. This diabetes-like curve in the sugar content of the blood, he ascribes to the thyroid treatment, as it harmonizes with what we know of the difference as to the tolerance for sugar with excessive and deficient thyroid functioning. The similar reaction to epinephrin was along the same lines but less pronounced.

98. **Influence of Infant Feeding on Development of Muscles Later.**—Wedholm's estimate was made from examination of 535 children known to have been breast fed and 279 raised entirely on the bottle. The children's ages ranged from 1 to 14 years. During the first two years of life the development of fat and muscle was less in the bottle fed, but from the third year on, no appreciable difference was apparent. Rachitis was evident in the proportion of sixty-nine among the 279 bottle children to seventeen in 535 breast fed.

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RESULTS OF TREATMENT IN HODGKIN'S DISEASE *

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In this summary of our clinical experience in treating sixty-three cases of Hodgkin's disease of certain diagnosis over a period of eight years, we shall exclude, so far as practicable, hypotheses and technical details. We offer an interpretation of the effects of our therapy that is to some extent both incomplete and unsatisfactory. Many of our patients began treatment comparatively recently, and approximate accuracy in the estimation of results depends on a series of well controlled observations extending over a period of at least five years. On the other hand, this is the largest series of cases reported from one group of observers, the only one that has been followed at frequent intervals by coordinated workers, consecutive records thus being obtained of variation in the blood picture, general physical condition and roentgenographic evidence. These observations, so far as possible, have been made independently in an effort to eliminate bias.

Pending the final determination of the cause, course and prevention of this disease, clinicians should have no less interest in its treatment; and this interest must be considerable since, next to tuberculosis, Hodgkin's disease is the commonest and most important disease of the lymphatic system.[1]

Whether one holds with the great majority that the disease is in nature inflammatory, or with the minority that it is neoplastic, concerns an individual sufferer but indirectly, provided every possibility of recovery is vouchsafed.

Our contention that the affection partakes *in effect* of the destructive potentialities of both a malign infection and a neoplasm[2] has been given practical trial in the methods of treatment employed, the appended results of which will to some extent determine the rationality of both.

CLASSIFICATION OF CASES

It is essential to group these cases according to the nature and stage of the process because the extremes, from a therapeutic point of view, are virtually incomparable. Years after Hodgkin's work indicated that he had discovered a clinical and pathologic entity, clinicians came to recognize acute and chronic forms, the former of from two to five months' duration, the latter lasting as many years. Much earlier Trousseau[3] had described three stages of the disease so accurately that his classification is the best available:

1. The latent stage, extending from the onset to the progressive stage.
2. The progressive stage, in which multiple more or less widely separated groups of glands become involved, so suddenly at times as to have been aptly termed explosive, but usually occurring gradually and ending after correspondingly variable intervals in the final or cachectic stage.
3. The cachectic stage, in which the peculiar progressive pallor and other signs of increasing physical and physiologic debility indicate that resistance and rehabilitation have been overcome permanently.

So great is the difference in the clinical picture at the beginning and at the end of these stages, that Trousseau's classification has been amplified, as indicated in the accompanying diagram. Our cases roughly fall into this grouping, but classification of individual cases according to this scheme is admittedly inaccurate and merely tentative.

CLASSIFICATION OF CASES

All Cases 63	Acute Cases, 5			Group 1 5 Cases
	Chronic Cases, 58	Stage 1, 8	Early	Group 2 5 Cases
			Late	Group 3 3 Cases
		Stage 2, 25	Early	Group 4 11 Cases
			Late	Group 5 14 Cases
		Stage 3, 25	Early	Group 6 14 Cases
			Late	Group 7 11 Cases

TREATMENT

After the reasons for treatment and the methods of treatment have been outlined, their application to each of the foregoing groups will be indicated and the results obtained stated.

General Principles.—At the beginning of this work a mortality of 100 per cent. was universally accepted, although there was lacking the record of a single exception to prove the rule. As experience increased, it was inevitable that methods of treatment should vary. Failures were distressingly frequent, but a few successes in ultimate recoveries and in satisfactory palliation (prolongation of life with decreased discomfort and the maintenance of the patients' optimism) sufficed to show that eventually a more effective therapeusis was at least a developmental probability.

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* Read before the annual meeting of the Wisconsin State Medical Society, Madison, Wis., Oct. 4, 5 and 6, 1916.

[1] Ziegler: Berl. klin. Wchnschr., 1911, **48**, 1917.

[2] Yates, J. L., and Bunting, C. H.: The Rational Treatment of Hodgkin's Disease, The Journal A. M. A., June 12, 1915, p. 1953.

[3] Trousseau: Clin. méd., 1865, **3**, 555.

In addition to a conviction that the process was infectious, clinical studies brought a recognition of certain fundamental facts. The most significant of these in importance has hitherto escaped recognition. Although this disease is noncommunicable and very few individuals are susceptible, after the process is once well established, final spontaneous recovery seldom if ever occurs; yet throughout its course repeated and almost successful temporary defensive responses are manifested.

This was assumed to indicate that the infection is of low virulence, and that the affected individuals are incapable of a permanent protective reaction to this toxin, however it may be administered. These premises demand in therapeutic logic an early and adequate subtraction from the amount of the disease in order to place the balance of power emphatically and rapidly on the side of individual resistance and to maintain it there, through the elimination of every possibility of reinfection.

Further, this morbid process imitates the behavior of malign affections, notably of certain types of tuberculosis and of certain malignant neoplasms, especially the carcinomas, in so many details, as, for example, in modes of dissemination, in direct extension and in the nature of local and general resistance, that the nearly identical problems presented seem to demand the same solution. This is an additional indication for surgical intervention.

Finally, the rather numerous "cures" recorded in the literature, following an almost incredible number of methods of treatment, were without exception but temporary improvements. The improvement in the majority of instances occurred in spite of the treatment used, though in some doubtless it was fostered thereby.

Apparently a composite sequential series of treatments is demanded, including everything of proved or possible value, as it was quite out of the question, with one exception, to devise anything, however rational or irrational, that had not already been employed, all with the same ultimate results.

These conditions seemed to us to indicate the following methods:

1. To determine and to eliminate the portal or portals of entry of the infection, those chronic lesions of skin or mucous membrane pointed out by Trousseau in 1865 and curiously never rediscovered, never even given any practical recognition by therapeutists.

2. To extirpate so thoroughly all eradicable involved tissue in suitable cases as (*a*) to place the balance of power decidedly on the side of the individual instead of on that of the disease; (*b*) to eliminate this source of further infection and intoxication, and (*c*) to prevent subsequent physical and physiologic debility through the continued growth of this tissue in situ and consequent pressure and irritation effects on surrounding structures.

3. To keep the balance of power on the side of the patient (*a*) by improving general health through hygienic measures; (*b*) to prevent by radiation, by immune serum and by medication any extension of the disease, and (*c*) to repeat these treatments at intervals of a few months, unless other manifestations of progress of the disease, as determined by the patient's condition and especially by untoward changes in the blood picture, demand more frequent treatments or more radical interventions.

Three of these procedures require explanation.

It has long been held and frequently reiterated, notably of late years by Fischer[4] and Dorothy Reed,[5] that surgery, always of doubtful value, frequently was positively harmful, and that reexcisions were seldom if ever justifiable. These views were based on the repeated observations that local recurrences, usually prompt, were the rule after the excision; and, moreover, that these recurrences often assumed a type more acute than the original process and were prone to hasten rather than to retard death. We have seen such recrudescences appear within a week. The explanation is simple.

A portal of entry (inflamed tonsils, teeth, accessory sinuses, patches of dermatitis, bronchitis, enterocolitis, etc.) is comparable to a primary lesion in carcinomatous processes. The records of earlier, less radical surgical treatment show that these foci of dissemination were constantly neglected, and that therefore local reestablishment of the disease was a natural result, particularly since this affection seems limited at its inception to preexisting lymphoid tissue, only secondarily extending therefrom to invade directly other tissues. Consequently if, in addition to this neglect, the primary excisions are relatively incomplete (and according to our belief none is or can be actually complete in removing all potential lymphoid tissue[6]), and are not therefore followed immediately and at intervals thereafter by intensive Roentgen-ray treatments, distressing experiences of aggravation of the disease are almost certain to occur. In addition, the constant liability to septicemia must not be overlooked.

On the other hand, radical extirpations preceded by removals of portals of entry and followed by careful after-treatment have proved that in favorable (less advanced) cases local recurrence may be reduced to a surprisingly low percentage (possibly less than 5 per cent.), and that when they do occur under these conditions they are usually late and have assumed a much more chronic type of lesion. Such late lesions may be excised safely under local anesthesia, but afterward the site of operation should be treated with the Roentgen ray as if this late procedure were primary.

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[4] Fischer: Deutsch. Chir., 1901, **24**, 104.

[5] Reed, Dorothy: Johns Hopkins Hosp. Rep., 1902, **10**, 133.

[6] So little is known of the number and distribution of lymphoid rests or of the redevelopment of lymphoid structures consequent on excisions that it is impossible as yet to make more than a conjecture as to the sequence of events after a wide, thorough extirpation. Clinical evidence indicates that following even the most thorough and radical excisions of cervical tissue, e. g., for tuberculosis or squamous cell epithelioma, recurrence in unmistakable lymph glands may develop in such numbers and in such distribution as to make it quite certain that either or both of such regenerative processes must have been operative. Years after the final local disappearance of Hodgkin's disease following radical excisions and Roentgen ray, we have seen a simple type of lymphadenitis occur in such areas in a perfectly natural fashion, following an inflamed tooth or a dermatitis of the scalp. Our observations suggest that present conceptions of the normal distribution and function of lymphatic tissue, or of the abnormalities developing under the stress of other types of involvement (tuberculosis or cancer) barely indicate the possibilities in these particulars, possibilities of infinite therapeutic potentiality. Direct and indirect evidence is found in abundance in human pathology to support Murphy's (Murphy, J. B., and Morton, J. J.: Jour. Exper. Med., 1915, **22**, 204) brilliant experimental observations and those of Theobald Smith (Jour. Med. Research, 1915, **32**, 455) indicating the significance of the lymphocyte as an index of local and general resistance to chronic malign affections, inflammatory and neoplastic. Hence our endeavors to protect all lymphatic tissue from infection, as the disease is prone to start in the germinal centers, and also to induce compensatory hyperplasia in actual or potential lymphoid rests. There is evidence that such hyperplastic tissue is not only hyperresistant itself, but also contributes materially to general resistance. For example, after multiple radical excisions with subsequent radiation done for palliation in a patient, there was an interval of months of such continued well-being without any superficial evidence of disease that hopes of recovery were entertained, though the intrathoracic portion of the disease did not improve. General resistance collapsed suddenly after a severe griplike infection. Recrudescences then appeared and developed rapidly in areas hitherto immune. In this connection the work of Murphy and his associates, and the earlier experimental observations of Heineke (Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1904-1905, **14**, 21) and of Warthin (Internat. Clin., 1906, **4**, 243) show the paramount importance of proper dosage of the ray. We have had no experience with radium, and will have none until it can be shown to give at least as good results as the Roentgen ray with no greater dangers.

We believe in the efficacy of extirpation because of examples of recovery following such treatment which we report below; moreover, we have personal knowledge that individuals showing similar forms of the disease and treated similarly by others but without excisions have succumbed after more or less temporary relief. In our experience fever has disappeared, and local general improvement has followed single and multiple extirpations — a result otherwise not obtainable. Two persons hopelessly ill have requested additional operations because of the period of subjective improvement following previous extirpations.

Once more we wish to emphasize the negative to these assertions: If extirpation is not to be complete, it should not be attempted. Meddlesome surgery in Hodgkin's disease is even more dangerous than in cancer. We believe that we have seen hopeless dissemination follow a simple "test excision," and therefore practice them only in doubtful cases, when prepared to follow a frozen section diagnosis immediately with a radical extirpation, or in exceptional cases when an accurate histologic estimation of the nature of the process is of sufficient value as an aid to therapeusis to balance the danger. Such wounds should be treated with the Roentgen ray immediately and repeatedly, as even in acute cases the liability to dissemination is thus reduced materially.

The use of an immune serum presupposes a final proof of the etiologic relationship of *B. hodgkini*. As we cannot offer that proof, we must justify the use of a serum on other grounds.

The administration of the serum when it is sufficiently potent has reduced temperature in certain febrile cases in a manner that seemed to prove it the cause of the defervescence. There has been in both febrile and afebrile cases an improvement in subjective symptoms that was absent when the serum was impotent. One patient was particularly susceptible to this benefit, and could estimate after a few injections the value of any particular supply. Variations in potency were noted in the serums obtained from different horses and at different times from the same horse, and could be estimated only by the effects noted clinically. There was no bactericidal action. However, agglutination and complement fixation tests of the several serums were positive, as a rule, but showed no variations corresponding to their clinical effect.

Whether given subcutaneously so as to filter directly through affected glands or administered intravenously, there occurred usually a fairly prompt and at times considerable enlargement of such glands. In one case with advanced mediastinal involvement, this acute tissue reaction produced a pupillary asymmetry and a dyspnea that was alarming. This reactionary enlargement soon subsides, as a rule leaving the glands smaller than before the administration was begun. Such tissue subsequently removed has failed, in the few instances in which this has been done, to give a positive culture. Negative cultures are the rare exception when the tissue shows the histologic changes of the disease. Patients who tolerate the serum seem to improve more rapidly and to receive more permanent benefits than from the same general treatment but without the serum.

Medication of this group of diseases has consisted since the days of Billroth in the administration of arsenic. It is without specific lasting virtue in any form yet available, from Fowler's solution to salvarsan. Some specific chemotherapy is urgently needed, but wanting this, fresh air, sunshine and proper feeding are infinitely superior to any drugs when there is no indication for tonics and the like.

APPLICATION OF TREATMENT TO GROUPS

Group 1, Acute Cases.—The blood picture, the most reliable single diagnostic evidence, is often obscured by the leukocytosis.[7] It is fortunate that the incidence of this type of the disease is comparatively slight, for it is about as amenable to treatment as is the mastitis carcinomatosa of lactation or melanoma. By the time a diagnosis is made, the outlook is usually hopeless because of the intense intoxication and extensive involvement. However, if this acute process could be converted promptly into a chronic type, ultimate recovery is conceivable, as will appear later.

In these acute types, periadenitis, comparable in its pathologic and prognostic significance to the penetration of gland capsules by cancer metastases, is both early and extensive. This periadenitis makes a satisfactory extirpation extremely difficult or more often impossible. Nothing less, however, promises even temporary relief, as this type of the disease is least responsive to radiation and typifies the rapid uncontrollable recrudescences that have been noted by all observers to follow so regularly in those "cures" obtained by the ray alone. This universal experience, fortified by our own results, has convinced us that mere reduction in the size of the gland masses should not be the primary object in treatment, but rather such therapy as, controlled by the blood picture, leads to an overcoming of the infection.

Group 2, Incipient Cases.—The blood picture is positive and early. In these instances the portal of entry has been recently established, and only a few adjacent glands are beginning to be palpable. Such early diagnoses of the disease are partly fortuitous and partly the result of (1) careful physical examination of patients complaining of nothing more serious than a lack of energy; (2) routine blood counting, and (3) an accurate interpretation of tuberculin tests. So far these early manifestations have been limited to the primary cervical variety of the disease. Tonsillectomy, careful exclusion or treatment of tooth or sinus troubles, roentgenotherapy and hygiene have sufficed to check the disease at this stage, even after test excisions have been made. Exceptionally, the entire demonstrable disease process may be limited to one tonsil and yet the toxemia be sufficient to produce the characteristic blood changes, and even a specific bacteremia may have occurred.

Group 3, Early Cases.—The blood picture is positive and still of the early type. There is unmistakable involvement of the primary group of glands, cervical, axillary or inguinal (the primary mediastinal and retroperitoneal varieties have not been recognized as early as this), but without demonstrable extension therefrom. In this group and every other more advanced group the occurrence of a specific bacteremia of some extent is virtually certain at one or more of the positive phases, though the toxemia alone is possibly capable of inducing an adenitis in both adjacent and remote lymphoid tissue. Elimination of a portal of entry, radical extirpation, roentgenotherapy and hygienic living have sufficed to relieve this uncommon type—uncommon because usually by the time one gland group is materially enlarged, extension to others has already occurred, at least at the time when advice is sought. It is unfortunate that too often patients of this and the preceding group are advised to temporize, or if the diagnosis is suspected are given arsenic and Roentgen-ray or radium treatments, and admonished to avoid surgery as a path to certain death. This attitude would be less open to criticism had any other method of treatment ever produced a cure even at this early stage.

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[7] Bunting: Bull. Johns Hopkins Hosp., 1911, **22**, 248.

Group 4, Moderately Advanced Cases.—The blood picture is positive but not of so early a type, that is, there are fewer lymphocytes, and a moderate eosinophilia has developed. More than one, sometimes all of the main superficial groups are diseased, but extension to the mediastinal or peritoneal glands cannot be more than suspected. These individuals show definite effects of intoxication and are slightly febrile, at least during periods of exacerbation. Eliminations of portals of entry and extirpation of the gland group or groups most involved may induce a permanent regression in other glands under proper radiation. Unless these secondary gland groups are but slightly enlarged and the patient's condition otherwise is indicative of no serious damage, the safest course is to proceed as rapidly as feasible with repeated extirpations to give maximal protection to inaccessible glands and to the lymphadenoid tissue in general. This should be followed by the usual secondary treatment. Even this early in the disease the protective and regenerative powers may be nearly exhausted, and quite probably are, in the patient having the peculiar intermittent, or Murchison type of fever. In all patients the margin of reserve power of resistance is reduced far more than is apparent. The individuals of this group are the ones who above all others change so suddenly from a relatively safe into a quite hopeless condition. After this "explosion" has occurred, an equally sudden and considerable increase in discomfort inspires these unfortunates with a tardy but now impelling desire for relief. They now submit willingly to the palliative measures far more trying than curative procedures would have been but a few weeks earlier.

Group 5, Advanced Cases.—The blood picture may be like the preceding, or may assume later features—a gradual reduction of nearly all cell forms, especially the lymphocytes, with a relative and actually neutrophilic increase. In these persons there is always a demonstrable involvement of deep structures, intrathoracic, intraperitoneal or both, frequently accompanied by more or less extensive involvement of multiple superficial gland groups. The difference between this and the preceding group in physical appearance may be slight, but commonly there are greater pallor, malaise and febrile reaction. Earlier it appeared that in this type palliation alone was obtainable; more recently there is evidence that recovery is occasionally possible. Radical extirpations, almost forbiddingly extensive, must be undertaken, and it is in this group that the administration of serum has seemed to make lesions responsive to treatment otherwise inefficacious. In the majority of these patients, in spite of relatively healthy appearance, the powers of recuperation and, possibly, of lymphoid regeneration have been so seriously and permanently depleted that were the entire Hodgkin's affection suddenly eliminated it is quite likely that the consequently lowered resistance to other types of infection, notably tuberculosis, would render long-continued existence improbable. Differentiation between this and the succeeding group is so uncertain that a complete explanation and apparent understanding of the exact condition by the patient must always precede any attempt at treatment.

Group 6, Cases Probably Hopeless but Capable of Palliation.—The blood picture is of late type; the lymphocytes are reduced (below 15 per cent.), but the platelets are still numerous and the leukocytosis not excessive (less than 25,000).

The patients are still active, and though considerable deep involvement is easily demonstrable, there appears to be such an abundance of physiologic vigor that prolonged relief, if not possible recovery, is conceivable. However, the margin of reserve power is always much narrower than it appears, and tissue regeneration, especially of the hematopoietic system, is nearly if not quite at the vanishing point. Here again treatment should not be undertaken without a frank understanding. If it were not for the great reduction in physical and mental distress usually obtainable, any radical treatment would be positively contraindicated.

Group 8, Cases with Lethal Involvement and Probably Beyond Palliation.—The blood picture is now of the very late character; the lymphocytes are below 5 per cent., there is a neutrophilic leukocytosis, and the platelets may disappear. Occasionally incomplete operations to relieve pressure distress are humane. Opium, scopolamin and cocain are the main reliances. It is remarkable how much reserve strength persists in this group when prolongation of life is regrettable. Unfortunately the number of patients seeking relief is greater in this group than in any other. This fact does not appear in our records, as a positive diagnosis can usually be made by letter, even when from a layman, and without making a blood count. Relatively few such patients come under our direct personal observation.

RESULTS

We have heretofore maintained that a recovery could be accepted only when a person had been free from all evidence of the disease, including a normal blood picture, for five years. This period exceeds so far as could be determined the longest free interval on record. In those rare instances of late recrudescence, the possibility of reinfection after a recovery has been established must be disregarded until the nature and methods of infection are determined absolutely, even though there is evidence of only incomplete temporary protective reactions.

Experience is still insufficient to determine the nature of a "normal blood picture" for individuals who have recovered *after* having had the disease develop beyond the incipient stage. The specific toxin has a selective action on hematopoietic tissues, wherein it provokes primarily a stimulative irritation and later produces progressive degenerative changes in these structures, from which regeneration becomes somewhat proportionately and increasingly impossible. Recovery occurring at any period, after complete regeneration is impossible, is bound to exhibit some evidence comparable to a cicatrix. It now appears that part of such evidence is more or less permanent impairment of the functions of lymphoblastic tissue. Hence a subnormal lymphocyte count need not of itself be indicative of a persistence of the disease, although suggesting reduced resistance, if the other features of the morbid blood picture have returned approximately to normal, as determined not by a single count but by a series of observations extending over several months.

During the first year after the institution of treatment, improvement, however remarkable, is of little or no prognostic value. The first year (and usually the first part thereof) has furnished virtually all of the "cures" recorded in the literature as the result of any methods of treatment.[8] Therefore the results of a year or less in duration will be termed "temporary." During the second year a more accurate judgment is possible, and the term "apparent" is justified, as is also the term "probable" during the third and fourth years. In the fifth year and thereafter, the ultimate results become relatively more certain, though final judgment must be reserved until a complete necropsy presents conclusive evidence years after recovery has been accepted clinically.

RESULTS BY GROUPS

Group 1.—Acute cases; five.

Four patients died in from one to four months; one primary retroperitoneal was discovered postmortem, the other three (two primary cervical and one primary mediastinal) were subjected to various treatments without checking the process. One case, primary cervical, has assumed a chronic type following tonsillectomy, extraction and treatment of teeth, multiple excisions and reexcisions, serum and Roentgen ray. Temporarily this patient is much improved and is still improving. Recovery is conceivable.

Estimated possibility of recovery, less than 5 per cent.

Group 2.—Incipient cases; five.

Two patients recovered, five years and over.

Two cases probable recovery, two years and over.

One case apparent recovery. In this patient the disease was limited to a nodule in one tonsil. Several months after tonsillectomy and Roentgen-ray exposures of the neck, symptoms suggesting extramedullary pressure on the tenth to the twelfth thoracic spinal segments developed. Relief finally followed serum administration and Roentgen-ray treatment of spine.

Estimated possibility of recovery, from 80 to 90 per cent.

Group 3.—Early cases; three.

One patient probably recovered. This patient has been under treatment eight years. His blood picture has never returned to normal and probably never will, but it is conceivable that the disease was eradicated five years ago.

One patient temporarily recovered.

One patient refused operation, and was treated elsewhere with vaccine and the Roentgen ray. Dead.

Estimated possibility of recovery, from 60 to 70 per cent.

Group 4.—Moderately advanced cases; eleven.

Two patients, recovery probable. Improvement during the past five years indicates that the disease is all but overcome.

One patient probably recovered.

One patient apparently recovered.

Five patients temporarily relieved; one of these now shows hopeless involvement.

One patient refused treatment.

One case, primary incomplete excision done elsewhere without previous tonsillectomy. Tonsillectomy; vaccine and Roentgen ray given, followed in a few months by a sudden recrudescence in an acute form. This was attributed, possibly unjustly, to the vaccine.

Estimated possibility of recovery, from 30 to 40 per cent.

Group 5.—Advanced cases; fourteen.

One patient probably recovered; case once appeared hopeless.

Three cases temporarily improved.

Three patients refused treatment; two dead, one dying.

Three cases are in terminal stages. All these patients refused intervention at a critical period when nothing less would benefit.

Two patients are dead; both were temporarily benefited, one (mentioned above) so greatly improved as to raise hopes of a recovery.

One patient has been subjected recently to an incomplete operation elsewhere.

One patient succumbed to operation.

Estimated possibility of recovery, from 5 to 10 per cent.

Group 6.—Very late cases, palliation still possible; fourteen.

Three patients declined to begin treatment. All are dead.

Three patients refused to continue treatment. One dead, two dying.

Four patients survived but a few (from eight to twelve) weeks. All were temporarily improved and for a time appeared to gain. This type without reserve power would be subjected to no treatment were it possible to estimate actual conditions.

Three patients have had from three to twelve months of hope and comfort; two are still active and optimistic. Two of these appeared to be weaker than three of the preceding four patients who responded less.

One patient died during operation.

Estimated mortality, 100 per cent.

Group 7.—Lethally involved cases; eleven.

As stated above, this would be the largest group if it included those who have consulted by letter.

Two palliative operations were attempted: one, a mediastinal decompression which was never begun, as the patient died during the induction of anesthesia; the other, an axillary decompression, which was very gratifying in its relief.

This group included at least two primary mediastinal cases.

Mortality, 100 per cent.

COMMENT

We regret the impossibility of giving more exact figures as to ultimate recoveries, but as 67 per cent. of these patients have come to us within the last two years, and as our work before that time was less standardized, the reason is obvious.

Apparently greater benefits are being obtained as experience increases and methods and judgment improve. We are of the opinion that in about 20 per cent. of all cases as we see them recovery is a possibility at present.

Earlier diagnoses, and the recognition that Hodgkin's disease, if treated promptly and radically, is curable would raise this percentage materially without any change in the treatment outlined above. More definite laboratory and clinical knowledge of this disease as a morbid physiologic process, and clearer conceptions of the defensive mechanisms which combat it, are needed to further an effective rational therapy.

Average Filipino Food Ration.—The food or ration now used by the average Filipino family is poorly balanced and lacking in nutritive properties, and is poorly prepared and served. It is poorly balanced in that the preponderant element is rice, polished, and as a rule of inferior quality. The protein element, particularly as regards animal protein, is lacking. There is also an insufficiency of fat, and vegetables and fruits are not used in anywhere near the proportions in which they should be used. The food as a rule is poorly prepared, insufficiently cooked, and improperly served; it is eaten in a great majority of instances with the fingers by dipping into a common dish, and meals are at irregular intervals.—J. D. Long, Reprint No. 371, *Public Health Reports*, Oct. 27, 1916.

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[8] We have been unable to learn of a single permanent recovery from the disease except those herein recorded, where a positive diagnosis has been made by other than clinical methods of physical examination. Tuberculous lymphadenitis can imitate Hodgkin's disease too accurately to be differentiated except by the morbid histology, and such examples are too common to be disregarded. We assume that the constant failure of the exponents of any method of treatment to make subsequent reports of their patients who improved primarily or to record consistent improvement leading to recovery in other individuals must be accepted as evidence of the inefficacy of those methods.

THE COLLOIDAL GOLD REACTION OF THE CEREBROSPINAL FLUID IN ACUTE POLIOMYELITIS *

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The careful work of Peabody, Draper and Dochez,[1] in 1912, leaves little to be said, from a diagnostic point of view, concerning the cerebrospinal fluid of patients suffering from acute poliomyelitis. Abramson,[2] in 1912, and Neal[3] and Klein[4] in the recent New York epidemic obtained substantially the same results. Inasmuch, however, as the fluid from such patients has given uniform and significant reactions with Lange's colloidal gold, it has been thought worth while to record the results of the application of this test, as a further contribution to the laboratory knowledge of the spinal fluid in this disease.

The recent small epidemic in Baltimore afforded an opportunity to obtain spinal fluid from a number of patients with poliomyelitis. One of us had the opportunity of doing lumbar punctures on most of the suspects reported to the city health department, as an aid in establishing the diagnosis. Fluids in several early cases were thus obtained. A few were taken in cases diagnosed in the outpatient department of the Harriet Lane Home. The majority were patients held in the Children's Hospital School, the institution utilized by the city for the isolation of poliomyelitis patients. There the spinal fluids were obtained through the kindness of Dr. Rosenthal, the physician in charge.

No case in which the diagnosis was doubtful has been included in the series. All the patients showed paralysis in some form or had presented the typical clinical syndrome with the characteristic spinal fluid findings.

TECHNIC

Each cerebrospinal fluid was subjected to the following tests:

1. Cell count was made immediately after withdrawal of the fluid, when possible, and always within two hours.

2. The globulin-albumin content was estimated by means of the Pandy and the Ross-Jones methods. The usual technic was used both in preparation of the reagents and in the application of the tests.

3. The Wassermann reaction was done with 0.25 and 0.5 c.c. quantities with two antigens: A, plain alcoholic beef-heart extract, and B, cholesterinized alcoholic beef-heart extract. Antigen A bound 100 per cent. with a known positive syphilitic serum in dilution 1 : 400 and was not anticomplementary 1 : 5. Antigen B found 1 : 900 and was anticomplementary 1 : 5; used in dilution, 1 : 20.

4. The technic of the colloidal gold test both in the preparation of the gold solution and the carrying out of the test was the same as advised by Miller, Brush, Hammers and Felton,[5] to whose paper those not acquainted with the details of the test must refer, excepting two slight modifications used in the preparation of the gold solution: (*a*) in distilling the water there was added to each liter of the first distillate 5 c.c. of a saturated solution of barium hydrate. By this method the necessity of absolutely fresh *first* distillation was done away with. In fact, we have used with uniformly good results the single distillation of the day before; (*b*) in the use of oxalic acid, 1 drop of a 1 per cent. solution to the liter was added at 60 C., instead of 10 drops at 85 C.

The gold solution used was absolutely clear to direct and transmitted light.

Five c.c. of the solution were completely precipitated by 1.7 c.c. of a 1 per cent. sodium chlorid solution in one hour.

The entire series was tested by a single lot of gold solution, which on each day used gave a brownish-red color after the addition of 2 drops of alizarin red to 5 c.c. Too much emphasis cannot be laid on this point. Slight changes in the reactions of the reagent give widely diverging results.

The solution gave a typical reaction with a known paretic cerebrospinal fluid and absolutely negative reaction with four different known negative fluids.

RESULTS

Fifty-seven fluids from patients with poliomyelitis have been tested. These have been grouped into three tables according to the stage of the disease. Three fluids from normal children which were used as controls have been included, one being shown in each table. The cases in each table are arranged in order according to the day of the disease.

Table 1 is made up from fluids obtained during the acute illness. Of these cases, one (H. L. H. No. 10153) was nonparalytic; two (O. S. 7 and O. S. 4) were preparalytic; and in the rest, the paralysis was either progressing or just arrested. The gold chlorid curve given in these cases is singularly constant and occurs in the so-called "luetic zone." Flocculation begins in the first tube in all but one, and reaches the maximum in from 1 : 40 to 1 : 160, in two instances persisting into 1 : 320. Decolorization usually proceeds as far as "blue."

In other words, in these fifteen cases in the acute stage of the disease, thirteen react with colloidal gold in the "luetic zone," and two (O. S. 7 and O. S. 5) show a slight tendency to precipitate in the higher dilutions, suggestive of the meningitic zone.

Johnston[6] has recently published an article in which he used the colloidal gold test in four cases of acute poliomyelitis, the day of the disease not being mentioned, in which the reaction took place in the "luetic zone." That the reaction is not so transient a one as his work would seem to indicate is shown in Tables 2 and 3.

After the subsidence of the acute illness, as is well known, the cells tend to decrease in number very rapidly, but the globulin content may increase. Corresponding to this, we often found in the ensuing two weeks (from the eighth to the twenty-first day) a tendency for the gold to show more pronounced flocculation in the first tubes and to decolorize more intensely in the higher dilutions. This is well shown in Table 2. The gold chlorid curve for the period, consequently, may show a "meningitic curve," as is illustrated by Case R. G. 3. One of the cases included in this table (P. 98) gave a "paretic" curve. The fact that the spinal fluid and blood of this child gave a positive Wassermann reaction might explain this reaction, although clinically there seems to be no sign of juvenile paresis.

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* From the Laboratory of Immunology and Bacteriology and the Department of Pediatrics, the Johns Hopkins University, Medical Department.

[1] Peabody, Draper and Dochez: Jour. Exper. Med., Monograph 4, June 24, 1912.

[2] Abramson, H. L.: The Spinal Fluid in Poliomyelitis and Its Differentiation from Fluids of Other Infections, Am. Jour. Dis. Child., November, 1915, p. 344.

[3] Neal: New York Med. Jour., 1916, **104**, 167.

[4] Klein: New York Med. Jour., 1916, **104**, 219.

[5] Miller, S. R.; Brush, N. D.; Hammers, J. S., and Felton, L. D.: A Further Study of the Diagnostic Value of the Colloidal Gold Reaction, Together with a Method for the Preparation of the Reagent, Bull, Johns Hopkins Hosp., 1915, **26**, 391.

[6] Johnston, M. R.: A Study of Normal and Pathologic Cerebrospinal Fluids in Children, Am. Jour. Dis. Child., August, 1916, p. 11

From the third week, there is a strong tendency for the spinal fluid to clear, the cell count having returned to normal, and the globulin gradually disappearing. The change has appeared in the gold chlorid reaction as early as the eighth day, but this is unusual. The first normal fluid encountered in our series was on the thirty-second day (P. 83), and we often found strong reactions as late as the eighth week after the onset, as is well shown by Case P. 83, which shows precipitation in the higher dilutions on the fifty-second day. In the main, however, "luetic zone" reactions are encountered, and they persist and may be found as late as eight weeks after the onset of the disease. These facts are brought out by the study of Table 3.

TABLE 1.—ACUTE STAGE, FIRST WEEK

No.	Name	Age, Years	Day of Disease	Cells per C.mm.	Ross-Jones	Pandy	Wassermann Reaction		Colloidal Gold Reaction								
							Antigen		Dilution of Cerebrospinal Fluid								
							A	B									
							.25 .5	.25 .5	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	1:2,560
H. L. H.	Catherine S..	5	3	70	+	+	0 - 0	0 - 0	1	1	1	2	2	1	0	0	0
O. S. 1	Christy.......	1½	3	135	+	+	0 - 0	0 - 0	1	1	2	3	3	1	1	0	1
O. S. 2	James M.....	2	3	110	+	+	0 - 0	0 - 0	1	1	2	2	1	1	0	0	0
O. S. 6	Ernest C.....	1½	3	70	+	+	0 - 0	0 - 0	1	1	2	3	3	1	0	0	0
O. S. 7	Robert S.....	4	3	45	+	+	0 - 0	0 - 0	1	2	2	3	3	3+	2	1	0
P. 103	Korsunsky...	3	3	130	±	+	0 - 0	0 - 0	1	1	2	2	1	1	0	0	0
O. S. 3	Lillian W....	2	3	1	++	+++	0 - 0	0 - 0	1	1	2	2	1	1	0	0	0
O. S. 4	Charles M....	3	4	81	+++	++++	0 - 0	0 - 0	1	1	2	2+	2+	2	1	0	0
O. S. 5	Marjorie M..	3	4	10	+++	++++	0 - 0	0 - 0	1	1	2	3	3	1	1	0	0
O. S. 8	Thelma G....	2	4	65	+	+	0 - 0	0 - 0	0	1	2	3	2	1	0	0	0
O. S. 1	Christy N....	1½	4	123	+	+	0 - 0	0 - 0	1	1	1	2	1	1	0	0	0
P. 101	Benj. D......	1½	4	32	±	+	0 - 0	0 - 0	1	1	1	2	2	1	0	0	0
R. G. 1	Eugene N....	2	5	30	±	+	0 - 0	0 - 0	1	1	2	3	3	2	1	1	0
H. L. H. (10153)	Birtzal.......	¾	6	170	±	±	0 - 0	0 - 0	1	1	2	2	2	1	0	0	0
O. S. 9	Adrian M....	2	6	25	++	++	0 - 0	0 - 0	1	1	2	3	2	1	0	0	0
H. L. H.	Pollock......	4	0	5	0	0	0 - 0	0 - 0	1	1	0	0	0	0	0	0	0

TABLE 2.—DISEASES IN SECOND AND THIRD WEEKS

No.	Name	Age, Years	Day of Disease	Cells per C.mm.	Ross-Jones	Pandy	Wassermann Reaction		Colloidal Gold Reaction								
							Antigen		Dilution of Cerebrospinal Fluid								
							A	B									
							.25 .5	.25 .5	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	1:2,560
P. 99	Davis.........	21mo.	9	70	++	++	0 - 0	0 - 0	2	2	2+	3+	3+	2+	2	1	0
P. 101	Droatman....	18mo.	9	5	+	+	0 - 0	0 - 0	+	+	1	1	1	+	0	0	0
R. G. 3	Thelma G....	14mo.	10	33	+	++	0 - 0	0 - 0	2	2+	3	3+	3+	3+	2	1	0
H. L. H. (12069)	Edw. J.......	2	10	20	+	++	0 - 0	0 - 0	2	2	2	2+	2+	1	0	0	0
P. 103	Korsunsky...	3	10	8	+	+	0 - 0	0 - 0	+	+	+	1	+	0	0	0	0
P. 98	Bayton.......	4	11	11	++	++++	25-50%	25-75%	5	5	5	3	2+	2	2		
H. L. H. (12574)	Gladys B.....	8mo.	11	20	+	+	0 - 0	0 - 0	1+	1+	2	2+	2+	1	+	0	0
P. 104	Christy.......	15mo.	11	2	+	++	0 - 0	0 - 0	0	+	1	1+	2	+	0	0	0
O. S. 6	Ernest C.....	15mo.	11	1	+++	++++	0 - 0	0 - 0	2	2	2	2	3	3	2	1	0
P. 96	Herbert L...	8	14	6	+	+	0 - 0	0 - 0	1	1	2	2	1	1	0	0	0
P. 101	Droatman....	18mo.	14	2	++	+	0 - 0	0 - 0	1	1	1+	2	2	1	+	0	0
H. L. H. (12574)	Gladys B.....	8mo.	18	2	++	++	0 - 0	0 - 0	1	1	1+	2	2	1	+	0	0
P. 81	Maffel M.....	15mo.	21	4	+	+	0 - 0	0 - 0	2	2+	3	3	2+	2	1	0	0
P. 95	Banks G.....	8mo.	22	12	+	++	0 - 0	0 - 0	2	2	2+	4	3	3+	2	1	0
H. L. H.	Woolford....	3	0	3	0	0	0 - 0	0 - 0	1	1	1	0	0	0	0	0	0

In view of the foregoing significant reactions in the colloidal gold test, and from facts as tabulated in the recent work of Miller, Brush, Hammers and Felton[5] and other workers, showing that clinical syndromes besides syphilis may give typical zonal reactions, and also because of the objections raised by the clinician that these terms are rather confusing, it is suggested that instead of the "paretic," "luetic" and "meningitic," the terms "first," "second" and "third" zones be used. This would allow an exact description of the reaction without suggesting a probable etiologic relationship, and enable the clinician from his general knowledge of the reaction to correlate the laboratory with the clinical findings in arriving at a more exact diagnosis.

The term "paretic zone" does not have the objection that is so manifest in "luetic zone," inasmuch as the precipitation in zone occurs practically only in paresis, tabes dorsalis and multiple sclerosis.

Regarding the "luetic zone" the following references are significant: Debenedetti and Olivero,[7] in a series of thirteen cases of tuberculous meningitis, give three in the "luetic zone." Eicke[8] states that early tuberculous meningitis gives a reaction in dilutions from 1 : 40 to 1 : 80. Grulee and Moody[9] give several reactions in the "luetic zone" in conditions other than syphilitic. Johnston[6] gives several miscellaneous fluids reacting in the "luetic zone." In the compiled table of Miller, Brush, Hammers and Felton, 204 cases in the miscellaneous group, out of 1,808, give a precipitation in the "luetic zone." From these data, together with the series of fifty-seven cases of acute poliomyelitis here described, and the four cases described by Johnston,[6]

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7. Debenedetti and Olivero: Riforma med., 1914, **30**, 906.
8. Eicke: München. med. Wchnschr., 1913, **60**, 49, 2713.
9. Grulee, C. G., and Moody, A. M.: Lange's Colloidal Gold Chlorid Test on the Cerebrospinal Fluid in Congenital Syphilis, THE JOURNAL A. M. A., July 5, 1913, p. 13.

it no longer seems desirable to continue the use of the term "luetic zone."

The term "meningitic zone" is not open to such strong objection as the others, inasmuch as it is but rarely that other conditions give curves simulating it. However, for uniformity's sake, we feel that it could well be called the "third zone."

CONCLUSIONS

1. In the acute stage of poliomyelitis, the spinal fluid reacts with colloidal gold in dilutions of from 1:40 to 1:160, producing a maximal decoloration of 3 ("blue").

2. In the second and third weeks the reaction is practically the same as in the acute stage, with a tendency to clear up in some cases and a precipitation in the higher dilutions in others. There is no constant rule.

3. In the fourth to the eighth week the colloidal gold reaction runs practically to the globulin-albumin content, persisting in some cases to the eighth week and beyond, but still occurring in dilutions of from 1:40 to 1:160.

TABLE 3.—CONVALESCENT STAGE, FOURTH TO EIGHTH WEEK

No.	Name	Age, Years	Day of Disease	Cells per C.mm.	Ross-Jones	Pandy	Wassermann Reaction		Colloidal Gold Reaction								
							Antigen										
							A	B	Dilution of Cerebrospinal Fluid								
							.25 .5	.25 .5	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	1:2,560
P. 93	Herbert......	8	22	18	++	++	0 - 0	0 - 0	1	1	2	2	2	1	0	0	0
P. 71	Lloyd B......	3	27	1	+	+	0 - 0	0 - 0	1	1	1	2	2	0	0	0	0
P. 100	Norman D...	3	28	4	++	++	0 - 0	0 - 0	1+	2	2+	2+	2+	2+	2+	1	0
P. 65	John J.......	8mo.	28	4	+	+++	0 - 0	0 - 0	1	1+	1+	3	2	1	0	0	0
P. 91	Malcolm S...	3	28	2	0	+	0 - 0	0 - 0	1	1	1+	2	2	1	0	0	0
P. 94	Elmer L......	6	29	3	+	+	0 - 0	0 - 0	+	1	1+	1+	1	+	0	0	0
P. 74	Mildred W...	9mo.	31	15	++	++	0 - 0	0 - 0	1	1+	2	2+	1+	1	+	0	0
P. 83	James E.....	3	32	4	0	0	0 - 0	0 - 0	0	0	0	+	0	0	0	0	0
P. 100	Norman D...	3	32	4	+	+	0 - 0	0 - 0	1	1+	1+	2	2	1	0	0	0
P. 84	Luber F......	3	35	2	+	+++	0 - 0	0 - 0	1+	1+	1+	2	1	1	0	0	0
P. 47	Emily W.....	6mo.	37	4	++	++	0 - 0	0 - 0	1	1	1	2	3	2	1	1	0
P. 56	Dillalumt.....	21mo.	39	8	0	0	0 - 0	0 - 0	+	+	+	0	0	0	0	0	0
P. 58	Hoffman.....	6	39	3	+	+++	0 - 0	0 - 0	2	2	2	2+	3	3	1	1	2
P. 68	Fisher........	3	39	1	+	+	0 - 0	0 - 0	+	1	1+	1+	1	+	0	0	0
P. 70	Alfred E.....	6	39	1	++	++	0 - 0	0 - 0	+	+	1	2	2+	2	+	0	0
P. 46	Gladys D.....	4	40	2	++	++	0 - 0	0 - 0	0	0	+	1	1	+	0	0	0
P. 42	Kathrine W..	2	40	4	+	+	0 - 0	0 - 0	1	1+	2	2	2	1+	1	0	0
P. 30	John B.......	10	42	6	++	+	0 - 0	0 - 0	0	+	1+	2	1	+	0	0	0
P. 37	Lillian L.....	2	42	6	++	++	0 - 0	0 - 0	1	1	2	2	2+	1	0	0	0
P. 45	Anna V......	4	42	4	+	+	0 - 0	0 - 0	1	1	1+	2	2	1	0	0	0
P. 43	Susie B.......	2	42	13	+	++	0 - 0	0 - 0	0	+	1	1+	+	0	0	0	0
P. 55	Benj. B......	15mo.	44	1	0	+	0 - 0	0 - 0	1	1	2	1	1	0	0	0	0
P. 32	Naomi L.....	1	46	2	++	++	0 - 0	0 - 0	1	1	1+	2	2+	2	1	+	0
P. 26	Dorothy H...	4	50	2	++	++	0 - 0	0 - 0	1	1+	2	2	1+	+	0	0	0
P. 27	Carr..........	3	52	3	+	+	0 - 0	0 - 0	1	1+	2+	3	3	1+	1	0	0
P. 17	Eshbury......	15mo.	52	4	+	+	0 - 0	0 - 0	1	1	1	1	1+	2+	3	0	0
P. 19	Mildren.......	3mo.	54	3	+	+	0 - 0	0 - 0	1	1	2+	2+	1	0	0	0	0
P. 46	Mary B......	4	45	3	+	+	0 - 0	0 - 0	1	1+	3	3	2	1	1	0	0
P. 90	William M...	2	0	2	0	0	0 - 0	0 - 0	1	1	1	1	0	0	0	0	0

4. As the spinal fluid in acute poliomyelitis reacts constantly in the same zone, the gold chlorid reaction is helpful in the diagnosis of this disease.

5. We deem it advisable to use the following nomenclature in reading the reactions of Lange's colloidal gold test:

(*a*) Zone 1 (or paretic zone), maximum precipitation from 1:10 to 1:160, with complete decolorization.

(*b*) Zone 2, maximum precipitation from 1:40 to 1:160, with decolorization up to 4 (light blue).

(*c*) Zone 3, maximum precipitation beyond 1:160.

A Pessimistic View of Man.—What a chimera, then, is man! what a novelty, what a monster, what a chaos, what a subject of contradiction, what a prodigy! A judge of all things, feeble worm of the earth, depositary of the truth, cloaca of uncertainty and error, the glory and the shame of the universe!—Pascal, Thoughts.

CLINICAL STUDY OF FOUR HUNDRED CASES OF ANTERIOR POLIOMYELITIS [*]

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My object is to present the observations obtained by a close study of 400 cases of anterior poliomyelitis of the 1916 epidemic, seen at the clinic of the Hospital for Deformities and Joint Diseases.

These cases made their appearance at an average of about ten weeks after onset of illness, and show: (1) regional distribution; (2) a large amount of cranial nerve involvement; (3) muscular distribution; (4) unreliability of the reaction of degeneration to permit judgments concerning the extent of muscle paralysis, and (5) numerous deformities.

1. Of the entire series, thirty-two patients, or 8 per cent., showed no evidence of muscle paralysis. Of the remaining 368 patients, 286, or 78 per cent., showed some involvement in the lower extremities. Thirty-eight per cent. showed involvement of only one limb. Of this number, 10 per cent. were of the upper extremity and 28 per cent. of the lower. In 20 per cent. of the cases there was some form of trunk paralysis, showing that it has been quite a common occurrence. The right and left sides of the body were equally attacked.

The extent of paralysis differed from a part of one leg to an involvement of both legs, both arms, both sides of the abdomen and back, and also the larynx, which is slight. Between these two extremes there was seen every conceivable type of combination obtainable. Table 2 illustrates this very clearly.

2. In fifty-one cases, or 13 per cent., the cranial nerves were involved. In six cases, two different nerves were involved at the same time. The fifth nerve was affected 1 time; the sixth nerve, 1 time;

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[*] Read before the Clinical Society of the Hospital for Deformities and Joint Diseases, Dec. 28, 1916.

the seventh nerve, 38 times; the tenth nerve, 4 times, and the eleventh nerve, 13 times.

3. In past epidemics, it seems that the muscles most often attacked in the leg were the peroneals; during the present epidemic it has been the tibialis anticus and quadriceps extensor which have most often suffered.

TABLE 1.—REGIONAL DISTRIBUTION

Region	No. Cases Involved	No. Parts Involved	Right	Left	Involved Alone	In Combination
Leg	286	437	207	230	183	103
Arm	111	139	72	67	45	66
Face	38	...	19	19	24	14
Abdomen	46	79	35	44	1	45
Back	53	91	44	47	...	53
Neck	3	4	3	1	...	3
Sternomastoid	2	...	...	2	...	2
Larynx	3	...	...	...	...	3
Palate	3	...	...	...	...	3
Jaw	1	...	...	...	1	...
Eye	1.	...	...	...	...	1

In the arm, the discrimination for the deltoid is again shown, followed by the pectorals, etc. (Table 3).

Not all the muscles were completely paralyzed, as there was some degree of motion in about 25 per cent. of all muscles involved.

The most frequent combination of muscles attacked in the leg has been those supplied by the anterior tibial nerve.

In the thigh, the quadriceps, adductors and hamstrings have shown a distinct tendency to be involved together (a mixture of both the lumbar and sacral plexuses).

When the external rotators of the hip were involved, the internal rotators always accompanied them. In no case were they affected alone. In the arm, the deltoid, pectoralis major and latissimus dorsi have been closely associated in paralysis. The latissimus dorsi was affected in fifty-one cases, and in fifty of these the foregoing took place. The "upper arm type" or the "forearm type" of paralysis did not occur in any instance.

TABLE 2.—EXTENT OF PARALYSIS

One leg	111
Both legs	72
One arm	41
Both arms	4
All extremities	5
Three extremities	9
Arm and leg (same side)	6
Arm and leg (opposite side)	5
Trunk	2
Face alone	24
Jaw	1
Arm, leg, face (left)	1
Leg and back*	21
Leg and abdomen*	10
Leg, abdomen and arm*	10
Leg, abdomen and back*	6
Leg, back and arm*	6
Arm and back*	2
Arm and abdomen*	2
Leg and face*	5
Arm and face*	2
Leg, arm, back and neck*	2
Leg, arm, back and abdomen*	8
Leg, back, abdomen and larynx	2
Arm, palate and face*	1
Leg, palate and face*	1
Face and eye*	1
Leg and sternomastoid*	1
Arm, face and sternomastoid*	1
Arm, back and abdomen*	1
Leg, arm, abdomen and face*	1
Leg, arm, abdomen, face and back*	1
Leg, arm, abdomen, back and neck*	1
Leg, arm, abdomen, back and larynx*	1
Leg, arm, abdomen, back and palate*	1
Cases showing no paralysis	32
Total	400

* It may be one or both in any of the parts affected; in order not to lengthen the list, this is not specified.

4. To judge the extent of muscle paralysis by the reaction of degeneration is entirely fallacious. Muscles showing absolutely no action have given normal electrical reactions both to faradic and to galvanic currents. Some, with partial motion, showed various degrees of electrical degeneration, and in one or two instances, a complete reaction of degeneration was obtained, that is, failure to respond to faradism (moderate strength) and also to galvanism at 15 milliamperes both to the cathodal and to the anodal closing and opening currents.

Whether a true prognosis as to ultimate recovery may be given judging by the reaction of degeneration will be brought out in a later paper.

5. In only a few instances, comparatively speaking, was the deformity of talipes equinus encountered. Of the others, especially in the upper extremity, there were many.

Too much stress cannot be laid on the prevention of deformity.

It must be borne in mind that practically every group of muscles has an antagonistic group. The flexors have the extensors, the inverters, the everters, the abductors, the adductors, the internal rotators, the external rotators, etc.

TABLE 3.—MUSCULAR DISTRIBUTION

Muscle	Involved	Partial	Complete
Tibialis anticus	369	101	268
Quadriceps extensor	302	78	224
Peronei (longis and brevis)	251	62	189
Hamstrings	222	77	145
Gastrocnemius and soleus	215	52	163
Extensor longus digitorum	215	66	149
Extensor longus hallucis	215	65	150
Adductors	205	44	161
Internal rotators	173	18	155
Tibialis posticus	171	10	161
Iliopsoas	147	55	92
Gluteus maximus	127	32	95
Flexor longus digitorum	97	29	68
Flexor longus hallucis	97	29	68
External rotators	76	18	58
Deltoid	119	37	82
Pectoralis major	88	25	63
Triceps group	65	30	35
Biceps group	58	24	34
Latissimus dorsi	51	10	41
External rotators	43	1	42
Extensor communis digitorum	34	18	16
Internal rotators	31	3	28
Supinator longus and brevis	26	5	21
Flexor carpi radialis and ulnaris	22	11	11
Extensor longus pollicis	22	12	10
Flexor sublimis and profundus digitorum	20	10	10
Pronator teres (group)	19	6	13
Flexor longus pollicis	16	8	8
Extensor carpi radialis longior and brevis, and extensor carpi ulnaris	15	8	7
Serratus magnus	11	3	8
Trapezius	9	5	4
Rhomboid group	4	...	4
Thenar eminence	3	...	3
Lumbricales and interossei	2	...	2
Abdomen	79	28	51
Back	91	36	55
Face	38	12	26
Neck	4	2	2
Larynx	3	3	...
Palate	3	3	...
Jaw	1	1	...
Sternomastoid	2	2	...
Eye	1	1	...

The possibility of flexion deformity at the knee, hip, fingers, wrist and elbow are just as favorable as one at the ankle (talipes equinus).

A healthy lattissimus dorsi with a paralyzed deltoid will do just as much damage in the shoulder as a healthy gastrocemius and soleus muscle with a paralyzed tibialis anticus will do in the ankle.

Nearly every patient having tibialis anticus paralysis had either a posterior splint or some other form of retentive apparatus to prevent the deformity of talipes equinus. Yet there was absolutely no appliance of any sort to prevent a paralytic deformity in: (1) 90 per cent. of shoulder patients having deltoid paralysis; (2) those having a paralysis of half the neck; (3) those having a paralysis of half the back; (4) those in whom the abdomen was completely paralyzed and the children walk with extreme lordosis; (5) those having a paralysis of the internal rotators of the hip with good strong external rotators, and (6) those in whom the calf muscles were paralyzed and the children walked on their heels.

Why more importance should be attached to a prevention of talipes equinus than to any other form of deformity, which often proves of a more serious nature, is incomprehensible. One deformity is as bad as another, if not worse.

Any joint in the body in any of its functional directions may be the seat of deformity.

Every deformity results in stretched muscles which markedly lessen the patient's chances for recovery, a state of affairs entirely unnecessary and easily prevented.

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FALLACY OF DENYING FUNCTIONAL SIZE CHANGES IN NERVE CELLS FROM COLLECTIVE CELL AVERAGES *

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Kocher[1] has recently published several papers which make a sweeping denial of any morphologic evidence of functional activity in nerve cells. He bases this conclusion chiefly on his failure to find constant differences in the average size of cells between exercised and undisturbed animals. In these measurements, he employed the polar planimeter, which gives from camera lucida outlines the exact area of cells in microscopic sections.

It became necessary for me[2] to test my own positive results for functional activity by this method, particularly since Kocher's destructive criticism was directed mainly at myself. From long experience, however, with the polar planimeter in calculations from individual cell reconstructions, there was no reason beforehand to expect any important differences.

The planimeter was tested, not by averaging all cells measured from any region irrespective of their functional stage, as Kocher did (collective averages), but by applying it to the same number of cells from every functional stage. Data of diameter measurement with volume estimation, which has been my method, were obtained concurrently from the same series from an exercised and control animal, in order to compare the two methods. A graphic charting of the data shows that the two methods afford results absolutely identical in every detail, both in size and in nucleus-plasma relations. Previous conclusions for functional size changes and species size relations are verified.

The value of the planimeter method is as a mutual check on the diametral method. Alone it has no special or superior value; but since it gives only two dimensions, with smaller variations than in volume calculations, it is quantitatively misleading.

Kocher's method, therefore, has no peculiar applicability in settling the problem. It remains to point out that his handling of the data by means of collective averages, which has been in fact the usual procedure, involves just the inconstant results which he obtained. If one measures the individual stages correlated as functional, he will find very wide variations in their size in any cell type in the same animal. For example, the stages of shrinkage first described by Hodge[3] are only one-half the area and one-fourth the volume of cells approaching chromatic exhaustion. The resting cell type is only one-half the volume of the initial enlargement of function. In their function, cells first enlarge, then they shrink, and from that shrinkage progress to a secondary enlargement. Is it not obvious to any one that when two animals are compared on this basis of averaging all cells together, the result depends on the distribution of cells and a wide range of results is possible? The comparison may or may not prove anything about the functional state. It is possible in two combinations of cells closely related in degree of function that one would run smaller, the other larger than the average.

In illustration, Hodge found a smaller size in the stimulated ganglion as compared with the unstimulated, because the majority of cells were in a state of shrinkage. But as they pass from this state of shrinkage to a progressive hypertrophy in prolonged stimulation, enough of these larger cells would first equalize a comparison, and then turn the average the other way. So Kocher did not consistently obtain Hodge's results. Yet, as a matter of fact, accepting the smallest differences, he did duplicate Hodge's results in eleven out of fifteen series from the spinal cord and associated ganglia, and the exceptions which misled him follow to a noticeable degree the explanation given.

Further, as Kocher dealt with areas and ignored the third dimension, it follows that there was less range of variation in the quantitatively smaller area figures, and the averaging had smaller differences to smooth out in the same animal. That is, a preponderance of large cells or of small cells would have less effect.

It is not a matter of chance that the cell sizes in Kocher's case approximated each other so closely in contrasted animals, but an actual basis can be stated for it. This is the tendency to a uniformity of absolute size for corresponding nerve cells of a species. For this the theoretical basis is that function is the sole determinant of absolute size in such a specialized cell. It is understandable on the basis of average general functional usage. The exceptions thereto so far have been the functional oversize, the functional hypertrophy and the functional undersize, the atrophy, used in this general sense to include functional disuse, depression effects, and lack of functional development. It makes the nerve cell agree with Conklin's[4] conclusion that within the same species cell size is practically constant. It is admittedly not demonstrated in the great number of individual instances required as an induction. But Kocher's small differences between an animal and its control are understandable on this basis, and the results, so far as they prove anything, confirm the tendency to this size uniformity. The induction relates specifically to the resting cell type, but the distribution of functioning cell sizes above and below it would make the averaging of all cells approximate a common size. Certainly, such results do not con-

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* Read before the American Association of Anatomists, New York, December, 1916. Complete data will appear in the Journal of Comparative Neurology.

[1] Kocher, R. A.: The Effect of Activity on the Histologic Structure of Nerve Cells, The Journal A. M. A., July 22, 1916, p. 278; Jour. Comp. Neurol., 1916, **26**, 341.

[2] Dolley, D. H.: Jour. Med. Research, 1909, **20**, 275; 1909, **21**, 95; 1910, **22**, 331; 1911, **24**, 309; 1911, **25**, 285; Am. Jour. Physiol., 1909, **25**, 151; Jour. Comp. Neurol., 1914, **24**, 445; Arch. f. Zellforsch., 1913, **9**, 485; Anat. Rec., 1916, **10**, No. 3.

[3] Hodge, C. F.: Jour. Morph., 1892, **7**, 1.

[4] Conklin, E. G.: Jour. Morph., 1912, **23**, 159.

found me in respect to functional size changes, for such size variations have been smoothed out by averaging and remain to be accounted for.

It may be said that most of the discrepant results in the literature depend on this method of collective averaging, though on the other hand it did give certain correct results to the pioneers because of the tendency to size uniformity.

With the false assurance from these results, Kocher was animated to deny all other morphologic evidences of function. He admits, indeed, the existence of all the stages of function previously described by me. The importance of this as the foundation of all succeeding work he strangely does not appreciate, though such an objective confirmation from a professed critic will doubtless carry unhoped for weight. He does not explain them; to him they are tacitly nonsignificant; but he sees them. Instead, because he finds them in the control as well as in the exercised animals, he jumps to the idea that nothing has happened, and hence to a final conclusion of lack of qualitative differences from function. Here it is only that our ideas of the significance of an identical conclusion differ, for it is simply a fundamental conclusion that qualitative differences are to be ruled out. Instead of being destructive to me, it is the first induction I should wish to be confirmed, as it throws comparative function solely on the quantitative principle. The comparison must be made in terms of working cells to resting cells.

He sought for quantitative differences, it is true, by means of differential counts, but failed to find them. The explanation regrettably is that his data are of doubtful accuracy: first, since certain stages as diagnosed do not accord with his text statements and are unlikely of the stated occurrence on the basis of relative differentiation; second, the one stage most liable to confusion by one inexperienced is given scant attention. Since he denies progressive changes in the morphology of the cells, it is evident that he was indifferent to the finer points necessary for a differential diagnosis.

An anatomic basis for function stands.

CONCLUSIONS

Collective averages of cells, irrespective of their functional state, and resulting size variations, which have been the usual basis of comparison between individuals, afford inconstant results and should be discarded. It is a scientific solecism that function, the one faculty which results from the differentiated state, is the one factor which has been neglected in the measurement of differentiated cells. To deny functional size changes in nerve cells on this basis because of small and inconstant variations between one animal and another, as Kocher has done, is a fallacy, and such results indicate only the tendency to a uniformity of species size for corresponding nerve cell bodies.

To investigate the size changes of function, it is necessary to identify and measure functioning stages and the resting type from which they spring. This gives present function. The resting cell alone gives species size, its mean and its variations, and species relativity of plasma to nucleus, uncomplicated by present function.

Making a Choice.—The choice of a profession or trade is not a question to be decided by egotism, ambition or heredity, but by the individual's aptitude. In estimation of this the physician should have the deciding voice.—C. Juarros.

THE RÔLE OF THE SEMINAL VESICLES
IN PERSISTENT NONGONORRHEAL INFECTIONS OF THE POSTERIOR URETHRA AND BLADDER *

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It is well known that the seminal vesicles may become involved during the course of a gonorrheal urethritis, and, if the process remains active in the vesicles, may prolong urethral infection in a most stubborn manner. The constant or intermittent feeding of new infection onto the prostatic urethra keeps active the inflammatory processes of the urethral mucosa, just as inflammatory processes in the vesical mucosa are activated by renal infections.

It is probably not so universally recognized that the seminal vesicles, when the seat of a nongonorrheal or pyogenic infection, may result in prolonged suppuration of the posterior urethra and trigon. These infections may be even more stubborn than those of gonorrheal nature. To me it has been a new realization to find how many of these long-standing bacillary and coccal infections involving the posterior urethra and at times the bladder have been secondary to unsuspected vesiculitis.

Every urologist is familiar with the type of case to which I refer. In some cases the infection assumes the form of a bacteriuria with occasional exacerbations in which a visible amount of pus can be detected and with periods of more or less urinary irritability. Sometimes the patient is seen with a frank cystitis and with a history of repeated previous attacks. Under treatment applied to the local condition, and even often without definite treatment, the symptoms subside and the urinary condition may improve until the most careful examination is necessary to demonstrate the presence of bacteria in the urine. After a varying length of time the process repeats itself. Most often the urine at all times supplies definite evidence of infection and may be continuously cloudy. During the intervals in which the infection is at a low ebb or quiescent, examination of the urinary tract may disclose very little abnormal, and frequently nothing which could explain the persistence of an infection. When exacerbations occur, definite lesions are found; but with the disappearance of the lesions, the infection does not disappear from the urine.

DIAGNOSIS

The fixing of the responsibility on the seminal vesicles as the source of the continued or recurrent infection is not always easy. In cases in which epididymitis occurs, and especially where there is recurrent epididymitis, the diagnosis of an active infection in the vesicles becomes reasonably certain. In many cases the presence of a vesiculitis may be readily determined by palpation; but it is surprising in what a large percentage active foci are present in one or other vesicle and still careful palpation may reveal very few changes. The diagnosis of vesiculitis in many cases depends entirely on changes which can be detected by palpation, and consequently is very inaccurate. When infection is already present in the posterior urethra, the finding of infection in the expressed seminal vesicle secretion is utterly valueless because it is impossible in such cases to obtain the seminal vesicle secretion uncontaminated. Neither are we always justified in considering that active infection may be present in the seminal vesicles simply because of changes which are detected by palpation. An old inflammatory process may have been present long before, and the induration the result of this process, which has entirely subsided.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

In some cases the determination of the presence of infection in the vesicles must be arrived at by a process of elimination. The occurrence of a persistent bacteriuria requires some focus continually feeding infection into some point of the urinary tract where there is no obstruction to urination and no residual urine is present. It is well known from repeated experiments that if organisms are injected into a normal bladder, in a comparatively short time they will entirely disappear from the urine. We know again that if the kidney is infected and that secondarily to this there is present a simple cystitis, the removal of the renal infection will be shortly followed by disappearance of the vesicle infection.

Six cases of the type described above have been under observation for periods varying from a few months to many years. The kidney as a source of infection was eliminated in each case. The patients had been treated at varying times by prostatic massage, instillations, irrigations, stripping of the seminal vesicles, etc., but in none of the cases was it possible to eradicate entirely the infection, and they presented themselves at different periods with exacerbations. In two of the cases the infection took the form of a persistent bacteriuria, one case being due to a colon bacillus and the other to a staphylococcus. Of the remaining four cases, one was a staphylococcus infection and the other three were due to colon bacilli. In the latter four cases pus and organisms could always be found in the urine, the amounts varying at different periods.

TREATMENT

In the belief that the seminal vesicles were probably responsible for these stubborn and resistant infections, it was determined to do a vesiculotomy in each case. In two cases a recurrent epididymitis pointed strongly toward the seminal vesicles as the most probable cause. In three cases there were definite changes in the seminal vesicles which could be detected on palpation. In three of the cases no changes could be detected, and they were apparently normal on palpation. The results of the vesiculotomy in each case were immediate and most gratifying. The histories of a few of these cases will illustrate:

REPORT OF CASES

Case 1.—G., aged 25, seen about May, 1913, complained of frequency and some burning on urination which had been present for over a year. Examination of the urine showed pus and staphylococci. The seminal vesicles presented no changes on palpation, but there was present a mild prostatitis. Catheterization of the ureters showed the urine from each kidney to be negative for infection, while the posterior urethra and trigon presented a somewhat red and granular appearance. The patient was treated with irrigations, instillations and prostatic massage for several months with very little improvement in the urinary condition, although the symptoms practically entirely disappeared. A few months later he developed an epididymitis on the right side, and some time later an epididymitis on the left side. Later on the urinary symptoms returned again and it was finally decided to do a vesiculotomy. The perineal exposure recommended by Young was employed, and the vesicles thoroughly brought into view and opened by several incisions, the ampulla of the vas being drained as well as the vesicles. The patient remained in the hospital two weeks, and at the end of this time, although no local treatment was employed, the urine was entirely free of infection. The patient has been under observation almost a period of two years since the operation, and there has been no recurrence of his trouble.

Case 2.—M., aged 45, seen in 1907 with a history of having had urinary irritability with attacks of frequency and cloudy urine for over six years, on examination was found to have a staphylococcus infection with considerable pus. There was no renal infection, and the bladder was practically normal. The patient was seen at intervals for eight years, and during that time received a great variety of treatments, including autogenous vaccines. The seminal vesicles in this case were considerably thickened with some perivesicular induration. In December, 1915, the patient consented to a vesiculotomy. The seminal vesicles were found to be quite thick walled and fibrous, the right seminal vesicle being particularly pathologic. Because of the marked thickening in the vesicles, the posterior wall of each vesicle was excised so as to give more perfect drainage, and the ampulla of the vas was thoroughly opened on each side. A cigaret drain was introduced on each side, being left in position for four days. The convalescence was uninterrupted, and examination of the urine two weeks later, when the patient left the hospital, showed the complete absence of infection. He has been seen at intervals during the past six months, and the urine has remained entirely sterile. It is interesting to note that for a few months following the operation there was some diminution in sexual power but recently this has returned to normal.

SUMMARY

In view of the results obtained in this small series of cases, it seems probable that many at least of these recurrent and persistent infections of the posterior urethra are secondary to infection of the seminal vesicles. In some cases in which the vesicles show very few changes on palpation, it may be possible by injection of the vas with argyrol or protargol to eliminate the infection of the vesicles. Where, however, there are any marked inflammatory changes in the walls of the vesicles, it does not seem reasonable to suppose that anything short of vesiculotomy or even partial vesiculotomy will accomplish the desired results. Where the vesicles show marked inflammatory changes, it is impossible by a single incision to secure thorough drainage, and in these cases it has been found advisable to remove the posterior wall of the seminal vesicles so as to drain the different pockets thoroughly. Furthermore, the ampulla of the vas should be opened in each case; otherwise a contributing focus may be overlooked. In order to secure the proper drainage, a thorough exposure of the vesicles is important. The urethra should not be opened, and after stripping back the levators and fascia from the prostate, the seminal vesicles present themselves as a rule quite readily in the operative field. They are furthermore brought into more accessibility by means of the Young tractor, which is similar to the prostatic tractor but is introduced through the meatus. This serves to push the seminal vesicles well into the field so that they can be readily attacked.

CONCLUSIONS

The seminal vesicles are much more frequently the cause of persistent bacillary and coccal infections of the urine than is generally supposed. These infections do not respond readily to local measures, and stripping of the seminal vesicles has not proved of much value in many of our cases. After local measures have failed to eradicate the infection, vesiculotomy is indicated. The vesicles in each instance should be thoroughly opened, the ampulla and the vas as well as the body of the seminal vesicles being thoroughly drained. In none of our cases of simple infection has a troublesome fistula resulted.

REPORT OF FIFTY-TWO CASES OF SEMINAL VESICULITIS *

A. C. STOKES, B.Sc., M.D.
OMAHA

From Jan. 1, 1907, to Jan. 1, 1916, my clinical records show that we have handled, in our office, sixty-seven private cases in which a diagnosis of seminal vesiculitis has been made, most of which were complicated by prostatitis. We have subsequent reports on fifty-two. Of these sixty-seven cases, eight operations were performed for diseases of the vesicles, a rather large percentage as compared with other records. The following clinical symptoms, some of which were present in all cases, and all of which symptoms were present in some of the cases, are reviewed:

Temperature and symptoms of sepsis with blood changes, twelve times.
Pain in the end of penis, thirty-eight cases.
Heavy feeling in the perineum, thirty-six cases.
Burning after urination, nineteen cases.
Pain in the back, fourteen cases.
Pain and heavy, sore feeling in the groin, thirty-two cases.
Pain on ejaculation at some time in the history of the case, twenty-four cases.
Pain on defecation, twenty cases.
Constipation, ten cases.
Intermittent discharge, thirty-nine cases.
Frequent urination at night, thirty-four cases.
Frequent urination in the day time, twelve cases.
Sexual aberration of one kind or another, twenty-six cases.
Complaint of passage of semen or some thick fluid at close of bowel movement, ten cases. (This fact I was not able to demonstrate in any case.)
Complaint of passage of semen following urination, eight cases.
Epididymitis, fifteen cases.

In five of the foregoing cases, the question of etiology was doubtful. In all of the others, it was definitely laid at the door of gonorrhea. There is no record in my histories of any cases having exhibited the symptoms spoken of by some of the writers as a colic simulating the passage of a kidney stone. No cases of metastatic infections are included.

These symptoms fall into three classes: general, genital and urinary.

General Symptoms:

Temperature and blood changes, twelve times.
Pain in different regions, 154 times.
Malaise and headache practically in every case.
Constipation, ten times.
Heavy feeling in the perineum, thirty-six times.

Genital Symptoms:

Increased sexual desire, twelve times.
Decreased sexual desire, ten times.
Excessive and uncontrolled sexual passion, four times.
Impotence, three times, sterility, five times.
Spermatorrhea (*a*) following bowel movement, sixteen times; (*b*) following urination, eight times.
Pus discharge, thirty-nine times.

Urinary Symptoms:

Frequent urination by day, twelve times; by night, thirty-four times.
Painful urination and pain in the end of the penis, fifty-seven times.

After washing out the urethra by a fluid passed into the bladder under a hydrostatic pressure and passed out again, thus washing out the urethra, the vesicles were massaged as distinctly as possible from the prostate. A Valentine endoscope was introduced into the bulb of the urethra before massage, and the fluid flowing out was collected and examined. The following are the results:

Unstained Microscopic Examination:

Sago bodies, thirty-eight times.
Sugar bodies, eight times.
Skins, ten times.

Stained Specimens Examined by the Microscope:

Staphylococcus, thirty-six times.
Diplococcus, gram negative, eighteen times.
Diplococcus, gram positive, twelve times.
Colon bacillus, six times.
Pus in every case.
Blood in ten cases.
Lecithin globules in every case.

In forty-two cases the records show inability to determine whether this pus came from the prostate or the seminal vesicles. In most cases I was sure that it came from both, and in only one case was I positive that the pus came alone from the seminal vesicles, because the prostate had been removed. On endoscopic examination the verumontanum was shown to be swollen and red and bleeding easily in practically all cases. In forty-nine cases the colliculus was inflamed. The infection of the verumontanum and the posterior urethra was due to the discharge of pus from the ejaculatory duct or from the ampule of the vas deferens or from the seminal vesicles.

The study of the urethra by sound and the dilation frequently showed narrowing in the bulbous urethra. In eighteen cases the urethra was exceedingly sensitive to the passage of the sound, and bled at the slightest touch. In twenty-five cases, on examination of the vesicles by the finger through the rectum, we have noted the following:

Vesicular enlargement, sensitive and thickened on the right side, twenty-nine times.
Vesicular enlargement on the left side, twenty-three times.

This is contradictory to the reports of many of the writers that the infection of the vesicle is much more common on the left side than on the right.

The prostate showed signs of enlargement in forty-six cases, indurated nodules in thirty cases, and it was soft and boggy in the remainder.

Vasotomy was performed eleven times, and the Hagner operation for epididymitis eight times. Eight patients were operated on for vesicular infections. The results of these eight cases form the most interesting portion of this paper:

REPORTS OF CASES

CASE 1.—Mr. A., from South Dakota, family presented negative and personal history, except that about one and one half years ago he had contracted gonorrhea. After three or four months the continuous discharge ceased. The patient had, however, intermittent discharge. He was referred to me because he was suffering from sexual aberrations. He believed that his sexual manhood was entirely destroyed forever. He was confident that any one meeting him on the street who looked in his eyes could determine that he was impotent. He had illusions of various kinds. Physically, he complained of the intermittent recurrence of the discharge, which was not very profuse but which occasionally started up and continued for three or four days. He had to rise once or twice at night. At times he had burning on urination, and the slightest effort in the way of work, drink or overeating would produce pains in the perineum, pain and soreness in the urethra, and a discharge. This was one of our early cases, and the record shows that we made a diagnosis of prostatitis and thought that it would be wise in such a case to open the perineum and drain the prostate or perhaps remove part of it. On arriving at the prostate, we were unable to determine anything serious about it, and in dissecting about the prostate and endeavoring to bring it better into view, discovered that the left vesicle was large and indurated. We opened this and drained out considerable pus; after the usual treatment the patient made an operative recovery. For a time he was perfectly well. In the course of a year and a half he returned again. This discharge was still in existence; his sexual symptoms were no better; his general state of health was exceedingly bad, and his mental condition worse. We then put him on the ordinary medical treatment, namely, prostatic massages, dilation of the urethra and the use of silver. This he continued for about six months, after which he left, much improved. About a year ago we heard from him again to the effect that he was better, was married and settled down, and his sexual hallucinations had disappeared. This, no doubt, was a useless operation. There are no facts connected with the results of the case that would tend to make me believe that this operation had any beneficial effect whatever. Local treatment and possible vasostomy should have been given a more thorough trial.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Case 2.—Mr. A., referred from Omaha, by Dr. Ewing Brown, had negative personal and family history. There was history of pain in the perineum and on defecation, occasional rise of temperature, and frequent urination. The left vesicle was sore, painful, large and distended. We opened the vesicle in the Swedish Mission Hospital, Oct. 22, 1910. A large amount of pus came from the vesicles. Tube drainage was inserted. After a stormy convalescence, accompanied by epididymitis, the patient was finally able to leave the hospital. The urinary fistula through the perineum remained for two months, after which it closed. He made a symptomatic recovery but claimed to be impotent and his discharge continued. Whether or not he was sterile, I have not had the opportunity to determine.

Case 3.—Mr. B., referred from Omaha, had gonorrhea about three years before, and complained of intermittent discharge, especially the morning drop. He had frequent urination, and occasional retention. On physical examination his prostate seemed enlarged on the right side. The seminal vesicle was indurated, enlarged and sore. The seminal vesicle on this side was drained as before. It was a chronic condition, and a question whether any pus was found or not; but the vesicle was slit through its entire length. The patient made a rapid operative recovery with no trouble whatever, and three years ago he was perfectly well.

Case 4.—R., referred by Dr. Owen of Omaha, had a definite seminal vesiculitis of a chronic history. We drained the right vesicle. He had a stormy convalescence accompanied by epididymitis, and he was a constant attendant at my office for about two years after the operation. The subsequent symptoms after the operation were intermittent discharge, pain in the right groin, the side on which the vesicle was drained, pain in the back, heavy feeling of the perineum, headache and constipation. By continued prostatic massage, irrigations, the use of dilation of the urethra and occasional cauterizations, we were able to remove the trouble entirely. This case I regard as one in which the operation did no harm and probably did no good.

Case 5.—Mr. C., from South Dakota, came to us after he had treated himself for an acute urethritis for some time. After careful physical and chemical examination, we determined that he had a large pus sac in the way of a right vesicle. He decided to have the vesicle drained. This we did. He recovered without any event, but in the course of two or three weeks after the operation, the discharge returned, his prostatic infection continued, and the last I knew of him he went to Dr. Belfield, who undoubtedly did a vasostomy on him and cured him.

Case 6.—Mr. P., of Belleville, Kan., referred by Dr. Decker, Sept. 30, 1912, was a sexual neurasthenic. On careful examination we thought we were able to determine a large and tender vesicle. He had frequent urination, and the bladder was more or less congested over the trigon, as seen by the cystoscope. He had intermittent discharge from gonorrhea about five years ago. In this case we determined to attempt a removal of the vesicle, which we did. He recovered from the operation very nicely, his discharge stopped, his sexual neurasthenia remained, and he thought he was impotent, but his semen showed live spermatozoa. He consulted Dr. Braasch, Rochester, Minn., and on his return he told me that Dr. Braasch thought he was perfectly well.

Case 7.—Mr. R., referred from Omaha, Jewish, had chronic gonorrhea for five years, with recurrent attacks at intervals of about every two years. He came to us for recurrent epididymitis. Because of pus in the prostate and seminal fluid, indurated and plainly palpable vesicle on the left side, we advised a vesicle removal, which was done, March 15, 1911, at Swedish Mission Hospital. The patient made an ideal recovery, and after about four months had no more discharge. Epididymitis did not return, and the patient had no sexual difficulties.

Case 8.—Mr. G., Jewish, 1912, had recurrent acute cystitis, with frequent urination. The bladder was normal except on the right side over the trigon, where it was edematous, congested and red. There was pus in the vesicular and prostatic contents, and an indurated and sore vesicle on the right side. On this evidence a diagnosis of seminal vesiculitis was made, and a part of the right vesical was removed. The patient had had only palliative treatment before this. He had never had a vasostomy. This man is a resident of Omaha and was an employee in the Jewish Hospital in this city. I see him every few days, and to date he seems to be perfectly recovered from his symptoms.

COMMENT

A study of these cases would place them under three clinical heads, namely, acute, subacute and chronic infections of the seminal vesicles.

The symptoms of the acute form are those of acute general sepsis characterized by rise of temperature, pain, leukocytosis, malaise, constipation, headache and the ordinary train of symptoms following such infection. Locally, we may have exceeding tenderness on pressure over the vesicle, pain on defecation, pain on ejaculation, increased and often uncontrollable sexual desire, and pain on urination accompanied with tenesmus. I regard the treatment of this class of cases as best executed by the vasostomy of Belfield. If this does not succeed, removal of the vesicle may be done.

The subacute form of seminal vesiculitis is characterized by the recurrent appearance of the symptoms of acute vesiculitis. The manifestation of recurrent incurable discharge appears. Chronic pains in the back, pains in the groin, Volecker has shown, are frequently due to a localized more or less circumscribed pus infection in the vesicle. Vasostomy cannot reach or be expected to cure this condition.

The chronic form of seminal vesiculitis is chiefly characterized by the appearance of sexual neurasthenias and aberration. Any or all of the preceding symptoms may be present, but chiefly in this case appear hallucinations of impotence and sexual weakness, which have demoralizing effects on the individual. Pathologically, Volecker divides this class of cases into two divisions: first, those in which the mucosa alone is entirely destroyed, and second, those in which not only the mucosa is destroyed but also the inflammation has extended through the fibrous wall of the vesicle and has produced an extensive perivesiculitis. Frequently the second class is a result of the first. In such cases it is impossible to conceive that the treatment by vasostomy can avail in the reconstruction of a destroyed organ. It is this class of cases in which vesiculectomy is indicated. From my experience, together with the study of the work of Tuller, Belfield, Squire, Schmidt, Volecker and others, I am convinced that if vasostomy fails, the removal of the seminal vesicle has a far wider and more beneficial application than the drainage of the vesicle alone. We can conceive only from a pathologic standpoint that drainage of the vesicle would be effective in those cases in which there was a pronounced empyema of the seminal vesicle. Drainage of an old hard vesicle with its mucosa infiltrated with round cells would be of very little benefit.

The technic which we have employed has been the ordinary technic as used by Young and Schmidt, and by a careful pulling of the prostate, we have been always able to arrive at the seminal vesicle just as it leaves the prostate gland. By a careful hemostasis and sharp dissection we have been able to isolate the vesicle at this point and to place a ligature between the vas and the vesicle by the use of a ligature carrier. By tying on either side and cutting between the sutures, we have been able in our cases to dissect out the vesicle, beginning from below and proceeding upward, contrary to the ordinarily recommended technic. If, however, a clamp is placed on the vesicle and gently retracted, and the tough fibrous capsule around the vesicle is cut on its lower border, the vesicle can be easily peeled out.

CONCLUSIONS

1. Seminal vesiculotomy is rarely indicated, and should not be done except in those cases in which there is an empyemic vesicle with signs of general sepsis and no tissue destruction.

2. On anatomic and pathologic grounds the operation of drainage of the vesicle cannot remove the disease in chronic cases, and the pathologic condition will return when the wound has healed.

3. In all chronic infected vesicles with a series of chronic symptoms, if after proper medical and mechanical treatment and vasostomy it becomes necessary to perform such a major operation as that of draining the vesicle, the removal of all the superprostatic vesicle adds such a small degree of operative risk that it is justified in practically every case in which such extreme methods are necessary.

4. Seminal vesiculitis as a simple clinical entity is exceedingly rare, and the diagnosis is difficult and rarely made, because sufficient attention has not been directed to this infection.

5. Treatment of the seminal vesicle alone has imperfect and incomplete results. The other urethra adnexa which are adjacent must be treated at the same time.

6. The prostate, the trigon, the vera and the utricle are usually either primarily or secondarily infected in cases of vesiculitis.

SEMINAL VESICLE INFECTIONS AS THE CAUSE OF PERSISTENT URETHRAL DISCHARGE

REPORT OF CASES *

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CHICAGO

This report is limited to the discussion of cases of acute urethritis in which the persistence of the discharge was thought due to infection of the seminal vesicles. In over 75 per cent. of cases in which the gonococcus invades the male urethra, it travels back of the cut-off muscle and into the posterior urethra, and in most, if not all of these, the ejaculatory ducts and subsequently the seminal vesicles become involved. When this condition prevails, the disease must be considered a genital tract as well as a urethral infection.

If the assumption is correct that most posterior urethral infections are complicated by involvement of the seminal vesicles, do we do our patients justice when we limit our treatment to urethral medication? It is only of late that the treatment of the seminal vesicles has been considered worthy of attention, and as a matter of fact the handling of this phase of the infection is the most serious problem that confronts us.

Let us consider what the possibilities are in a given case in which the treatment of the vesicles is ignored until a subacute or chronic condition ensues.

1. The vesicles may heal out spontaneously.

2. The acute process may gradually subside, with a resulting chronic vesiculitis.

3. Acute recurrent infections of the epididymis are possible at any time as long as infection in the vesicles persists.

4. Systemic manifestations and joint involvements are always possibilities during the continuance of such infections.

5. The acute process may not subside and may be the cause of the persistence of the urethral discharge.

Inasmuch as spontaneous healing of infected vesicles is a rarity, and local treatment, such as stripping, is curative in only a small percentage of cases, the question arises. When is surgical intervention indicated? If we consider the number of complications and sequelae that may develop at any time during a vesicle infection, it would seem logical to direct treatment to these organs when once we are convinced that they are involved.

Contrary to this idea, in the past, vesicle surgery has been limited principally to chronic cases not accompanied by a profuse urethral discharge. In this report I wish to refer to a class of cases in which, regardless of urethral medication, the discharge has persisted over a long period of time. It is my belief that in many of these the vesicle infection is the direct cause of the persistence of the urethral discharge.

My attention was first drawn to this theory by a patient who came under my observation complaining of a profuse discharge from the urethra of six months' duration, complicated by frequent and painful blood-stained emissions, which had not occurred prior to the urethral infection. These emissions led me to make

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a careful examination of the vesicles, which proved them to be greatly enlarged and tender. In order to relieve this condition, I made a bilateral vasotomy and injected both vesicles with collargol. To my surprise, the profuse urethral discharge practically disappeared within forty-eight hours. Since this time I have made it a point to scrutinize carefully the vesicles in all cases in which the discharge from the urethra does not respond to the usual treatment. Since resorting to this practice, I am convinced that the seminal vesicles have not received the recognition they deserve in the acute stage of gonorrhea of the male urethra. It is obvious that the diagnosis is in many instances difficult; however, when the urethra discharges persistently, it is our duty to make a careful rectal examination of the vesicles. This examination will often reveal large, soft, tender vesicles, differing from the chronic cases, in which the vesicles are usually hard.

Brief cessation of the urethral discharge, with repeated recurrences, should also attract our attention to the vesicles.

Few of these cases exhibit symptoms pointing to these organs; however, we find some patients who complain of a sensation of fulness in the rectum, as well as those who are troubled with frequent and painful emissions, which are sometimes blood-stained.

Given a case of protracted urethral discharge, in which, on palpation, the vesicles are found enlarged and tender, would it not seem far better immediately to attempt to eradicate the infection from the vesicle rather than to wait for the condition to become chronic, with the accompanying danger of the many complications and sequelae which may develop in the interim?

This report does not include any cases of chronic seminal vesiculitis, but is limited to those in which vasotomy was performed for the relief of profuse and persistent urethral discharge, which was believed attributable to infected vesicles.

REPORT OF CASES

Case 1.—M. P., aged 23, complained of a profuse purulent discharge from the urethra, of six months' duration, and of frequent painful seminal emissions, which developed during the fourth week of his infection.

Examination revealed a purulent urethral discharge which contained numerous gonococci. Rectal examination revealed both vesicles enlarged and soft. The prostate was slightly enlarged. The patient had been given various mild silver salt injections, since the start of his trouble, without any diminution of the urethral discharge. Sedatives failed to control the frequent and painful emissions. For the relief of the latter condition, a bilateral vasotomy was performed and both vesicles injected with 8 c.c. of a 5 per cent. collargol solution. To my surprise, the urethral discharge was hardly noticeable after forty-eight hours, and disappeared entirely within a week.

Case 2.—J. F., aged 24, single, contracted gonorrhea two years before. He states that discharge from the urethra returns promptly (within forty-eight hours) after every sexual exposure. The present discharge has continued for the last two months. Palpation of vesicles showed them to be enlarged and rather harder than normal. Pus from the urethra contained many gonococci.

Dec. 16, 1915, bilateral vasotomy was performed, followed by injection of both vesicles with 6 c.c. of a 3 per cent. collargol solution. The discharge disappeared within ten days; it has not recurred, although the patient has had several sexual exposures since the operation.

Case 3.—F. H. contracted gonorrhea three years ago. He has had many acute exacerbations since. The present profuse discharge was of nine weeks' duration. The discharge developed twenty-four hours after exposure and was evidently an auto-infection, due to the passage of contents of infected vesicles into the urethra.

Examination showed both vesicles enlarged and tender. Microscopic examination of pus from the urethra showed gonococci.

Bilateral vasotomy and injection of vesicles with collargol was followed by diminution of the discharge and gradual disappearance in eleven days.

During the entire three years the treatment consisted of urethral injections, but the patient was never free from discharge and pus in the urine.

Case 4.—S. C., aged 26, with no past venereal disease, had a urethral discharge which began eight months ago, appearing four days after exposure. The patient developed left epididymitis in the fourth month of infection.

Examination revealed a profuse purulent discharge, which had been uninterrupted since infection started eight months before. Injection of mild silver salts had no effect on the discharge.

The vesicles were both very large and tender, the tenderness being more marked on the left side. Microscopic examination showed many gonococci.

Feb. 4, 1916, a bilateral vasotomy was performed with injection of 12 c.c. of 3 per cent. collargol into each vesicle. The discharge was completely absent on the fifth day after operation. The urine remained cloudy, but cleared up promptly after a few applications of silver nitrate to granulations in the posterior urethra.

Case 5.—W. H., aged 30, complained of a painful swelling in the right side of the scrotum of four days' duration. He stated that he had had a profuse discharge from the urethra for three months. He had been treated with urethral injections since the onset.

Examination revealed the right epididymis and cord greatly swollen and tender, and both vesicles greatly enlarged.

Jan. 15, 1916, a right epididymotomy was performed, followed by bilateral vasotomy and injection of both vesicles with 6 c.c. of 5 per cent. collargol. Pain and swelling in the epididymis subsided promptly. The discharge from the urethra disappeared in eight days.

COMMENT

The five cases reported in detail are taken from a selected series of twenty-one. All cases in the series had the following points in common:

They all had a profuse purulent discharge from the urethra. This discharge had been of long duration—from two to eight months.

They all gave clinical evidence of involvement of the seminal vesicles.

They all had the usual treatment directed to the urethra, without apparent benefit.

In six cases the discharge disappeared within a week; in three cases within two weeks; in four cases within three weeks.

In five cases the discharge continued after operation, and I am satisfied that the urethral glands or the prostatic follicles were more responsible for the discharge than the seminal vesicles.

In three cases after the operation the discharge changed from purulent to serous in character. In two of these, urethroscopic examination revealed granulations in the posterior urethra, and the discharge cleared up promptly after application of 5 per cent. silver nitrate solution. The third patient improved after instillations of silver nitrate solution, but passed from my hands still showing a slight discharge.

Considering the reports of Belfield, Fuller, Squier, Young, Pedersen and many others, who report excellent results from the various operative procedures directed toward chronic infected vesicles, the question again arises: Why not attack these cases when we are convinced that the vesicles are involved, and are responsible for the persistence of the trouble?

32 North State Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GERAGHTY, STOKES AND HERBST

Dr. E. O. Smith, Cincinnati: Dr. Geraghty's discussion of the seminal vesicles as a seat of infection is well taken, and all of us are familiar with the frequency with which this condition occurs. He did not mention one of the remote symptoms, which has been overlooked many times, and that is arthritis. We have here a focus of infection that sometimes escapes notice, as is illustrated by a patient sent to me sometime ago for a persistent arthritis, most evident in the lower extremities. It had been going on more or less for two or three years. He had been to health resorts and had had many sorts of treatment. A surgeon put arches in his shoes. This did not relieve him. He was sent to a dentist and had a large amount of expensive bridgework removed, but this did not relieve his arthritis. Some months later he was sent to me for examination of the seminal vesicles and prostate. We found involvement of these structures, and put him on suitable treatment—massage, irrigation, vaccines—and the arthritis cleared up very promptly.

Dr. O. S. Lowsley, New York: The seminal vesicles begin to develop at the fourth intra-uterine month as evaginations from the vasa deferentia. Pauline has shown that the anatomic arrangement consists of one main tubule extending the entire length of the vesicle, with a varying number of small branches laterally. This normal anatomic arrangement, of course, is distorted in diseased conditions.

Dr. V. D. Lespinasse, Chicago: The problem of infection in the seminal vesicle seems to be, first, diagnosis. If we treat the vesicle directly we must be sure that the disease is in the vesicle itself and nowhere else, and the greatest trouble is to diagnose these cases, not to decide what type of treatment is best. In the acute cases vasostomy with irrigation, which washes out the ejaculatory duct and the ampulla of the vas and frees it from the thickened secretions, acts the same as the passage of a ureteral catheter or the simple incision of an abscess, and consequently gives excellent results.

In the chronic cases this procedure does not always produce the results that we should like to have it produce. In such cases bisection or removal should be done. Our results in this work will be poor unless we select our cases carefully and make a localizing diagnosis before we institute any surgical procedure.

Dr. John R. Brown, Tacoma, Wash.: No case ought to be allowed to become chronic. In our own work we have experimented to some extent with rather excessive heat applied to the seminal vesicles. The gonococcus is not resistant to heat. One hundred and five degrees for five minutes will kill a culture in vitro. Some authorities say there are certain strains that will survive 113 degrees for five minutes, but that seems to be the limit. If we then can apply heat directly to the infected spot it seems that it is a very good application. I have devised a rubber bag, which is introduced into the rectum through a tubular speculum. It has rather thin walls, and an inflow and an outflow tube; a thermometer controls the heat, and the heat we apply is 125 to 135 F., which the rectum will bear without very much inflammation for an hour. We can apply the same heat in the urethra by means of a hollow sound. The outside skin of the penis will be raised to 106 F. in five minutes. The urethra will not stand much more than 120 F. The rectum will stand a temperature of 135 F. The results in these cases have been much more than we had hoped for in the beginning, two or three treatments curing acute cases of seminal vesiculitis. In chronic cases it is less spectacular, but even in cases of five years' standing, and in one case of eighteen years' standing, we secured what seems to be a symptomatic cure.

Dr. Louis E. Schmidt, Chicago: I do not believe we should rely entirely on our finger for diagnosis. If we do, we will overlook an enormous percentage of cases. I am under the impression that in a lot of these people who have pain in the suprapubic region, whether or not accompanied by any sexual, urinary, rectal or abdominal symptoms, you can detect a sensitive vesicle with an instrument. If no other instrument is at hand, the handle of a sound should be used, and you will be surprised to discover so many sensitive vesicles if you do this in a systematic manner. Those people in whom you can elicit a terrific pain by pressure on the upper portions of the seminal vesicle I am inclined to believe demand treatment, not necessarily operative, but they should receive the regular routine, plus massage with an instrument, and later vasostomy if necessary. If this routine is gone through several times and if no result is obtained, operative interference can be considered in many of these cases.

As to the presence of blood in the semen that is obtained by massage, fully 75 per cent., if not more—possibly 95 per cent.—of all cases of seminal vesiculitis show blood in the presence of pus. Oftentimes you massage a prostate and get pus and you are in doubt as to whether the pus comes from the vesicle, but if there is blood present it is almost a certainty that the pus comes from the vesicle. You rarely ever can get red blood cells even in microscopic quantities if the inflammation is only located in the prostate. As to operative interference in these cases that have neurasthenic symptoms, the more prominent the symptoms the better it is to omit operative intereference, because these symptoms, in connection with others, will not disappear. It is true that operative interference might improve some of the conditions for which you operate, such as recurrent discharges, but, as a rule, their neurasthenic symptoms will increase. There are a lot of little details as far as the operative interference itself is concerned. I believe you can get along very well without the aid of Young's instrument in pulling down the prostate and seminal vesicles. Furthermore, it is not necessary to use the method that Squier recommended. You can make the exposure of the seminal vesicles and remove them without any such help. The whole secret is that there should be an exposure which will permit of careful interference.

Dr. A. C. Stokes, Omaha: I wanted to bring out the fact that in a pus sac like the seminal vesicle, removal of it is better surgery and better pathology than the drainage of it. We do not drain a gallbladder or an appendix or fallopian tube; we remove them. There is one point I thought some one would bring out; that is, the relation of the seminal vesicles to the peritoneum. A German surgeon some years ago and later Dr. Young have shown that we can reach the seminal vesicles from above. While I have not done that on the living subject, I have done it several times on the cadaver, and believe one can remove them with less trauma to important structures from above than from below.

Dr. Louis E. Schmidt, Chicago: I would like to say a word with regard to impotency as a result of these operations. It shows that the operations of vesiculotomy and vesiculectomy should not be carried out promiscuously. There is no question, from all the reports, that this is the consequence in a certain percentage of cases. I have one to report out of the last ten cases in which I have operated. I am not in a position to state whether it is only temporary or permanent. The impotency has persisted practically nine months, and I know of other instances where the impotency has persisted for a much longer period of time. This word of warning is sufficient: Do not operate too quickly if you consider this one unfortunate result which can occur in any case. In this particular instance the individual's symptoms were chiefly pain. He had been operated on by others in every conceivable way, previous to the draining of the seminal vesicles. In a great many cases where there has been considerable pus and where the vesicles have even been infiltrated, with small abscesses in their walls, the results as regards impotency have been perfectly satisfactory. The pathology in these cases where impotency has followed in my series has been far less than in those cases where impotency did not result.

A Complete Library.—Every library should try to be complete on something, if it were only the history of pinheads.—O. W. Holmes, The Poet at the Breakfast Table.

CERTAIN ASPECTS OF NATURAL AND ACQUIRED RESISTANCE TO TUBERCULOSIS

AND THEIR BEARING ON PREVENTIVE MEASURES *

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(*Continued from page 674*)

The significance of the histologic elements in tuberculous foci may perhaps be elucidated more completely in the future by a comparative study of primary, secondary and later foci. Thus the existence of a chain of tuberculous lymph nodes signifies, at least in certain regions of the body, that one has been infected from the other. If the first or primary focus has had any appreciable effect on the relative immunity of the host, the reaction in the second node should differ somewhat from that of the first. The same may be said of a third focus. A more frequent manifestation of secondary foci occurs in what is known as generalized or miliary tuberculosis. It is obvious that the tissue reaction in miliary disease should be different from that of the primary focus; since the body must have undergone a certain degree of immunization, however slight. While the character of the tissue reaction in secondary foci may remain qualitatively the same, there may be quantitative changes in the direction of an accelerated reaction.

The behavior of different species of animals differs markedly with reference to the progress of tuberculosis toward secondary and tertiary infection. In highly susceptible animals, as the guinea-pig, the prompt invasion of the blood stream and the formation of foci in spleen, lungs, liver and other organs is the rule. It proceeds rapidly after infection. In other species, generalized infection does not occur regularly. The formation of large numbers of miliary and submiliary tubercles, in cattle, for example, is rarely seen, and the entry of tubercle bacilli into the blood is indicated by a few often relatively large foci. This condition is best explained by assuming that the bacilli entering the blood are suppressed before tubercles are actually formed, and that the isolated foci of hematogenic origin are the resultant of local, specially favoring conditions. On the other hand, in swine which are victims of the bovine bacillus, miliary tuberculosis is far more frequent. Bearing on this point, the occasional single giant cell in otherwise normal tissue of tuberculous cattle may be regarded as a tubercle in its simplest as well as most highly immune type.

GENERALIZED TUBERCULOSIS

We may thus state that generalized or miliary tuberculosis may occur in two extreme types of cases: (*a*) in those highly susceptible it occurs regularly, (*b*) in those relatively immune, as in man, it occurs infrequently, and may be the result of some intercurrent disease or accident which caused a dissemination from a primary focus. Between these extremes, intermediate types undoubtedly occur. The problem is to find out the differences in the character of the secondary tubercles of the two classes as defined above. The tubercles of the first group should show a tendency toward enlargement and progression into the environment; those of the second group, a prompt tendency toward those retrogressive changes, such as sclerosis, caseation, calcification, and capsule formation, which indicate host resistance.

TYPES OF TUBERCLE

A series of types of tubercle depending for their make-up on the degree of host immunity may be formulated as follows, beginning with the highest resistance:

1. The giant cell alone.
2. The giant cell plus a small envelope of epithelioid cells, the whole remaining pervious, not undergoing necrotic changes, and becoming sclerotic.
3. A focus larger than that just mentioned and undergoing prompt caseation and calcification.
4. A group of tubercles due to temporarily unhindered multiplication of bacilli and forming a relatively large focus undergoing the usual retrogressive changes.
5. Very rapid and copious multiplication of tubercle bacilli within a given focus, or tubercle leading to necrosis and subsequent dissemination of bacilli.

These, among other types, serve to indicate the variable factors at work, be they humoral or cellular, or the two operating together. The giant cell alone, according to this scheme, stands for the highest type of resistance, as indicated by histologic methods. The suppression or destruction of individual tubercle bacilli without any recognizable reaction of any kind on the part of cellular elements is, of course, possible, but such a process is not likely to be demonstrated by current histologic methods.

The outstanding fact of interest in the relation between the tissues of the host and tubercle bacilli is the survival of a certain number of the latter in the products of degeneration and their discharge outward. How many bacilli are produced, how many destroyed in tuberculous lesions cannot be even guessed at. The data obtained by staining methods indicate that in relatively susceptible hosts, such as the rabbit, toward bovine tubercle bacilli, the foci contain very large numbers of bacilli. In relatively resistant hosts, such as the rabbit, toward human bacilli, the foci contain few bacilli. It is probable that the tissues in general operate toward suppressing multiplication rather than in destroying bacilli which have multiplied, although, as stated above, active destruction is not questioned here.

LATENCY OF BACILLI

Around the fact of the survival of tubercle bacilli — a necessary prerequisite to their continued existence as a species — there have arisen special questions concerning the latency and persistence of tubercle bacilli. Latency may be defined as the presence of tubercle bacilli in supposedly normal tissues of still normal individuals, and persistence as their continued presence in manifestly tuberculous tissue. For example, bacilli have been found in apparently normal lymph nodes of children by a number of observers, as determined by inoculation of such tissues into animals. Such nodes, however, may contain microscopic foci, as pointed out by Joest, L. Rabinovitch and others. Why such foci should have remained microscopic belongs to the unexplained phenomenon of individual resistance, unless we grant that the individuals are practically immune to the particular bacilli encountered. As stated above, the persistence of bacilli in caseous and even calcified and chalky foci has been noted by observers both in the human and the bovine

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* Second Mellon Lecture, delivered before the Society for Biological Research, University of Pittsburgh, May 17, 1916.

* This is the second section of Dr. Smith's article. The first part will be found in The Journal, March 3, 1917, p. 669.

diseases. Weber and others, from an intensive study of the distribution of human bacilli after intravenous injection in calves, concluded that virulence was a very important factor in persistence. When using tauruman, a fairly active vaccine, consisting of a culture of human tubercle bacilli, they found bacilli still present in all tissues examined after the first month. Thereafter the bacilli gradually disappeared, remaining longest in heart and lungs. After six months they were no longer detected. In the subcutaneous tissue, bacilli survived for over eleven months. The bacilli of a weaker vaccine disappeared more quickly. Calmette states that cattle treated or vaccinated with bovine bacilli grown on a glycerin-bile medium resisted a fatal dose and remained well. Such cattle, however, harbored virulent bacilli in lymph nodes, chiefly the bronchial, for as long as eighteen months. Some, he thinks, are excreted by way of the hepatico-intestinal route.

The persistence of tubercle bacilli may be due to the assumption of a more resistant morphologic state. This state may be merely temporary and representing some functional modification induced by the heightened resistance of the host. That a spore state exists, such as was accepted by Koch in his earliest writings, has not been generally credited. The gram-staining, granular type of Much may represent either a more resistant or a degenerative phase.

QUESTIONS TO BE SOLVED

The foregoing review of the intimate relation between tubercle bacilli and the tissues of the host clearly indicates that our knowledge on this subject is still unformed. We do not know what it is which in man and cattle leads now to the cessation of the disease, now to progression. We do not know what is lacking in such species as the guinea-pig, rabbit and monkey to prevent the steady, irresistible encroachment of the bacilli, or what it is in such species as rats and mice which suppresses the infection in an early stage or at the start.

In particular, the relative share of cellular and humoral factors, of phagocytosis and of antibodies, which are involved in all types of infection and parasitism, remains to be worked out. Thus far the weight of opinion and evidence seems to favor the cellular elements. The humoral elements, it should be borne in mind, represent contributions from various distant groups of cells poured into the blood stream. Such contributions, it appears, can be stimulated only by products of tubercle bacilli, either metabolic or disintegrative, which have entered the blood or lymph stream. They are therefore called forth after infection. The cellular elements entering the tubercle must represent the primary factors in engaging the bacilli. In my vaccination experiments, referred to above, the immune humoral factor was evident in the treated animals in that the infection, after flooding the blood, failed to get a foothold in the capillaries of the lungs, where myriads of tubercles developed in the controls.

There may be, however, humoral elements of a general nonspecific character always present which may have much to do with deciding the course of the infection. Of these we know nothing in particular. Nor do we know anything definite of the primary resistance or vulnerability of the endothelial cells in different species which appear, for instance, in the endothelial elements of the pigeon. In this species, the pneumococcus, as shown recently by Kyes, is taken up promptly by such cells and made to disappear. On the other hand, the same cells take up mouse septicemia bacilli, but the pigeon invariably succumbs, and at the time of death the cells are loaded with bacilli.

SEARCH FOR METHODS OF INCREASING RESISTANCE

But there are different ways of approaching the same problem. Practical medicine does not wait for science to elaborate methods available in combating disease, but pushes ahead, often without any reliable guide to search for cures, and now and then succeeds in discovering important principles which serve, not only as weapons for man, but also as points of departure for important theoretical researches. So it has been in tuberculosis. The attempts to discover means for increasing the resistance of individuals toward tuberculosis and for inducing a healing of existing lesions have far outrun our knowledge of the phenomena of infection and immunity. In attempting to circumscribe and suppress tuberculosis in the human race, there are two chief means at hand. One is to suppress the infection in transit from individual to individual; in other words, to break the cycle in its fourth phase. The other is to increase the resistance of individuals toward a more or less ubiquitous infection or, expressed differently, to treat the host in such a way that the second phase of the cycle, the multiplication of bacilli within the body, may be suppressed. The two methods tend to the same result and are cooperative to a large degree, but not wholly so, as we shall see farther on. There is a third possible method, that of destroying or rendering inert tubercle bacilli within the body by the direct action of some substance administered. This method would likewise interfere with multiplication and would have the same end effect as the second method. To increase resistance, the well known methods of vaccination with living or dead bacilli or of various preparations of the latter are the first to be considered. Here we must turn to animal experimentation to give us certain data.

The immunization of cattle against bovine tuberculosis by the use of a vaccine consisting of living human bacilli was first tried by von Behring, and is known as bovovaccination. The basis for this work was the relative harmlessness of the human type of tubercle bacilli for cattle, even after intravenous injection. Now and then cultures were encountered which in the doses ordinarily employed were fatal to calves after intravenous injection. In general, the animals stood such injections well, and when tested later with a dose of bovine bacilli, showed a considerable degree of resistance. The mode of testing was, as a rule, quite severe, and no absolute resistance to such test could be expected. The outcome of these many experiments was that while resistance was increased by vaccination, it declined and disappeared after a time. This disappearance has been generally assumed to be coincident with the final disappearance of the living bacilli of the vaccine from the host tissues. The test of such vaccinal immunity has not been thoroughly made as yet toward the natural disease, owing to the great cost. Usually such tests, consisting of exposure in infected herds, were associated with sanitary precautions and other preventive measures which weakened the value of the immunity test.

In experiments of this kind undertaken by myself, the resistance, as compared with controls, was well marked. At the end of about six months after the final test with bovine bacilli, the animals were killed and certain lesions found and studied. These indicated that the bovine infection introduced by the test inoculation was at first retarded or latent and later progressive. The immunized animals, furthermore, showed changes in the anatomic character of the disease as well as changes in the histologic make-up of the lesions which brought the inoculation disease nearer to the pulmonary disease of human beings known as phthisis. Similar experiments made by myself and by Paul A. Lewis with tubercle bacilli killed by heat showed that dead bacilli produced no increased resistance. The use of living cultures of low virulence is thus indicated if any distinct increase of resistance is desired. How far it might be possible to replace the intravenous by the subcutaneous injection of the vaccine cannot be definitely stated. Heymans, who applied the latter method extensively, has not to my knowledge made any experimental tests of the acquired resistance by the intravenous injection of bovine cultures.

The von Behring method has brought to light a serious practical objection to the use of living cultures. When they are implanted in the body, the time of their final disappearance cannot be predicted. As stated above, they persist for many months in some organ or tissue. In the presence of animal parasites, injuries, and inflammatory conditions due to other infections, they may multiply and produce definite lesions. Administered to calves at an early age, they may persist in rare instances and reappear years after in joint affections and be shed in the milk. The joint infections are most likely preceded by traumatism; the udder infections by mastitis. These results do not encourage the use of living cultures on the human subject and, in view of the failure thus far of dead cultures to increase resistance, we must regard the specific immunization against tuberculosis as an open problem.

Considerable interest has been aroused by certain experiments of Römer on guinea-pigs, which showed that actively tuberculous animals resisted the multiplication of a second small dose of tubercle bacilli, while those which had been treated with virulent living and with dead bacilli, as well as the controls, became tuberculous. These results were later confirmed by Kraus on monkeys and by von Behring and by Calmette on tuberculous cattle. The chief interest in these experiments rests on the fact that a disease which is progressive within the body may ward off fresh infection from without. That the tissues of the tuberculous guinea-pig may produce lysis of tubercle bacilli was pointed out by Kraus in 1912. A more detailed and thorough test of this phenomenon was published by Manwaring and Bronfenbrenner in 1913. In preliminary tests they found that after the injection of certain strains of tubercle bacilli into the peritoneal cavity of normal guinea-pigs, the bacilli underwent rapid changes leading to involution forms and loss of staining capacity. Eliminating as far as possible this error by choosing their strains carefully, they found that tubercle bacilli could be recovered quantitatively from the peritoneal cavity of normal guinea-pigs, but only about 65 per cent. from the peritoneal cavity of tuberculous guinea-pigs. The disappearance is ascribed to lysis and this to specific changes in fixed peritoneal cells.

That animals which have passed through the primary stage of infection should be more resistant need not surprise us, for the entire fabric of vaccination and artificial immunization is based on this doctrine. It is not so clear why the primary disease should not likewise be checked. Among a number of possible factors to account for this situation several may be mentioned:

1. Different tissues have different degrees of natural resistance, and the progress of the infection may at least in some cases be due to the accidental occurrence of metastatic processes in certain tissues. Thus, in rabbits the kidneys are as vulnerable as the lungs, if not more so. In guinea-pigs, macroscopic disease of the kidneys is exceedingly rare. The omentum of the guinea-pig following intra-abdominal injections of tubercle bacilli is always involved to some degree; after subcutaneous inoculation, never. The udder of cows is diseased in from 1 to 2 per cent. in spontaneous cases. It is, however, a very vulnerable organ, as shown by intravenous inoculations. In the spontaneous disease it is well protected, at least for a time, from invasion from primary foci.

The skin and subcutis are to all appearances more resistant than many other tissues, and immunity should show itself here more promptly than elsewhere. The relative immunity of the skin and subcutis is shown now and then by the absence of any local lesion following minute doses of attenuated bacilli. The nearby glands, however, are always diseased. It would seem as if in such cases the few bacilli left in the subcutis are suppresed and destroyed and those which are carried to the nearest lymph node find there the conditions for multiplication. The relative infectiousness of tubercle bacilli in different territories is well illustrated by the experiments of Findel, who found that for producing disease in guinea-pigs from 6,000 to 19,000 times as many tubercle bacilli were needed when fed than when inhaled.

The progress of tuberculosis once started in the guinea-pig may consist largely in the multiplication of bacilli in organs and tissues of a low degree of resistance. It may also depend to a certain degree on accidents which favor the approach to such organs. On the other hand, the resistance of the tuberculous animal to superinfection is readily broken down by slightly increased dosage, and is successful only when very minute doses come into play, as pointed out by Römer himself. Granted that Römer's inferences are correct in this, that a tuberculous focus once under way prevents the successful lodgment of the same infection in minute doses from without, we are still in the dark as to the fate of an infection of higher virulence. Knowing that strains of tubercle bacilli vary considerably in virulence, we cannot assume on the strength of Römer's experiments that all superinfection will be excluded.

Römer asserts as a result of his experiments that most if not all tuberculous infection dates back to early life. The large number of positive tuberculin tests in children give support to this assertion. The recrudescence of the disease during adolescence and later is referred to an early massive dose. Why this early dose should not have promptly displayed its energy and developed a progressive fatal disease, in view of the high susceptibility of early life toward all infections, needs explanation. A view more in accord with the general facts of infection and resistance would be to assume that the recrudescence is due to untoward conditions arising in modern life in the careers of most human beings, which not only reduce general resistance, but also create in one way or another special places of lowered resistance, as in the calf which carries the human type of bacillus; introduced as vaccine, until parturition creates a locus of lowered resistance in the udder, or through injury in the joints, or through parasitism. The gradual increase of resistance toward infections in general with age, which manifests itself not only in the species subjected to a given disease, but also in species which are not exposed to or afflicted with such a disease in nature, as in experimental animals, must also enter as a factor in favoring early and warding off later infection. Thus, O. Bang has shown that although horses are insusceptible to infection with the avian type of tubercle bacilli, colts respond to inoculation and may succumb to it.

RELATION TO PRACTICAL MEASURES

The facts and inferences presented by Römer are of interest from the standpoint of public health because of the derived practical measures which might gain headway. Thus it might be argued that there is no need of quarantining and suppressing infection, because a little tuberculosis is good for children, and adults cannot infect themselves anyway. Opposed to these measures we may assemble a number of important objections. We can never quite know when infection will be light or massive. We cannot tell whether the one infected is below par and will soon be a victim. We cannot tell how virulent any infection may prove to be. Lastly, we cannot tell when any given infected individual becomes again susceptible, because we cannot tell when the first process is extinguished. There is every reason, therefore, for continuing adequate, rational measures for the restriction of tubercle virus in transit. The susceptibility of the adolescent or adult may be no greater without than with the preliminary early dose. This is indicated by the comparative immunity of adults against bovine infection. In any case, for some time to come there will be enough infection about even with all precautions in operation to give the "vaccinal" dose to many in our congested centers of population.

The special aspect of acquired immunity introduced by the experiments of Römer is of sufficient interest to warrant a repetition of his work. His experiments with so-called animalized bacilli, which he obtains by removing and crushing tuberculous lymph nodes associated with the primary lesion, are not sufficiently numerous and conclusive wholly to meet the objection that in his earlier experiments the culture bacilli used for the second inoculation are not the equals of the bacilli which have been in the body for months, which have successfully met the increasing immunity of the host, and which are capable of continuing the invasion. On the whole, I think that the theory of von Behring and Römer that all infection dates from early life should be accepted with caution and reserve. My own view is that a bacillus coming from without into the lungs has as good a chance, other things being equal, as one carried there from some existing internal focus. If the internal infection is "massive" and the fresh infection light, the former is more likely to produce a focus of disease than the latter. If the fresh infection is massive and the other light, the fresh infection is likely to produce disease rather than is the metastatic process. This seems to me a safe attitude until more attention shall have been given to Römer's theory. It is probable that a more careful study of bovine tuberculosis may be of assistance. Here we have a spontaneous disease, agreeing in most points with the human disease. Very minute, detailed study of the lesions at necropsies should give us the information desired. To demonstrate superinfection it would be necessary after a careful exclusion of secondary processes to find in the lungs foci of different ages as indicated by the degree of necrosis, calcification and liquefaction.

USE OF PRODUCTS OF BACILLI

Passing from the problem of living and dead bacilli as immunizing agents, we come to the use of the so-called products. Among these, tuberculin, the substance which passes into the culture fluid from tubercle bacilli and which resists destruction by boiling, has enjoyed the greatest prominence since its discovery in 1890, when it was supposed to have marvelously curative powers. This prominence has been maintained in spite of the disappointment following a more detailed study of its real significance. The appearance of the phenomenon of anaphylaxis as a working problem in 1904 gave a new impetus to the further study of the tuberculin reaction because it agreed so closely with the reaction of hypersensitiveness.

It had been rather puzzling that a state of hypersensitiveness to tuberculin could not be brought about either by tuberculin itself or by dead tubercle bacilli. In a long series of unpublished tests made some years ago, I failed to obtain more than a fall in weight following treatment with heated tubercle bacilli. In 1910, Baldwin described a method with which an acute anaphylactic shock can be produced by postorbital injection of tuberculoprotein following sensitization by the intraperitoneal route. Krause, continuing the same work, found that the process of sensitization does not alter the resistance of animals to experimental tuberculous infection. Austrian, somewhat later, was able to produce active and passive anaphylaxis in guinea-pigs with a watery extract of pulverized tubercle bacilli by using the same method. Guinea-pigs made hypersensitive to this extract were not protected to any degree against experimental infection with tubercle bacilli. He found that "hypersensitiveness in guinea-pigs and rabbits exerts a neutral or baneful influence on a subsequent tuberculous infection." It should be mentioned that Baldwin found that guinea-pigs sensitized by intraperitoneal injection failed to react by the same route, but reacted when injected intracardially and postorbitally.

From these experiments of Krause and Austrian it would seem as if the introduction of tuberculoprotein was of no significance, or else harmful, in immunization. Yet it would be premature to conclude that the same is true for the human being. The guinea-pig is indeed hypersusceptible to tuberculosis, and recoveries are unknown, except, perhaps, after the use of highly saprophytized cultures. The energy required to lift the guinea-pig to an immune level cannot but be far greater than is needed for man, and may be unattainable. The apparently injurious effect of the sensitization in the guinea-pig may eventually be found to be due to a stronger but unsuccessful reaction.

The efforts of Much to separate the tubercle bacillus into its constituent antigens deserves mention, because they may aid in interpreting the obscure phenomena of tuberculosis resistance. Much separated bacilli into protein, fatty acid lipoids, neutral fat, and toxin. These he calls partial antigens. Each of these substances, if not denatured in the unlocking of the bacilli with heat and acids, produces its own antibody. Much claims that antibodies cannot be produced unless the bacilli have been opened up (*aufgeschlossen*) by suitable methods. Yet according to Römer a first inoculation of guinea-pigs leading to an active process produces resistance to fresh bacilli inoculated later. In this case the original bacilli must have been "opened up" by the guinea-pig tissues in order to bring about the increased resistance.

MODIFICATION OF THE TUBERCLE BACILLUS

During the second or multiplicative stage of the parasite cycle it is highly probable that tubercle bacilli regain some of their parasitic characters or strengthen those weakened by cultivation, just as some of the anthrax bacilli from cultures promptly assume the characteristic capsule after inoculation, while the rest are destroyed. During active multiplication all organisms are more or less vulnerable, and it is probable that during this period the surviving bacilli exercise new or augmented functions imposed on them by the developing immune bodies of the host. Such changes have been observed in organisms more labile and more subject to immune bodies than tubercle bacilli. Resistance to destruction in the bodies of immune animals was observed by Levaditi and Roché in the spirilla of tick fever. From three to six days after the crisis in the rat, a relapse occurs. The serum in the stage of relapse acts actively on spirilla of the first attack, but not on those of the relapse period. The antibodies are absorbed or bound by the spirilla of the first attack, but not by those of the relapse. Mesnil and Brimont made the interesting observation that in goats infected with *Trypanosoma brucei* there is after a time a progressive adaptation of the trypanosomes to the immune bodies of the goat's serum. Trypanosomes taken from such an animal at an interval of several weeks are no longer identical. The second lot of trypanosomes are immune to serum drawn with the first lot, while they are not immune to the serum taken at the same time. As a result, mice inoculated with trypanosomes of the second lot plus serum corresponding to the first lot die, while those inoculated with the reverse combination survive.

Bacilli coming directly from another host, as is the case in the natural disease, stand in some way under the influence of the developed immune bodies of that host, and are in far better position than culture bacilli to gain a foothold. It is well known in laboratories that small doses of such bacilli will accomplish more than large doses of cultivated organisms.

In the process of entry or infection, the actual significance of the sensitization which such bacilli are under as they come from a preceding host deserves more attention than it has hitherto received. Basing myself on the analogy between sensitized bacteria and toxin-antitoxin mixtures, I have attributed to the former greater penetrative power.

In ascribing to the bacteria coming from a patient with a well developed case of tuberculosis special resistive characters, we must distinguish between such characters as meet the immediate situation in the next host and such as permanently raise the virulence of the infecting agent. The former would simply disappear and reappear in each cycle, the latter would manifest themselves by greater virulence and a tendency of the induced disease toward epidemic proportions. We have no direct evidence to show that the usual passage of infection from individual to individual increases virulence, since the tendency of all infectious diseases has been toward a lower level of virulence. The tendency toward higher virulence may be there, but it may be concealed by a slow upward movement of host resistance due to selective elimination on the one hand, and by the natural elimination of too virulent strains on the other.

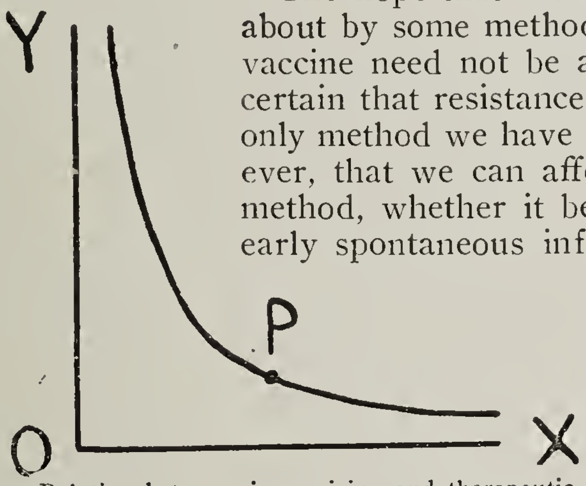
In general it is to be presumed that if the condition of the host changes during the course of the disease toward a greater specific resistance or immunity, the parasite cannot remain the same, for it must meet the new condition in order to survive and be excreted. Capacity for variation and adaptation and for temporary adjustments on the part of bacteria have been pointed out in many special researches. All procedures for the cultivation of tubercle bacilli tend to modify the bacilli to a certain degree, perhaps by tending to select and eliminate spontaneous varieties. Thus the cultivation of tubercle bacilli on blood serum, blood serum with glycerin, egg, egg with glycerin, and agar with glycerin leads to slightly different strains according to the special medium used. After a time, notably with the bovine type, highly luxuriant cultures are obtained on mediums, such as glycerin agar, on which multiplication at the start is impossible. At the same time the virulence diminishes as multiplication becomes more active. Just what changes take place have not been definitely pointed out. I have taken the position that the change in the direction of more abundant multiplication is in some way associated with a change in the outer envelope, be it the ectoplasm or a special membrane which, while favoring nutritive processes, makes the organism more vulnerable. If such profound changes may be induced by artificial cultural influences, it stands to reason that the living tissues are equally, if not more, capable of molding the bacilli in prolonged contact with them. There exist, therefore, various indications that tubercle bacilli undergo cyclic changes in their journey through the body on account of the growing resistance of the host. What these changes are we do not know; but arguing from analogy, we may suppose that the tubercle bacilli after a time develop resistant protective envelopes which at the same time check metabolism and stop multiplication.

Before concluding this last phase of the cycle, I need to call attention to the bearing of modifications of tubercle bacilli due to artificial cultivation on the interpretation of laboratory experiments. The gap between saprophytized bacilli from long-standing cultures and such still in the caseous material coming from a disintegrating focus must be very great. Such cultures passed through calves, for instance, and recovered many months later had not gone back to the original animalized condition, for the recovered cultures grew from the start luxuriantly. Whether such cultures, through passages, ever completely regain their original status has not been taken up.

The use of cultures is probably responsible for the statement that after injection polymorphonuclear leukocytes appear and later on disappear, taking no part in the development of tubercles. The leukocytes are probably attracted chemotactically by the suspending fluid and the disintegrating bacilli, always present in cultures after several weeks.

This phase of our subject, dealing with cyclic and other changes in bacteria, cannot be cleared up until epizootics among small animals are subjected to a close detailed study of all individuals involved. All that can be stated here is that miscellaneous evidence points to a cycle of varying resistance in each host, as well as slow movements of virulence up and down extending through many hosts and subject to many collateral influences.

The suppression of tubercle bacilli in the tissues directly through chemotherapeutic agents is now being prosecuted in various laboratories, and the ultimate outcome of such researches must be awaited with patience. One or more decades ago such ventures would have been regarded with a high degree of skepticism; but the success obtained since then in the direct elimination of trypanosomes and spirochetes, and the possibilities of still greater successes in this field make the realization of some restricting therapeutic agent in tuberculosis by no means chimerical. Since experiments in this field must first of all be conducted on laboratory animals, the results obtained thereby are likely to be both overvalued and undervalued, as it will require more or less time to adjust immunizing and remedial agents to the human disease. The differences between induced and spontaneous infections must not be overlooked. The relation between immunizing and therapeutic experiments on induced and spontaneous diseases is best shown by the accompanying diagram of a hyperbola. As I have stated elsewhere, the problem in laboratory experiments is to save the life of the animal; the by-products of the disease are not considered. In human disease, the treatment is concerned not so much with saving life as with curing more or less chronic affections. If we represent by distances on *OY* the degree of disease to be overcome, and on *OX* the amount of treatment to be applied to bring about a given resistance or cure, we usually begin in the laboratory on the upper limb of the curve which represents a fatal disease, and by vaccination or other methods rapidly bring the disease down to *P*. From there on, local lesions or the residual disease is cured with difficulty, the curve approaching *OX* very slowly. In the case of human diseases we usually begin treatment at such a point as *P*, and the rather spectacular drop (or immunity) obtained in the laboratory does not follow. The line of complete cure, *OX*, is approached only very slowly.



Relation between immunizing and therapeutic experiments on induced and spontaneous diseases.

RELATION OF PRESENT ASSURED KNOWLEDGE TO PRACTICAL PROBLEMS OF PREVENTION

While the practice of medicine cannot and does not wait for scientific discovery to supply the desired preventives and remedial agents, but goes its own pace, feeling and groping its way into unknown territories to search for the hoped-for cure, it nevertheless adjusts itself promptly to the acquisitions of medical research. The campaign against tuberculosis has always involved two distinct problems, to prevent the spread of infection and to cure the disease in the individual. These two problems are distinct, but related. One reacts on the other. To cure is equivalent to checking the spread of the infection. But I am not certain that they should not be kept distinct. One or the other will predominate if both are attempted. The movement against tuberculosis among the people, as indicated in the work of antituberculosis societies, has been, at the beginning, chiefly toward the prevention of disease by campaigns against the spitting habit. The movement as developed among the medical profession has been chiefly toward the cure of the disease, especially in early cases.

It is at least open to question whether the latter movement was logically indicated as a starting point. If quantity of infection is the menace, and if minute doses of infection may and do frequently lead only to a local disease which in many cases takes care of itself, it is obvious that the first step in the control of tuberculosis is to render harmless the most severe cases, so to secure them that the helpless bystanders do not suffer by taking in "massive doses." This is the first duty of the community. If there remains a surplus of energy, then it should be devoted to treating incipient disease. Only in this way can the disease be surrounded and the circle made smaller and smaller each year, until the germ is eventually eliminated. To give elaborate treatment to incipients and to neglect the menace of advanced cases is to keep the door wide open for more incipients. We are not now questioning the treatment in early cases, but simply the order of attack of the problem. No matter whether we adopt the view of von Behring that all tuberculosis is started early in life, or that it may enter the system at any time, the quantity of infection plays a prominent part in both theories, and a reduction of the quantity of infection is logically the thing called for.

The hope that increased resistance may be brought about by some method other than that of using living vaccine need not be abandoned as yet, but it is quite certain that resistance caused by the living virus is the only method we have at present. I do not think, however, that we can afford to play with this dangerous method, whether it be through the use of cultures or early spontaneous infection, but should work against all infection. For the time being there is still opportunity for getting small doses and a mild infection, and it will be time enough to consider this phase of the subject when the sputum of all dangerous cases has been satisfactorily disposed of.

Another result of both experimental and practical studies is the fact that there is a considerable store of natural resistance to the disease and this natural resistance is maintained by a normal life. If it is possible to restore patients with tuberculosis to health by applying natural remedies, such as rest in bed in the open air, and proper diet, it is obvious that we are utilizing the reserve of natural resistance to suppress the early disease. Hence the ordinary, simple, normal life may be relied on to suppress infection even before we are aware of its presence. The idea that we must first become diseased to be protected rests on a false understanding of what immunity, so called, consists of. It is nothing more than tissue reserves called into action. That there is a great underlying store of natural resistance, making early tuberculosis a curable disease in many cases, which has been demonstrated by the indefatigable labors of sanatoriums and private physicians, is the most valuable lesson we have learned, and a most important incentive to normal, hygienic living.

The Development of Learning.—Learning hath his infancy, when it is but beginning and almost childish; then his youth, when it is luxuriant and juvenile; then his strength of years, when it is solid and reduced; and lastly his old age, when it waxeth dry and exhaust.—Bacon, Essays Civil and Moral.

ACUTE PULMONARY ABSCESS TREATED WITH ARTIFICIAL PNEUMOTHORAX *

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In presenting these cases I wish to call attention to a simple, rational method of treating acute abscess of the lung, namely, artificial pneumothorax. This treatment is being universally used in pulmonary tuberculosis. A few cases of its use in old chronic lung abscess have been reported, but I have been able to find only one report in American medical literature of the use of compression of the lung in any condition similar to these acute pulmonary abscesses. Greer[1] reports a case, following pneumonia, of interlobar empyema draining through the bronchus, in which he effected a cure by compressing the lung with nitrogen, all symptoms clearing up in three weeks. I have only two cases to report, but as this work has been done without any previous experience as a guide, and is, so far as I know, an original method of procedure in these acute abscesses, I feel that it is of sufficient importance to report fully at this time.

REPORT OF CASES

Last July, I was called into consultation with Drs. White, Walker and Sterling Ruffin, to consider the best method of treating a case of acute lung abscess which had followed operation on the nose. I advised artificial pneumothorax as being a rational procedure, although its use heretofore had been confined entirely to pulmonary tuberculosis, with the exception of a few cases of chronic lung abscess of a year or more in duration, and one case of interlobar empyema reported by Greer. All modern medical literature advised rib resection with drainage, but I could find no reference anywhere to the use of lung compression.

Case 1.—Mr. H. C. P., aged 32, mining engineer, was injured in an elevator in a mine about the middle of June, 1916, sustaining a fracture of the superior maxilla and nose. He was brought to Washington and operated on, June 17, 1916, by Dr. Walker, who repaired the nasal septum, and Dr. White, who did a herniotomy. The patient's temperature became normal after the operation, and he was apparently making an uneventful recovery. June 26, which was nine days after the operation, his temperature suddenly rose, and ranged between 101 and 102 F. This was accompanied by pain in the chest and considerable sweating. The leukocytes were found to be between 20,000 and 30,000. Examination by Dr. Ruffin showed a moderately marked pleurisy with effusion at the left base, and a small amount of fluid was obtained by Dr. White on aspiration. The temperature and leukocytes remained high, however, and July 12, which was sixteen days after onset of symptoms, the patient suddenly coughed up a considerable amount of purulent sputum, and an abscess was discovered in the lower portion of the right lung. A roentgenogram was taken by Dr. Groover. The symptoms improved considerably during the week following the rupture of the abscess, but the patient was coughing up pus at frequent intervals, and the leukocytes still remained in the neighborhood of 20,000. July 22, the temperature began rising again and remained high, often going above 102. July 29, I was called in and asked concerning the possibility of using compression of the lung. I advised waiting a short time, hoping for a spontaneous recovery, especially in view of the fact that the operation would be somewhat in the nature of an experiment. We were also rather reluctant to collapse the abscessed lung on account of signs of pleurisy with effusion on the opposite side; but the patient gradually became worse. He was losing weight, had profuse sweating at times, considerable expectoration, and the temperature and leukocytes remained high. August 12, one month after the onset of the symptoms, I started a compression of the lung, injecting 150 c.c. of air into the pleural sac. I gave him another small injection, August 14, and a larger one, August 22, following which his temperature became normal, and with the exception of two days, remained so thereafter. He then received the injections about once a week, taking in all ten treatments. All cough and expectoration had stopped by September 15, and the leukocytes became normal, September 20. He gained 20 pounds after starting the pneumothorax, and was discharged as cured, October 15. The only unpleasant symptom caused by the gas in this case was some shortness of breath and cyanosis on one occasion following an unusually large injection.

October 15, Dr. C. W. Richardson called me in to use artificial pneumothorax in a case of acute lung abscess following tonsillectomy. Following is the case history:

Case 2.—Mrs. O. B., aged 27, had the tonsils removed by Dr. C. W. Richardson, Sept. 9, 1916, at the Episcopal Hospital. Three days after the operation she had some pain in the left chest which disappeared in twenty-four hours, and she was discharged, September 15, six days after operation, apparently well. The day after her return home, or seven days after operation, pain in the left chest returned, accompanied by high temperature. One week later she suddenly coughed up a large amount of pus. She returned to the hospital, September 28, with a temperature ranging between 102 and 104, pulse from 120 to 140, and respirations between 30 and 35. Her cough was very frequent and severe, and was accompanied by a large amount of purulent expectoration with a foul odor. A roentgenogram taken by Dr. Selby showed a large abscess in the left lung involving most of the upper lobe and some of the lower lobe. Dr. Charles White was called into consultation, and suggested pneumothorax rather than rib resection. The symptoms persisted until I saw the patient, October 15, which was four weeks after the onset of the trouble. She was in a condition of extreme prostration, and I started a collapse of the lung immediately, although I did not feel at all optimistic as to the outcome. The temperature, pulse and cough improved the day following the first treatment, and, October 17, two days later, I gave her a second treatment. That night she coughed up an unusually large amount of pus, and on the following day the temperature was normal and remained so thereafter. The pulse and respiration became nearly normal, and the cough diminished materially. October 21, another injection was given, and, October 24, just nine days after the beginning of the pneumothorax, the patient was discharged from the hospital and returned home. I gave her a treatment at her home, November 4, and all symptoms have disappeared. She will receive several more injections, about two weeks apart, in order to insure complete healing.

SUMMARY AND CONCLUSIONS

1. The mortality of acute lung abscess treated medically is high, approximately 60 per cent., and the percentage of cures is low, about 10 per cent.

2. The results with rib resection and drainage are better, but we still have a mortality of about 30 per cent. Moreover, this operation often leaves a patient with a draining sinus which may persist for a year or more.

3. Artificial pneumothorax is a rational method of treatment in all cases having a communication with the bronchus, and gives promise of appreciably lowering the mortality and raising the percentage of cure in acute abscess of the lung.

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* Read before the Medical Society of the District of Columbia, Nov. 8, 1916.

[1] Greer, A. E.: Interlobar Empyema Treated by Artificial Pneumothorax, The Journal A. M. A., April 1, 1916, p. 1019.

A COMPARATIVE STUDY OF THICK AND THIN BLOOD SMEARS FOR DIAGNOSIS OF MALARIAL FEVERS

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The difficulties of specific diagnosis in chronic malaria, as well as in many of the more acute manifestations, has been appreciated by physicians generally, and more especially by public health investigators in connection with index determinations. With discovery of the malarial organism by Laveran, in 1880, it first became possible accurately to differentiate malaria from other febrile conditions, and later to separate the three types of infection. The well known thin smear methods of blood examination have distinct advantages for purposes of morphologic study; with the presence in a large proportion of cases, however, of but few parasites in the peripheral circulation, requiring at times hours of study for demonstration, methods have been sought whereby a larger amount of blood could be examined so as to make possible increased accuracy of diagnosis. The first use of thick films was made by Ross, and the technic was modified later by Ruge and others. Dampwolf, in a study of malaria at Dar-es-Salaam, made a series of thick and thin comparisons. Of 9,758 adults and children, 8.5 per cent. were found to be positive on thin smear examination, and of 5,770, 25.7 per cent. were found positive on thick film examination. James, in a study of malaria in the Canal Zone, examined 100 cases by both methods, obtaining 94 per cent. positive, using thin films. Thick unfixed stained specimens were used by Muehlens in an investigation of malaria at Emden, Germany; he found both thick and thin smears positive 131 times, and the thick positive with thin negative, 102 times.

The object of this paper is to present the results of a series of comparative studies of thick and thin blood smears carried on in connection with malarial index examinations of the United States Public Health Service under the direction of the late Surgeon R. H. von Ezdorf, and with a number of cases examined and followed in the Marine Hospital.

While smears were being taken for the purpose of establishing an index in North Carolina, during the fall of 1913, one thin and one thick smear was secured from 3,613 apparently healthy individuals to determine the percentage of carriers in the various localities. For this purpose the thick smears alone were used, while the thin smears were examined to note any blood changes and to make differential counts. From the number of positive findings, 526 "thicks" in which the parasites had been demonstrated in five minutes' time, the $\frac{1}{12}$ oil immersion being used with a 3 × and 4 × ocular, were selected and compared with the corresponding "thins." Of the 526, only 125 of the "thins" were confirmed, thirty minutes being given to a slide. Thus it will be readily seen that 263 hours were consumed in examining the "thins," confirming only 125, while only forty-three and one-third hours were spent on the thick films, in which time 526 were found positive.

The method employed in the dehemoglobinizing and staining of the smears is the one regularly used in the laboratory of the Malarial Investigation Division, and has been fully described by von Ezdorf.[1]

PROCESS OF DEHEMOGLOBINIZING

The slides are placed in a 2 per cent. hydrochloric acid solution in 70 per cent. alcohol, until the smears are thoroughly decolorized, which will require at times from one to several hours. The process may be hastened by first soaking the slide in water for from one to two minutes, until the process of laking out the hemoglobin begins, and then placing in acid alcohol for completion; but the greatest care must be exercised if the latter addition is made, owing to the fact that there is danger of washing the cells out, and consequently lessening the likelihood of finding the parasites. After complete fixation and laking out of the hemoglobin, the slides should be removed from the acid alcohol and washed in a brisk stream of tap water for fifteen minutes, in order to remove and neutralize the acid absorbed. The acid alcohol may be used several times until saturated with hemoglobin.

The stain employed is a modification of the original Giemsa, omitting the glycerin; but any modification of the Romanowsky method may be used.

Stock Solution.—1. Eosin, 1 gm.; distilled water, 1,000 c.c.

2. Azur *II*, 1 gm.; distilled water, 1,000 c.c.

Ten c.c. of each of the two solutions are added to 40 c.c. of water (preferably distilled), and the smears are stained for not less than thirty minutes. This gives a dark purple appearance to the smear, while the chromatin of the parasites takes a dark red stain (polychrome) with blue protoplasm, and the nuclei of the leukocytes take a deep blue. There is an advantage in using 10 c.c. of each of the stock solutions of eosin and azur to 40 c.c. of water, as the weaker solutions (5 c.c. of each to 40 c.c. of water) fail to give the deep red of the chromatin in the usual time for staining. This is especially noticeable in staining gametes. If rapidity is desired, full strength of the stock solution may be used, or good results can be obtained by using Wright's stain in the usual way.

APPEARANCE OF THE THREE TYPES OF PARASITES

It is of interest to give an outline which may serve as a useful guide in differentiating the organism in the thick film, and distinguishing the normal from the abnormal appearance. It is easy for even the most casual observer, provided he is familiar with the normal constituents of the blood, to recognize the malaria organisms in the red blood cells; but it takes the experienced eye to recognize them in a dehemoglobinized preparation, as they no longer retain all of their normal characteristics. Therefore experience, and experience alone, can bring about confidence and accuracy.

Simple Tertian.—(*a*) The young ring forms, as a rule, are larger than those of the estivo-autumnal and quartan.

(*b*) They are found in varying sizes, from the young schizont to the segmenting forms.

(*c*) When the rings are complete, the cytoplasm opposite the chromatin is more likely to be thickened in this form than in any other.

(*d*) The deep red chromatin dot, with the deep blue dash of cytoplasm, not completing the ring, is quite characteristic.

(*e*) The chromatin dot usually occurs singly.

(*f*) The gametes are usually irregular in appearance, and there is less pigment than in the gametes unaffected by acid.

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[1] Von Ezdorf: Reprint 159, Public Health Reports.

(*g*) The segments of the dividing forms are not in close contact as in the unruptured cells of the thin films.

Estivo-Autumnal.—(*a*) In active cases the young ring forms are more numerous than in the tertian and quartan.

(*b*) Rings are smaller and more delicate in appearance, with a small amount of cytoplasm which is not thickened at any point to any appreciable degree.

(*c*) All of the rings are apparently of the same age and size.

(*d*) A double chromatin dot is present in many of the rings.

(*e*) Crescents are present in chronic cases which in many instances will be found to be distorted, with irregular outlines. Some may appear perfectly straight and shrunken on account of acid, but never lose their pigment.

Quartan.—(*a*) The young ring forms are much heavier and contain much more protoplasm than is found in the tertian and estivo-autumnal.

(*b*) The chromatin dot takes a deeper red stain than the other two varieties.

(*c*) There is less tendency toward branching, and the older forms of the rings are much more apt to remain in contact than those of the tertian.

(*d*) Bands with heavy black pigment are present which are not to be found in the other two varieties of organisms.

(*e*) The gametes have less tendency to lose their characteristics than in the tertian. Heavy black pigment is quite characteristic.

ADVANTAGES OF THE METHOD

Besides being a great time-saving device, this method has a great advantage over the thin film method, in that it gives an adequate idea of the degree of infection, both before and at various times during treatment. In addition, the process of dehemoglobinizing and staining works automatically in that the slides may be left in acid alcohol over night and stained for twelve hours or more without any appreciable damage to the parasites.

It is to be remembered in examining the blood of latent cases of malaria for parasites that they are often very hard to find, sometimes only a single parasite being found even in many fields of the thick film (after a few minutes' search) and it has been our custom in such scanty infection to seek for others for confirmation unless the first was distinctly clear and its morphology could be made out easily. The advantages are much greater to find a second parasite by the "thick thin film" when the hemoglobin has not been laked out with water or in the "thick film," when the specimens have been rendered clean by dehemoglobinizing with acid alcohol.

I wish to emphasize that this method, although requiring experience to bring about accuracy in distinguishing the parasites, has a great advantage over any practical method we have at hand, in that it is a time-saving device as well as more accurate and efficient, where chronic cases are involved. Also, if it is employed in the diagnosis of all suspects of malaria, and the patient treated accordingly, certainly it will lessen the likelihood of the mosquito receiving infection, and consequently weaken the endless chain which continues the propagation of malaria, namely, man to mosquito and mosquito to man.

THE LONGEVITY OF ADULT ASCARIDS OUTSIDE THE BODY OF THE HOST

ITS BEARING ON ANTHELMINTIC TREATMENT

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DETROIT

Wharton[1] has recorded experiments in which he kept the eggs of the common roundworm of man, *Ascaris lumbricoides,* alive in Kronecker's salt solution (physiologic sodium chlorid solution to which 0.06 gm. of sodium hydroxid per liter is added) for from six to twelve days. While I was in the service of the federal Bureau of Animal Industry, I made some tests to determine the length of time that the common roundworm of the pig, *Ascaris suum,* could survive outside the body of the host. A number of these worms had been collected and thrown into about a 5 per cent. dilution of liquor formaldehydi and left for a few minutes. They were taken out of the formaldehyd and nine of them placed in Kronecker's solution and nine placed in physiologic sodium chlorid solution. The height at which the solution stood when made up was marked on the glass dishes containing them, and once a day distilled water was added to replace that lost by evaporation. The condition of the worms was noted every day except Sunday, and the room temperature noted every day except Sunday from the fifth day to the end of the experiment.

During the course of the experiment, the room temperature ranged from 27.5 to 30 C. (from 81.5 to 86 F.). The last survivior in the physiologic sodium chlorid solution, a male, was alive on the fourteenth day after removal from the host, and was found dead on the fifteenth day. Three females survived for nineteen days in Kronecker's solution; two of these survived for twenty-four days, and one of these was alive on the twenty-sixth day after removal from the host and was found dead on the following day. In another experiment in which ten specimens of *Ascaris suum* were kept in physiologic sodium chlorid solution, one worm was still alive on the fifteenth day. It appears, then, that ascarids may survive for fifteen days in physiologic sodium chlorid and for twenty-six days in Kronecker's solution.

The particular interest which attaches to this experiment is its bearing on a very common idea in connection with anthelmintic treatment. It is quite commonly believed, and the belief is shared by many physicians and veterinarians, and is expounded in reputable medical literature, especially the older literature, as well as in the advertisements of commercial houses, that when a patient infested with worms is fasted for twelve or twenty-four hours, the worms become hungry as a result of this lack of food, and that when an anthelmintic is administered, especially when it is given in some such vehicle as milk, the hungry worms will ingest the anthelmintic and thereby become poisoned.

There are two or three objections to such a belief. In the first place, when these worms can survive for twenty-six days in such an unnutritious medium as Kronecker's solution, it is unlikely that they would suffer the pangs of hunger after twelve or twenty-four hours in contact with the collapsed walls of the intestine and the relatively abundant content of food, epithelial débris and secretions which is still present after such an interval. Moreover, it is known that the digested or partly digested food in the lumen of the host intestine is not the only food of parasitic worms, and it may constitute in some cases a very small part or no part at all. Garin says that nematodes of the digestive tract live at the expense of the wall of the digestive tract in all cases, and not on food in the lumen. According to Garin, some worms (*Heterakis papillosa*) live on mucus and intestinal juices; others (*Oxyuris, Ascaris lumbricoides, Ascaris suum*) live on epithelial cells; others (*Ascaris rotundata, Physaloptera clausa, Habronema microstoma*) live on lymphatic cells and lymph; others (*Strongylus, Ancylostoma, Graphidium, Trichuris*) live on blood. He states that the attack on the mucosa may be mechanical (with teeth, etc., as in the case of hookworm) or chemical (by digestive secretions, as in the case of whipworms). Much remains to be learned in this connection, but it is known that such forms should suffer no inconvenience whatever during the period in which the host animal is deprived of food. Finally, it is not necessary to suppose that anthelmintics must be voluntarily ingested by the parasitic worms in order that the worms may be destroyed. It is likely that they are either ingested without volition or that they exercise their lethal effects in some cases by absorption, as may be the case with such volatile anthelmintics as chloroform.

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[1] Wharton: Philippine Jour. Sc., 1915, **10**, 19.

In any case, the preliminary fasting, as well as the preliminary purgation, previous to anthelmintic treatment is, of course, a very desirable procedure. But its utility lies in the fact that it removes the bulky food mass which might otherwise protect the worm against the anthelmintic action.

THE COMPLEMENT FIXATION TEST IN THE DIAGNOSIS OF TUBERCULOSIS [*]

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The great desirability of reaching an early diagnosis in tuberculous infection has led to much work being done in laboratories in the search for some test which would make such a diagnosis possible, with the result that the various tuberculin reactions were discovered, as well as other methods, as the serum skin reaction of Bronfenbrenner.[1] All of these diagnostic methods, however, have proved more or less unsatisfactory in the differentiation of active and inactive tuberculosis and a criterion of cure.

As early as 1910, Ruppel and Rickmann[2] made use of complement fixation in the diagnosis of tuberculosis in cattle, using old tuberculin as an antigen, and obtained positive results only in tuberculous animals, although no fixation occurred in some known to be tuberculous. Stimulated by this work, numerous investigators, notably Caulfield and Beatty,[3] Calmette and Massol,[4] and Hammer,[5] demonstrated that complement fixation could be obtained in a certain proportion of cases of human tuberculosis with the use of several different antigens, and it was the studies of Wassermann and Bruck on complement fixation in tuberculosis which led them to investigate, with Neisser, the question of the possibility of devising such a test for the diagnosis of syphilis, an investigation resulting in the discovery of the Wassermann reaction.

Until 1914, however, when Besredka published the results of his work, no complement fixation test for tuberculosis had been devised which was considered of any great value in the diagnosis of the disease or as useful as some other and better known diagnostic measures. In 1913, Besredka[6] described a special method of cultivating the tubercle bacillus on a medium consisting of broth, egg white and egg yolk, and in 1914 he[7] described the results which he obtained with an antigen made by filtering cultures grown on this medium, in the diagnosis of tuberculosis by complement fixation. His results were most encouraging, and were soon confirmed by Inman[8] and by Bronfenbrenner,[9] using antigens prepared by Besredka.

The chief difficulty encountered in devising a complement fixation test for this disease appears to have been in securing a suitable antigen, for enough successful work has been on record for a long time proving that in tuberculosis antibodies are formed which may be demonstrated by complement fixation, and that the test is a true specific reaction and not lipotropic in nature, as is the Wassermann reaction. Various substances have been used for antigens, as suspensions, variously prepared, of the tubercle bacillus; the various tuberculins; extracts of the tubercle bacillus, and antigens prepared by extracting tuberculous tissues. Varying degrees of success have been obtained with many of them, but, as has been stated, until the use of Besredka's antigen, none had given results which made the test of practical value to the physician.

In 1915, I[10] described my results with complement fixation in tuberculosis, using an antigen prepared from several strains of the human tubercle bacillus grown on an alkaline broth containing egg white and egg yolk, a medium practically identical with that employed by Besredka; but the antigen, instead of being a simple filtrate of the culture, was prepared by extracting with alcohol in the shaking machine and in the incubator, after which it was filtered through a fine filter paper and titrated for its antigenic qualities. It will thus be seen that the antigen which I first used consisted of a filtrate of an alcoholic extract of several strains of the human tubercle bacillus plus the culture medium in which the organisms had been grown. The most important factor in this antigen, aside from the thorough extraction of the bacilli, consisted in its being polyvalent, this form of antigen being suggested by the fact that there are marked variations of both human and bovine tubercle bacilli in both cultural relations and infective power. I have since used antigens made in the same manner but prepared from the surface growth of the various strains of the bacillus grown on Vedder's starch medium, and these antigens have given even better results than the one originally used, and have the advantage that they are not contaminated with the medium on which the bacilli are grown, and which, in my original antigen, appeared to render it very unstable as regards antigenic power.

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[*] From Department Laboratory No. -2, Southern Department, U. S. Army, El Paso, Texas.

[*] Read at the meeting of the El Paso County Medical Society, Nov. 6, 1916.

[1] Bronfenbrenner, Joseph: Proc. Soc. Exper. Biol. and Med., 1914, **11**, 90.

[2] Ruppel and Rickmann: Ztschr. f. Immunitätsforsch., 1910, **6**, 34.

[3] Caulfield and Beatty: Jour. Med. Research, 1911, **24**, 122.

[4] Calmette and Massol: Compt. rend. Soc. de biol., 1912, **73**, 120.

[5] Hammer: Deutsch. tierärztl. Wchnschr., 1912, **20**, 593; München. med. Wchnschr., 1912, **59**, 1750.

[6] Besredka, A.: Compt. rend. Acad. d. Sc., 1913, **156**, 1633.

[7] Besredka, A.: Ztschr. f. Immunitätsforsch., 1914, **21**, 77.

[8] Inman: Compt. rend. Soc. de biol., 1914, **76**, 251.

[9] Bronfenbrenner, Joseph: The Complement Deviation Test with Besredka's Tuberculin, and the Occurrence of Tuberculosis Among Syphilitics as Diagnosed by This Test, Arch. Int. Med., December, 1914, p. 786.

[10] Craig, C. F.: Am. Jour. Med. Sc., 1915, **150**, 781.

Since the publication of my paper a large amount of research has been devoted to this subject, and efforts have been made to improve the antigen and render its preparation more simple. This appears to have been accomplished by Miller and Zinsser,[11] who have used with marked success an antigen prepared by grinding the tubercle bacilli with table salt in a suitable receptacle and then adding distilled water to isotonicity. The resulting mixture is used as the antigen. With this very simple antigen the authors mentioned have secured most excellent results which, if confirmed, would appear to settle the question of the antigen in the complement fixation test for tuberculosis. They recognize the importance of using several strains of the bacillus, saying, "It seems, however, to be important that a number of different strains should be used — that is, that the antigen should be polyvalent."

Before I discuss my own results with this test, a brief review of the results of recent investigators of the subject will be of interest.

In the first stage of tuberculosis Besredka found the reaction always positive, in the second stage nearly always positive, and in the third stage the reaction was often partial or negative. However, he found that with his antigen syphilitic serums often gave a positive reaction and that sometimes normal serums reacted positively.

Inman, using Besredka's antigen, tested 100 cases of pulmonary tuberculosis and found 95 per cent. positive; of 50 persons suspected of pulmonary tuberculosis but having no definite symptoms sufficient to base a diagnosis on, 60 per cent. gave a positive reaction. Of 100 patients in hospital for conditions other than tuberculosis, 24 per cent. gave positive results but never in high dilutions. He concluded that a positive reaction, especially in high dilutions, should be considered as evidence of an active tuberculous lesion, while a negative reaction indicated either the absence of the disease or an arrest of a former lesion.

Debains and Jupille,[12] using the same antigen, obtained the following results: In Stages 1 and 2, with the patients in fair condition, 90.3 per cent. gave a positive reaction; in Stages 2 and 3, with the patients in bad condition, 81.3 per cent. gave a positive reaction. They found that 24 per cent. of serums giving a positive Wassermann reaction also reacted positively with the Besredka antigen, while 17.3 per cent. of patients suffering from other conditions gave a positive reaction, and 3.2 per cent. of normal persons tested were also positive.

Bronfenbrenner,[9] working with Besredka's antigen, obtained 98.3 per cent. of positive reactions in active tuberculosis, and 55.5 per cent. of positives in convalescents presenting no symptoms of the disease, while cases strongly suspected of tuberculosis but in which no definite diagnosis had been made gave 75 per cent. of positive reactions. In treated and untreated cases of syphilis, however, he obtained 24 per cent. of positive reactions with this antigen, and 8 per cent. of his controls reacted positively; but he states that the substance or substances in Besredka's antigen giving these false positive reactions can be removed, and that the antigen, thus purified, is specific for tuberculosis. In another paper, Bronfenbrenner,[13] in discussing the causes of the different results obtained with this antigen, calls attention to the importance of a polyvalent antigen in this test. He says, "Moreover, it followed from our comparison of different tuberculins used as antigens in the complement deviation test that in tuberculosis (as well as in other diseases) there exists a certain variability of specificity with different strains of tubercle bacilli, which necessitates, probably, the preparation of a polyvalent antigen containing not only several human but also bovine strains."

Miller and Zinsser, using their antigen, obtained the most favorable results that have yet been reported. In thirty-two patients in Stage 1, all with active symptoms, but sixteen of whom were negative for tubercle bacilli in the sputum, all gave a positive reaction; in 110 patients in Stage 2, all but twelve of whom showed tubercle bacilli in their sputum, 108, or 98 per cent., gave a positive reaction; of eighty-four cases in Stage 3, all but one case having a positive sputum, eighty-three, or 98 per cent., gave a positive reaction. The case that was negative is stated to be very far advanced.

Miller[14] writes that he has tested 113 inactive or arrested cases, and that of these only ten were positive.

As regards doubtful cases, Miller and Zinsser state that they tested 140 such cases, of which thirty-two, or 22.8 per cent., were positive. Of forty-five cases giving a positive Wassermann reaction, two gave a positive reaction with this test, but one of these had a tuberculous peritonitis. In comparing this test with the skin tests with tuberculin, they state that nearly all the healed cases gave positive tuberculin reactions, but the complement fixation test was negative.

Since the publication of my original paper I have continued observations on this subject as opportunity presented, and further investigation has only strengthened my conviction that in the complement fixation test for tuberculosis we possess the most valuable diagnostic method that has yet been devised for the early recognition of the disease and the best index of its activity.

The general technic of the test is similar to that employed in making the Wassermann test, which has been described in a previous communication.[15] A human hemolytic system is used instead of sheep's corpuscles, guinea-pig serum is used as complement, and the serum to be tested is inactivated at 56 C. (132.8 F) for one-half hour. The antigen, as has been stated, consists of an alcoholic extract of several strains of the tubercle bacillus prepared as described. The final reading of the result of the test is made within two hours after the last incubation in the water bath, an important point, for even the strongest positive reactions may become partially or completely negative, with this test, if the tubes are allowed to stand, even in the ice box, longer than two hours. The antigen should be titrated frequently against a known positive serum, as it loses strength much more rapidly than do the antigens employed in the Wassermann test.

The tests made in this study of the subject may be divided into three groups as follows: Group 1, cases in which the diagnosis was pulmonary tuberculosis, either active or inactive; Group 2, cases in which the diagnosis was of some other disease; Group 3, normal individuals.

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[11] Miller and Zinsser: Proc. Soc. Exper. Biol. and Med., 1916, 23, 134.

[12] Debains and Jupille: Compt. rend. Soc. de biol., 1914, 76, 199.

[13] Bronfenbrenner, Joseph: Biochem. Bull., 1914, 3, 381.

[14] Personal communication to the author.

[15] Craig and Nichols: Bull. 3, Surgeon General's Office, 1913.

RESULTS OF THE TEST

Group 1.—In this group the cases were divided into three general classes: Class 1, incipient cases of tuberculosis; Class 2, moderately advanced cases, and Class 3, far advanced cases. In addition the cases were classified as *active and inactive*,[16] and each of the classes mentioned contained examples of each of these types of infection.

The total number of cases of tuberculosis tested has been 209, of which 183, or 87.5 per cent., gave a positive reaction, and twenty-six, or 12.4 per cent., gave a negative reaction. In 159 of the cases which reacted there was absolute inhibition of hemolysis, while in twenty-four there was almost complete inhibition. It has been found by experience that with this test a reaction should generally be interpreted as positive in which there is over 50 per cent. of inhibition of hemolysis, as a considerable number of tuberculous cases react weakly, especially if the disease is progressing rapidly.

TABLE 1.—RESULTS OF THE COMPLEMENT FIXATION TEST IN PULMONARY TUBERCULOSIS WITH REFERENCE TO THE ACTIVITY OF THE INFECTION

Activity	Positive		Negative		Total No.
	No.	Per Cent.	No.	Per Cent.	
Active	144	96.6	5	3.3	149
Inactive	39	65.0	21	35.0	60
Totals	183	87.5	26	12.4	209

Table 1 gives the results of the complement fixation test in the total number of cases of tuberculosis tested divided into active and inactive infections. It will be noted that the percentage of positive reactions is greater in the active than in the inactive cases of the disease, being 96.6 per cent. in the active and but 65 per cent. in the inactive cases. In considering these figures, it should be remembered that many of the inactive cases that reacted positively were believed to be cured and no clinical symptoms were present, while, on the other hand, some of these cases were considered merely quiescent and still showed tubercle bacilli in the sputum. The test was most useful in this class of cases in showing that so many persons suffering from incipient tuberculosis and thought to have been permanently arrested or cured reacted positively, and demonstrates the value of the test as a criterion of cure in this disease.

As I have stated in a previous article,[17] "The percentage of positive results in active tuberculosis of the lungs, i. e., 96.6 per cent., is as high as that obtained in my experience with the Wassermann test in secondary syphilis, for in 2,200 cases of syphilis in that stage of the disease I have obtained positive reactions in 96.2 per cent. of the cases."

In all the cases of inactive tuberculous infection tested, the symptoms of the disease had disappeared, and in thirty-eight of them the sputum was negative for the tubercle bacillus. From the percentage of positive results obtained in this class of cases it is evident that the complement fixation reaction is a very valuable method of detecting infections which are still active, although clinically the patients may appear to be cured. The results prove that complement binding bodies are present in the blood serum of tuberculous patients when symptoms of infection are slight or absent, and it is my belief, and that of most recent investigators, that a positive reaction with this test means the presence of an active focus of infection somewhere in the body, and that the test will prove of the greatest value in differentiating really cured infections from those which are merely quiescent. It may be stated that many of the patients who reacted positively, and at that time were thought to be cured, have since developed symptoms, and the tubercle bacilli have reappeared in their sputum.

As has been stated, the tuberculous patients were divided into three classes: incipient cases, moderately advanced cases and far advanced cases. Table 2 gives the results of the test in the three classes mentioned. There are several points of interest which merit consideration. In the incipient cases it will be noted that those classed as active gave a positive percentage of 96.7, while the inactive cases gave 62.5 per cent. of positive results. In all of the latter cases, symptoms were practically absent and the sputum was negative for the tubercle bacillus in all the cases giving a positive reaction, fifteen in number. Though this was so, complement binding bodies were present in sufficient amount to give a positive reaction, the only symptom of tuberculosis which could be demonstrated in these cases at the time they were examined.

The highest percentage of positive results occurred, however, in active infections in the moderately advanced class of patients, in which, of sixty-two active infections, sixty-one, or 98.3 per cent., gave a positive reaction. The percentage of positive results in the inactive cases, thirty-two in number, was 68.7, and here again the great value of the test is noted in demonstrating that these cases, although quiescent or cured clinically, were still active serologically. The subsequent history of many of these inactive and moderately advanced cases was followed, and at least 80 per cent. of them are known to have relapsed clinically.

TABLE 2.—COMPLEMENT FIXATION IN TUBERCULOSIS IN RELATION TO THE CLASS OF INFECTION

Class	Activity	Positive Reaction		Negative Reaction		Total No.
		No.	Per Cent.	No.	Per Cent.	
1. Incipient cases	Active	30	96.7	1	3.2	31
	Inactive	15	62.5	9	37.5	24
		45	81.8	10	18.1	55
2. Moderately advanced cases	Active	61	98.3	1	1.6	62
	Inactive	22	68.7	10	31.2	32
		83	88.3	11	11.6	94
3. Far advanced cases	Active	54	96.4	2	3.5	56
	Inactive	4	100.0	0	0.0	4
		58	96.6	2	3.3	60

Contrary to what might be thought, the positive reactions in the far advanced and active cases were less than in either the incipient or moderately advanced active infections. This has been the experience of others in studying this test, and is explained apparently by the fact that in certain far advanced cases of tuberculosis, complement binding bodies disappear from the blood, the severity of the infection apparently preventing their development. The difference in results was slight, however, the percentage of positive reactions in the far advanced cases being 96.4, as compared with

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[16] The term "inactive" as used here indicates cases in which no active clinical symptoms are present. Many of these cases are simply latent and, as shown by the test, really have an active focus somewhere in the body just as occurs in syphilis. In other words, there are enough living bacilli present to give rise to the body or bodies producing complement fixation, and, in my opinion, as long as this is true such cases cannot be considered as cured.

[17] Craig, C. F.: Am. Jour. Med. Sc., 1915, **150**, 787.

96.7 per cent. in the incipient cases and 98.3 in the moderately advanced cases.

It will be noted that there were four far advanced cases which were classed as inactive. In these cases the clinical symptoms were in abeyance and the lesions in the lung were quiescent. In all of them the test gave a positive reaction, thus indicating the presence of an active infection, although symptoms and physical signs spoke in favor of an arrestment of the disease.

Group 2.—This group included all cases tested having a clinical diagnosis of some disease other than tuberculosis. In all, 450 persons were tested, of whom 350 were suffering from syphilis and gave a positive Wassermann reaction. Of the total number examined, twenty-two, or 4.4 per cent., gave a positive reaction with the complement fixation test for tuberculosis. Of the positive cases, eighteen were syphilitics, while the remaining four were all suffering from disease of the respiratory tract, four from acute bronchitis and two from acute pharyngitis.

As noted, eighteen, or 5.4 per cent., of the 350 syphilitics tested gave a positive reaction with this test. That the positive result was not due to syphilis, however, I believe is demonstrated by the fact that so small a proportion of syphilitics gave such a result, and the history of many of the cases which did react positively. Thus, five had definite lesions in the lung; three had a rise of temperature in the afternoon at the time the test was made, and four afterward showed tubercle bacilli in the sputum. The remainder, while showing no symptoms of the disease, were, in all probability, in the incipient stage of tuberculosis. In my previous paper on this subject I gave the results of the test in 150 syphilitics, all positive to the Wassermann test, and all negative with the complement fixation test for tuberculosis. The present figures are not so good as this, but the few cases which have reacted positively can, without much doubt, be considered as tuberculous as well as syphilitic, for it would be strange, indeed, if one could test 350 syphilitics without finding a certain proportion infected also with tuberculosis.

Of the patients suffering from other diseases at the time the test was made, all gave a negative reaction with the exception of the four mentioned, all suffering from acute conditions of the respiratory tract. It is impossible to state at this time whether or not these cases are tuberculous, but from my experience with the test I believe that they are. A large number of diseases were tested, and with the exceptions mentioned the reactions were negative in all. I believe that the results obtained demonstrate that this test will not give positive results with diseases other than tuberculosis.

Group 3.—The persons tested in this group were young healthy soldiers, free from any sign or symptom of tuberculosis. Of this class there were 200 men tested, and but one, or 0.5 per cent., gave a positive reaction. This one man, it is interesting to note, developed an afternoon rise of temperature, night sweats, and loss of weight shortly after the test was made, and has since had two hemorrhages; but no tubercle bacilli have ever been found in his sputum.

The fact that the complement fixation test for tuberculosis was negative in so large a number of persons suffering from other diseases and in health speaks strongly in favor of its being a specific test for active infection, for among this number of persons there must have been many with encapsulated tuberculous lesions, in whom any of the tuberculin tests would have given a positive reaction.

COMMENT

The work here recorded, as well as the latest observations of Bronfenbrenner, Miller and Zinsser, and others, demonstrates, I believe, that the complement fixation test for tuberculosis has reached a stage of development at which it can be used with confidence by the practitioner in the diagnosis and as a criterion of the cure of tuberculous infection.

From my own experience I can mention many examples of tuberculous infection diagnosed by this means which it would have been impossible to diagnose with any other method at our command, and in so-called cured infections, when this test gave a positive result, a clinical relapse occurred in the vast majority of the cases that were followed. While it certainly would be premature to consider that a negative result with this test indicates cure or absence of the disease, the fact remains that the test is negative in many cases that have not relapsed clinically, and in healthy persons and in diseases other than tuberculosis. Repeated negative results, extended over a considerable period of time, should be sufficient, in my opinion, to warrant a statement that the infection is cured or that the disease is not present, in instances in which a diagnosis is in doubt. As with the Wassermann test, a single negative is of little value in excluding the disease. Variations occur in the strength of the reaction from day to day comparable with those which I have shown to occur with the Wassermann reaction, and these variations may be sufficient to render a positive reaction negative or weak at intervals, so that a single negative reaction should never be relied on in excluding tuberculosis. Although these variations in the strength of the reaction occur very rarely, the fact that they do occur renders a single negative test of little value if one desires to exclude tuberculosis.

I believe that a positive reaction with this test indicates the presence of an active tuberculous focus, and that as long as the reaction remains positive, the patient should not be considered as cured. This belief has strengthened with every test which I have made, and has been confirmed by the results obtained with the test by recent investigators. I believe that the complement fixation test for tuberculosis has come to stay, and that it is only a question of time before it will be as widely used and as useful to the physician as is the Wassermann test for syphilis.

Rice Growing and Malaria.—So far as we know, the best example of the influence of an economic situation on public health work is that from California which began with the new commercial enterprise, rice growing. In the four years since rice was first grown for commercial purposes in the state, the returns have been very great, and the acreage has increased fully 100 per cent. Rice growing makes possible the cultivation of land otherwise useless, with a profit of millions of dollars to the state. Obviously, here is an industry that has come to stay. But, unfortunately, the conditions ideal for the cultivation of rice—land flushed with standing or gently moving water—are ideal also for the growth of mosquitoes. Of the myriads of mosquitoes found during the long summer season in rice areas, 70 per cent. were of the *Anopheles*, or malaria-bearing variety. These sections of the state were malarial enough before the rice growing began; of late the increase of the disease has been so marked as to constitute a menace and to require definite measures for abatement in individual districts.—Alice Hamilton, *Survey*, Jan. 20, 1917.

SYPHILIS AS AN ETIOLOGIC FACTOR IN MONGOLIAN IDIOCY *

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The etiology of Mongolian idiocy remains as obscure today as when first described by Downs[1] in 1866. As one might expect *a priori,* the theories are numerous and comprehensive. The help of the omnipresent and omnipotent *Spirochaeta pallida* and *Bacillus tuberculosis* has frequently been invoked.

TABLE 1.—SUMMARY OF PATERNAL HISTORIES

Father	Number of Case												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Age at present.....	46	35	42	29	46	42	36	48	50	38	27	39	42
Age when married.	25	22	23	22	42	22	32	39	31	22	21	26	22
Age when patient was born.........	43	33	41	25	45½	39	33	48	50	33	26	37	33
History of syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—
History of venereal infection......	—	—	—	*	—	—	—	—	—	—	—	—	—
Present or past evidence of syphilitic infection....	—	†	—	—	—	—	—	—	—	—	‡	§	—

* Had gonorrhea.
† Had diffuse rash on body, itching, which lasted two months when 25 years old.
‡ Has skin eruption; frequent headaches.
§ Has heart trouble.

Downs, in his original communication, favored the tuberculosis hypothesis. To quote, "They [Mongolian idiots] are for the most part instances of tuberculosis in the parents." It would be beyond the scope of this paper to enter into an exhaustive consideration of the various opinions concerning the etiology of this characteristic type of idiocy.

We merely wish to go on record as opponents to the recent views of Stevens,[2] who tries to incriminate congenital syphilis as the underlying cause. Stevens' views are best appreciated by quoting from his latest published article:[3]

> In a previous article I presented results which indicated, with a high degree of probability, that the condition known as Mongolian idiocy was one of the manifestations of congenital syphilis.
>
> At the outset it may be stated that the findings in these cases [Series 2] confirm, in almost every particular, the results of Series 1.
>
> While the serologic tests seem to demonstrate *beyond question* that this condition is a result of syphilitic infection, it is not, however, to be considered a form of frank cerebrospinal syphilis. The characteristic facies of the Mongolian syndrome and the dwarfing of the body make it appear probable that the syphilis acts primarily on some of the endocrine organs, possibly the pituitary body. [Italics ours.]

A critical review of Stevens' articles shows that his deductions are scarcely warranted by the data presented.

All the conclusions are based on an examination of the blood serum and the cerebrospinal fluid, particular significance being attached to the cerebrospinal fluid examination, especially the results of the globulin and colloidal gold chlorid tests. The latter test, when positive, is probably due to an increased globulin, which in turn predicates inflammatory or irritative involvement of the central nervous system. The logical conclusion from Stevens' findings, provided they were accepted, would be that mongolism is a cerebrospinal type of congenital syphilis and not a form of syphilis acting "primarily on some of the endocrine glands, possibly the pituitary body."

In the report of Stevens' second series of eighteen cases, he says:

> 1. The Wassermann reaction on the blood serum [Noguchi modification] . . . was positive in 33 per cent. (six out of eighteen) of the cases.

According to the table given, two are designated with + + +, two with + +, and two with +. On the basis of these figures it hardly seems justifiable to us to state without reservation that the reactions were positive in 33 per cent. Those with the + and + + should at least have been repeated.

Churchill and Austin[4] state that "the + + + reaction gives a positive diagnosis, but in the absence of any suspicion clinically, a repetition of the + + + reaction should be obtained. When the clinical picture is entirely negative and the Wassermann test is + or + +, a repetition on the blood collected later will frequently be negative." Furthermore, from the description of the technic it appears that only one antigen was used, "acetone insoluble extract of beef heart." At least two antigens, and better three or four, should have been used.

> 2. The Wassermann reaction on the spinal fluid was positive in 11.1 per cent. (two out of eighteen) of the cases.

These reactions Stevens designates by a single plus (+).

> 3. Pleocytosis was present in no case.

TABLE 2.—SUMMARY OF MATERNAL HISTORIES

Mother	Number of Case												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Age at present.....	43	32	42	26	44	38	30	41	43	40	23	37	45
Age when married.	21	19	22	19	40	16½	26	31	24	24	17	24	25
Age when child was born.............	39	30	39	21	43½	35	27	41	43	35	22	35	36½
History of syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—
History of venereal infecton.......	—	—	—	—	—	—	—	—	—	—	*	—	—
Number of pregnancies...........	4	6	10	2	6	8	2	8	8	8	4	6	8
Number of miscarriages............	1	0	0	0	1	1	0	0	1	0	1	0	0
Age of fetus in mo. at miscarriage...	6	..	..	..	3	6	..	..	2	..	2		
Which pregnancies miscarried.......	1st	..	..	..	4th	1st	..	..	5th	..	2d		
No. of stillbirths...	0	0	0	0	0	0	0	0	0	0	0	0	0

* Had leukorrhea several years ago.

This seems to show an absence of any meningeal involvement, and is hard to reconcile with an increase of globulin in every case.

> 4. The globulin content was increased in 100 per cent.

This is difficult to reconcile with an absence of pleocystosis in every case.

> 5. The gold chlorid reaction was present in 100 per cent. of the cases [90 per cent. in the first series].

The analysis of the chart shows that this assertion is scarcely warranted. Cases 3, 4, 8, 9, 10, 19 and 20 (seven out of the entire twenty-one cases, or 33 per cent.) show practically negative curves. As authority for this assertion we quote Miller, Brush, Hammers and Felton[5]:

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* From the Department of Pediatrics, Western Reserve University, School of Medicine, and the Babies' Dispensary and Hospital.

[1] Downs, J. L.: Clinical Lectures and Reports, London Hospital, 1866, **3**, 259.

[2] Stevens, H. C.: Mongolian Idiocy and Syphilis, The Journal A. M. A., May 15, 1915, p. 1636; The Spinal Fluid in Mongolian Idiocy, ibid., April 29, 1916, p. 1373.

[3] Stevens, H. C.: Footnote 2, second reference.

[4] Churchill, F. S., and Austin, R. S.: Frequency of Hereditary Syphilis, Am. Jour. Dis. Child., October, 1916, p. 355.

TABLE 3.—SUMMARY OF HISTORIES OF THE OTHER OFFSPRING

Offspring	Number of Case 1	2	3	4	5	6	7	8	9	10	11	12	13
Number of children living......	4	5	8	2	5	8	2	6	7	6	3	4	5
Present or past evidence of syphilis..............	—	—	—	—	—	—	—	—	—	—	—	—	—
Skin at birth.....	—	—	—	—	—	—	—	—	—	—	—	—	—
Bloody rhinitis..	—	—	—	—	—	—	—	—	—	—	—	—	—
Bones...........	—	—	—	—	—	—	—	—	—	—	—	—	—
Eyes.............	—	—	—	—	—	—	—	—	—	—	—	—	—
Ears.............	—	—	—	—	—	—	—	—	—	*	†	—	—
Teeth............	—	—	—	—	—	—	—	—	—	—	†	—	—
Number of children dead........	0	1	2	0	1	0	0	2	1	2	1	2	3
Cause of death§...	..	—	—	..	—	..	..	—	—	—	—	—	—
Physical and mental condition of living children§..	—	—	—	—	—	—	—	—	—	—	?	—	—

* One child has chronic suppurative otitis media.

† Five children had chronic suppurative otitis media; teeth in all children poor; one child has edema of feet.

§ The minus sign means that nothing suggestive of syphilis could be determined.

> In spinal fluids otherwise negative, the occurrence of the gold reactions of this type (1111000000) is the equivalent of an absolutely negative finding and should be regarded as such. A colloidal gold reaction of the type 1121000000 is so commonly seen in spinal fluids otherwise normal that it probably possesses no significance, especially in cases clinically not luetic.

Thus of Stevens' first series the gold chlorid is positive in 66⅔ per cent., instead of 90 per cent. as claimed. In the second series, eliminating Cases 2, 10, 11, 12 and 18, we find the colloidal gold reaction positive in only 72.2 per cent., instead of 100 per cent. as claimed.

> 6. The color changes of the gold chlorid reaction are typical of cerebrospinal syphilis.

The author evidently considers anything from 1211000000 to 1244421000 as a positive reaction typical of cerebrospinal syphilis.

REPORT OF REINVESTIGATION

By a simple analysis of Stevens' reports, the evidence does not seem to justify the conclusions. Consequently, we have repeated the work on a different series of patients, thirteen in number, who were seen at the Babies' Dispensary and Hospital and the Cleveland City Hospital. In all these cases, in addition to careful personal and family histories, there have been meticulous physical examinations supplemented by the usual laboratory procedures.

Only typical cases of Mongolian idiocy have been used in this series, and we consider this important because in a few cases the question of differential diagnosis between mongolism and congenital syphilis is not easy. At present, we have under observation a congenital syphilitic in whom the fissured tongue, lips, depressed bridge of the nose, facies, physique and mental status strongly suggest mongolism.

In the cases reported by Van der Bogert,[6] the first child was a typical Mongolian, the second normal, and the third and fourth twins. One of the latter, on account of congenital syphilis, had a Mongolian facies, and is similar to the foregoing.

Laboratory Technic.—The Wassermann test of the blood serum and spinal fluid was done in all of the thirteen cases. In the performance of this test, four different antigens (all carefully titrated for antigenic, anticomplementary and hemolytic properties) were used in each case. With the exception of the antigens, the original Wassermann technic was followed, half quantities being employed. Stated in terms of the half quantities, we used 0.1 c.c. of blood serum and from 0.25 to 1 c.c. of spinal fluid, as shown in the accompanying tables. The antigens used were: (*a*) an alcoholic extract of guinea-pig or beef heart; (*b*) an alcoholic extract of human heart; (*c*) antigen A + 0.4 per cent. cholesterin, and (*d*) antigen B + 0.4 per cent. cholesterin.

TABLE 4.—SUMMARY OF PERSONAL HISTORIES

Patient	Number of Case 1	2	3	4	5	6	7	8	9	10	11	12	13
Which pregnancy..	4	6	10	2	6	7	1	8	9	6	4	6	8
Present or past evidence of syphilis..............	—	—	—	—	—	—	—	—	—	—	—	—	—
Skin at birth.....	—	—	—	—	—	—	—	—	—	—	—	—	—
Bloody rhinitis..	—	—	—	—	—	—	—	—	—	—	—	—	—
Bones...........	—	—	—	—	—	—	—	—	—	—	—	—	—
Eyes.............	—	—	—	—	—	—	—	—	—	—	—	—	—
Ears.............	—	—	—	—	—	—	—	—	—	—	—	—	—
Teeth............	—	—	—	—	—	—	—	—	—	—	—	—	—

The cerebrospinal fluids were also examined for the cell count, Ross-Jones and Pandy tests for increased

TABLE 5.—LABORATORY FINDINGS

Case No.	Blood: Wassermann Reaction: Amount of Serum Used, C.c.	Reaction with Antigen Number 1	2	3	4	Cerebrospinal Fluid: Wassermann Reaction: Amount of Fluid Used, C.c.	Reaction with Antigen Number 1	2	3	4	Cells per C.mm.	Globulin: Pandy	Ross-Jones	Colloidal Gold Test 1	2	3	4	5	6	7	8	9	10
1	0.1	—	—	—	—	0.5	—	—	—	—	1	—	—	0	0	0	0	0	0	0	0	0	0
2	0.1	—	—	—	—	0.25 0.5	—	—	—	—	2	—	—	0	0	0	0	0	0	0	0	0	0
3	0.1	—	—	—	—	0.25 0.5	—	—	—	—	4	—	—	0	0	0	0	0	0	0	0	0	0
4	0.1	—	—	—	—	0.25 0.5	—	—	—	—	3	—	—	0	0	0	0	0	0	0	0	0	0
5	0.1	—	—	—	—	0.25 0.5	—	—	—	—	2	+	—	0	0	0	1	1	1	1	0	0	1
6	0.1 0.2	—	—	—	—	0.25 1.0	—	—	—	—	3	+	—	1	2	2	2	1	0	0	0	0	0
7	0.1 0.2	—	+	—	—	0.5 1.0	—	—	—	—	4	—	—	0	0	0	0	0	0	0	0	0	0
8	0.1 0.2	—	—	—	—	0.25 0.5	—	—	—	—	3	—	—	0	0	0	0	0	0	0	0	0	0
9	0.1	—	—	—	—	0.25 0.5	—	—	—	—	2	—	—	0	0	0	0	0	0	0	0	0	0
10*	0.1	—	—	—	—	0.5 1.0	—	—	—	—	4?	+	+										
11	0.1	—	—	—	—	0.25	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0
12	0.1	—	—	—	—	0.5	—	—	—	—	4	—	—	0	0	0	0	0	0	0	0	0	0
13	0.1	—	—	—	—	0.25	—	—	—	—	3	—	—	0	0	0	0	0	0	0	0	0	0

* Six antigens were used. No colloidal gold test was done in this case, in which there were a few erythrocytes in the spinal fluid.

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[5] Miller, S. R.; Brush, N. D.; Hammers, J. S., and Felton, L. D.: A Further Study of the Diagnostic Value of the Colloidal Gold Reaction, Together with a Method for the Preparation of the Reagent, Bull. Johns Hopkins Hosp., 1915, **26**, 391.

[6] Van der Bogert, Frank: Congenital Syphilis, Simulating Mongolism, in One of Twins, Am. Jour. Dis. Child., January, 1916, p. 55.

globulin, and the colloidal gold test. One spinal fluid containing erythrocytes was, of course, used only for the Wassermann reaction.

In preparing the gold solutions, great care was exercised, and only solutions which were clear to both transmitted and reflected light were used. Triply distilled water from a block tin condenser was used, and all glassware was cleaned as directed by Miller, Brush, Hammers and Felton.[5]

Family Histories.—1. We have succeeded in obtaining parental histories from all of the thirteen patients. In none of these was there a frank history of any syphilitc infection, or any subsequent symptoms or signs of syphilis. Had such evidence been obtained, we would have made special note of it, as we can appreciate the possibility of a coexisting mongolism and congenital syphilis. A summary of these histories is given in Tables 1 and 2.

2. The histories of all brothers and sisters, both living and dead, were obtained, and the causes of death were particularly inquired into. In no case could death be attributed to a syphilitic infection. In no family was more than one Mongolian encountered. This has been a common observation, although Babonneix and Villette[7] recently report four cases in one family. It seems more than likely that if mongolism were due to syphilis in the parents, the occurrence of more than one case in a family would be not infrequent. Details of these histories are given in Table 3.

Personal Histories.—The histories of the patients were carefully taken and can all be considered reliable. None of the usual manifestations of congenital syphilis could be found (Table 4).

The complete laboratory findings in all of our cases are given in Table 5. The serum Wassermann was negative in all cases. In Case 7, there was one + reaction with Antigen 2 (cholesterin antigen). The Wassermann reactions on the cerebrospinal fluids were consistently negative. No special fluid gave a cell count above four cells per cubic millimeter.

The globulin tests in Cases 5 and 6 were positive to the Pandy test, but negative to the Ross-Jones test, while Case 10, which contained a few red blood cells, gave a positive reaction to both.

The colloidal gold test was negative in every instance, and in only two cases did the reaction read as high as 2. It is needless to say that no test was done in Case 10, the spinal fluid in which contained a few red blood cells.

CONCLUSIONS

From careful anamneses, physical examinations and the laboratory tests now available, it cannot be stated at the present time that mongolism is due to congenital syphilis.

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[7] Babonneix, L., and Villette, J.: Arch. de méd. d. enfants, 1916, **19**, 478.

Smoking Fresh Water Fish.—In 1915 the United States Bureau of Fisheries at Fairport, Mich., began experimenting with the smoking of fresh water fish. These experiments have yielded interesting results. The bowfin, or grindle, which has been regarded as practically worthless, has been found to yield a good product, when properly smoked, with excellent texture and flavor. Further experiments are being made to obtain a product of improved appearance and quality. The bowfin is abundant in the Great Lakes and in sluggish waters from Minnesota and New York to Florida and Texas. By this means another food product has been added to the general supply.

NOTE ON THE BACTERIOLOGY OF THE SPINAL FLUID IN POLIOMYELITIS AND SCARLET FEVER

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CHICAGO

During the routine examination of a patient admitted to the contagious ward of the Cook County Hospital with a diagnosis of scarlet fever, a lumbar puncture was performed because of marked rigidity of the neck. The spinal fluid was under increased pressure, the cell count was 28, principally of lymphocytes, and the globulin tests were positive. The spinal fluid was inoculated into dextrose broth and dextrose agar, and a pure culture of a small gram-positive coccus was obtained within thirty-six hours. The organism exhibited both the cultural and the morphologic characteristics of the micrococcus described by Nuzum[1] as occurring in the cerebrospinal fluid in poliomyelitis. Repeated inoculations yielded pure cultures of the same micro-organism. From the nasal discharge a micrococcus was obtained resembling the organism in the spinal fluid. The organism from the nasal secretion was agglutinated by the antipoliomyelitic serum[2] in a dilution of 1 : 500; control organisms did not so agglutinate.

Clinically the case resembled the cerebral type of poliomyelitis, and the subsequent course of the disease made the admitting diagnosis quite doubtful. Later the child developed bronchopneumonia from which he died. The necropsy confirmed the diagnosis of poliomyelitis and bronchopneumonia. In another patient admitted with the diagnosis of poliomyelitis, the micrococcus was obtained both in direct smear and in culture.

The ease with which these organisms were obtained raised the question of contamination. Accordingly a study of the spinal fluid of the children in the contagious ward was undertaken. Lumbar punctures were performed in fifty patients having scarlet fever and associated exanthems, as diphtheria and varicella. The patients varied in age from 1 to 14 years, and were principally under 7. The children were in all stages of the disease, from the very onset with the acute rash and high fever to the convalescent period. The spinal fluid was inoculated in dextrose agar and dextrose broth with the same technic as in the previous cultures, and also into litmus milk, blood agar, ascites, glucose agar, aerobically and anaerobically by the pyrogallic acid and sodium hydroxid method described by Mallory and Medlar[3] in obtaining the *Bacillus scarlatinae* from the buccal cavity of patients with scarlet fever. All cultures were incubated for five days at 37 C. (98.6 F.). The cultures remained sterile, except for four tubes in which the *Bacillus subtilis* and *Staphylococcus albus* were obtained as contaminations. The pressure of the spinal fluid was found to vary with the mental and physical attitude of patients. In quiet children it flowed 30 to 60 drops a minute; in crying or restless patients it generally appeared to be under pressure. The cell count varied from 1 to 20 cells per millimeter. For the fifty patients it averaged 8 cells, but in eleven it varied from 10 to 20. Lymphocytes predominated from 80 to 90 per cent.

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[1] Nuzum, John W.: Bacteriologic Findings in Cerebrospinal Fluid in Poliomyelitis, The Journal A. M. A., Nov. 11, 1916, p. 1437.

[2] Nuzum, John W.: The Production of an Antipoliomyelitic Serum, The Journal A. M. A., Jan. 6, 1917, p. 24.

[3] Mallory, F. B., and Medlar, E. M.: The Etiology of Scarlet Fever, Jour. Med. Research, 1916, **35**, 209.

SUMMARY

The micrococcus described by Nuzum as occurring in the cerebrospinal fluid of poliomyelitis is not present in the cerebrospinal fluid of acute exanthems.

The pressure of the spinal fluid varies with certain physiologic states of the patient.

The average cell count of the cerebrospinal fluid in scarlet fever is 8 cells per cubic millimeter. Lymphocytes predominate.

ISOLATION OF THE TYPHOID BACILLUS FROM DUODENAL CONTENTS, OBTAINED BY EINHORN TUBE

F. M. Durham, M.D., Columbia, S. C.

J. P. M., man, was referred to Dr. S. E. Harmon by Dr. Mayer of Newberry, S. C., June 30, 1916, for gallbladder operation. Dr. Harmon and I examined the patient on the same day and made a diagnosis of gallbladder infection; but his condition was such that he was left in my care that he might be built up and that a more thorough diagnosis might be worked out.

The patient gave a history of having previously and recently undergone a serious illness of several weeks and of having been in declining health for several years. The temperature was of the irregular nature, usually characterizing chronic gallbladder infection, ranging from 98.6 to 100.5 F., and once going to 101.4. It was normal, however, the greater part of the time. The pulse usually remained in the eighties. The urine contained some albumin, and hyaline and granular casts, but cleared up after a few days' rest. The temperature and pulse remained good, but the patient's facial expression showed that he was below normal in resistance. I, therefore, advised against an operation, for in my opinion this man was evidently afflicted with something more serious than a mild gallbladder infection.

July 5, 1916, I sent a specimen of blood for a Widal test to a laboratory, and a positive paratyphoid test was reported.

On receipt of this report, the patient was given no food except a very light dinner, three hours after which he was encouraged to drink water at frequent intervals in order to get the stomach and duodenum clean. That night at 9 o'clock I inserted an Einhorn duodenal tube, fastening the part remaining out of his mouth to his night shirt. At 7 the following morning I aspirated the contents of the duodenum, and to my surprise obtained about 2 ounces of as pure looking bile as I ever saw, which was absolutely free from food. I sent this bile to the state board of health laboratory, requesting a culture for *Bacillus typhosus*. July 15, Mr. J. R. Cain, assistant bacteriologist, reported that the specimen contained a pure culture of typhoid bacilli.

Dr. F. A. Coward, director of the state board of health laboratory, reported that the bile was cultured directly in bouillon and on agar. In twenty-four hours pure cultures of a motile bacillus were obtained. This bacillus, which was gram negative, grew readily, and was agglutinated by serum from a patient with typhoid fever. An agar culture of the organism had been prepared, and was being kept at the laboratory for further study.

The patient was discharged, July 18, with a normal temperature, and promising to return within a few weeks for an abdominal exploration. I am informed that he was operated on out of Columbia about the latter part of October and died. The report of the operation was to the effect that the whole abdominal contents were so engorged, adhered and friable that the surgeon closed the incision without completing the operation.

This man was a typhoid carrier, and to the best of my knowledge and information this is the first time that duodenal contents, secured by the use of the duodenal tube, ever gave a positive *Bacillus typhosus* culture. I am fully convinced of the importance of a duodenal culture made from duodenal contents which have been secured by the use of a duodenal tube as a means of diagnosing typhoid carriers and obscure cases of typhoid fever.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 713)

TREATMENT OF MERCURIC CHLORID POISONING

The first symptoms of mercuric chlorid poisoning are epigastric pain, nausea and vomiting, the vomitus sometimes containing more or less blood. The gastric symptoms may be almost entirely relieved by proper treatment, the success of which depends on the length of time between the ingestion of the poison and the treatment, and on whether the stomach was full or empty when the poison reached it. Diarrhea and signs of duodenal inflammation occur within a few hours, unless the poison was quickly vomited. If much mercury has been absorbed, stomatitis occurs on the second day.

If a tangible amount of mercury has been absorbed, there is soon a gradual diminution in the amount of urine passed, and after the first or second day there may be complete suppression. As noted in other acute metallic poisonings, total suppression of urine may not cause convulsions, as it ordinarily does in uremia, probably because some of the detoxicating functions of the kidneys may still be operative. After several days, delirium may occur, followed by coma, while the heart shows gradual failure.

If acute nephritis does not cause death, ulcerative colitis with hemorrhages from the bowels may prove fatal, even after a lapse of several weeks.

The following treatment of mercuric chlorid poisoning is founded on the therapeutic results and laboratory findings of Lambert and Patterson[91] and of Fantus.[92] It is best immediately to examine the first material expelled from the stomach either by vomiting or by lavage, and to examine the urine for mercury, as the patient may not have taken mercuric chlorid, as he imagines. The patient is first given the whites of several eggs; the stomach is then washed out. He is then given a pint of egg albumin water, and the stomach again washed out.

According to Fantus, a tablet composed of sodium phosphite, 0.36 gm., and sodium acetate, 0.24 gm., should be dissolved and administered as soon as possible. If this drug cannot be obtained, the following solution should be substituted: sodium hypophosphite, 1 gm.; water, 10 c.c.; hydrogen peroxid solution, 5 c.c. If the amount of poison swallowed is known, ten times that amount of hypophosphite should be given. As this dosage of hypophosphite might be large, it should immediately be followed by lavage with warm water and a greatly diluted solution of the antidote. This may be followed by a safe dose of antidote, which may be repeated every eight hours for several days. A glass of egg albumin water should also be imbibed every alternate hour until several doses have been taken. Since it has been shown that milk is worthless as an antidote, there seems to be no necessity for using milk, which curdles and causes acid. As a demulcent, starch water, slippery elm or flaxseed tea may be used. A gram of sodium acetate, dissolved in sweetened water, should be taken every three hours, for a day or two, being omitted at such times as it comes in conflict with the antidote.

Lambert and Patterson's recommendation of rectal irrigation is important. They use the drop method of rectal irrigation, with a solution of potassium acetate, 4 gm. (a dram) to the pint. It might be well to substitute sodium acetate for the potassium acetate, as in all poisoning and in all serious conditions, sodium salts are safer than potassium salts, as this solution is more or less rapidly absorbed and generally causes diuresis. The colon should also be thoroughly irrigated twice daily to remove whatever mercury may have been there deposited or which may have reached the colon through the bowels. As there occurs a resecretion of mercury into the stomach, it should be washed out twice daily during the first few days unless the patient vomits repeatedly when given warm water. Lambert and Patterson affirm that it is advisable to continue the colonic drip enteroclysis day and night, at short intervals, even though it is intensely disagreeable to the patient, until two examinations of the urine on successive days have given a negative test for mercury. They also assert that if excessive doses of mercuric chlorid have been absorbed, or if the kidneys were previously diseased, the treatment should continue for a longer period, as long as three weeks, if necessary.

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[91] Lambert, S. W., and Patterson, H. S.: Poisoning by Mercuric Chlorid and Its Treatment, Arch. Int. Med., November, 1915, p. 865.

[92] Fantus, Bernard: Jour. Lab. and Clin. Med., 1916, **1**, 879.

If the kidneys have become seriously involved and suppression is present when a patient first comes under observation, the prognosis, although very serious, is not hopeless. Lambert and Patterson advise a daily sweat in a hot pack. This treatment, and also frequently repeated stomach washings, depends on the condition of the circulation — if the heart is weak and the circulation poor, the hot pack may be inadvisable.

(To be continued)

WAR WOUNDS AND SHOCK

The phenomena of surgical and traumatic shock are familiar to the practitioner. They are difficult to combat by any of the routine methods ordinarily applied in emergency practice. Laboratory investigators have long been busied with the study of experimentally produced shock. They are agreed that the cardinal symptom in this condition is a profound fall in blood pressure, as the result of which the individual suffering from shock is liable to "bleed to death into his own veins" unless some effective remedial procedure is instituted. When one approaches the question of the causes underlying the manifestations which characterize shock, there is no unanimity of opinion.

When the development of shock is carefully investigated, it is apparent that the fall of arterial pressure is caused by a diminution in the output of the heart. The fall is not due to abolition of the peripheral resistance in the arterial system. Henderson and others have pointed out that no inhibition or fatigue, or failure of any sort, occurs in the vasomotor nervous system. On the contrary, this mechanism is intensely active in an effort to compensate the lessened blood stream. Nor is the heart itself weakened. When the pressure in the venous system is observed, it becomes evident that the apparent cardiac failure is the result of diminution of the pressure and volume of the venous stream to the right heart. The etiologic sequence, in certain forms of shock at least, appears to be: venous stasis, cardiac failure, and fall of arterial pressure.

Traumatic shock has played a prominent part in the management of the wounded in the present European war as in previous conflicts. It is confidently stated by W. T. Porter that the number of wounded who suffer from low arterial pressure is large, much larger than most surgeons believe. Thousands have died from shock, and a remedy is urgently needed. Here we must turn to the beneficent results of experimentation on animals for our main hope of preventing or curing shock. Porter's observations, like those of others, have shown that when the diastolic pressure remains some time at from 45 to 50 mm. it will not recover without aid. Unless proper remedies are employed, the animal dies of shock. A diastolic pressure of 50 mm., therefore, is, as he expresses it, "critical." When the diastolic pressure falls to 50 mm., the blood accumulates in the abdomen. The animal then bleeds to death into its own portal vein. The remedies successful against this impending catastrophe are gravitation, and the raising of blood pressure by the injection of physiologic sodium chlorid solution or of epinephrin.

Commissioned by one of the American research foundations to investigate the problem of shock in freshly wounded soldiers at the front, Porter[1] of the Harvard Medical School determined to ascertain whether the phenomena of low blood pressure in wounded men are essentially those observed experimentally in laboratory animals. The question was naturally raised as to whether life in the trenches of itself lowers the arterial pressure or predisposes the soldier to a failure of the pressure after he is wounded. Porter's observations, conducted under exceptionally favorable conditions for ascertaining the effect of the severest types of mental and physical hardship in warfare, do not support the view that soldiers under fire suffer from low arterial pressure. He points out that a soldier soon gets accustomed to being under fire, and must not be judged from the standpoint of a civilian. Indeed, one would be led to expect perhaps that excitement would raise the blood pressure rather than lower it. A storm of large shells is not an indifferent matter, however, even when the emotions are restrained. The air pressure from their explosion produces violent reactions. Paralysis, low blood pressures, and other injuries may be thus produced in men who have no visible wound. The treatment of this condition does not differ from that following wounds, but the prognosis is said by Porter to be probably less favorable.

The newest observations of Porter on the wounded men at the front demonstrate that "there is no essential difference between the low pressure of men and that of other animals." The remedies successful against low pressure in animals are also successful against low pressure in human beings. The outcome of this conclusion has been a series of rules applicable in cases in which shock associated with a diastolic pressure of 60 mm. or less exists. To avert the accumulation of blood in the portal system, with consequent impairment of the activity of the heart and of the nutrition of the nerve cells, there are advised: (1) a special position of the wounded, so that the abdominal vessels shall be higher than the heart and brain; (2) heat; (3) intravenous injections of saline solution; (4) intravenous injections of epinephrin; (5) the transfusion of blood, in certain cases, and (6) the observation of the diastolic pressure every half hour as an index of the condition of the patient. The application of some of these procedures is reported to have produced gratifying results. The advantages which they afford obviously need not be restricted to the surgical exigencies of war.

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[1] Porter, W. T.: Shock at the Front, Boston Med. and Surg. Jour., 1916, **175**, 854.

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SATURDAY, MARCH 10, 1917

THE RELATION OF THE MOTHER TO SOME DIETARY FACTORS IN MILK

More than twenty-five years ago, Hirota observed an acute or subacute disease with a clinical picture of generalized edema, dyspnea, gastro-intestinal derangement, cardiac disturbance, and oliguria affecting infants who are nursing mothers suffering from beriberi. Although it was generally supposed before Hirota published his observations on these infants, in 1898, that beriberi did not affect nurslings, the existence of a characteristic infantile beriberi is now clearly recognized.[1] Like the comparable disease of adults, it is reported to be found in the East only rarely among the well-to-do native families who are able to purchase a varied and proper diet. The conclusion seems well founded today that infantile beriberi is due to a deficiency of some essential substance in the milk of the mother. Sufficient analyses of such milk have been made, however, in the case of mothers whose nursing infants have died from infantile beriberi, to show that the lacking factor in the diet cannot be a deficiency in proteins, inorganic salts or even fat; and as the infantile malady can be cured, precisely like the adult type, by administration of an extract of rice polishings, it seems logical to conclude in the light of present knowledge[2] that the two are caused by a deficiency of the same so-called vitamins.

The foregoing facts raise the question whether or not substances which are indispensable components of any adequate diet during growth can normally be formed by the maternal organism in connection with secretion. In many respects the mammary function appears to be more or less independent of the food supply to the lactating individual. Cows continue to produce milk of the usual composition, so far as the usual familiar nutrients are concerned, even when the fodder they receive is not adequate. When the constructive units of the ration do not meet the needs of the functioning mammary cells, they draw on the rest of the body so that the milk proteins, if they are produced at all, are characteristic. So long as the body stores can be drawn on, the secretion of an apparently normal milk continues even when the animal is losing body weight and becomes depleted in its protein reserve.[3] These facts correspond, as has been pointed out,[4] with the observation of Decaisne[5] during the siege of Paris that, even during fasting or partial fasting, vigorous young women were able to keep up a flow of milk sufficient to induce some growth in their infants.

Can the unidentified dietary factors, popularly called vitamins, be similarly furnished by the maternal organism even when they are wanting in the diet of the lactating mother? The prevalence of infantile beriberi among children whose mothers' diet is insufficient to prevent this disease speaks against the probability of a ready maternal synthesis of vitamins. McCollum and his collaborators,[4] who have raised this question anew, point to the remaining possibility that the diet of these mothers, which is restricted as to source and variety, and is of poor quality, may be inadequate with respect to the preventive substance itself and also as to its content of a possible precursor from which it might be formed through the peculiar property of a special organ, in a manner analogous to the formation of the various hormones of internal origin.

The antineuritic vitamin which prevents the occurrence of beriberi is not the only unidentified dietary factor essential for adequate growth. Another of these apparently indispensable food hormones is found in some of the natural fats, notably milk fat and egg yolk fat, the need of which has been so clearly emphasized by McCollum, Osborne and Mendel. McCollum prefers to avoid implications of the as yet unknown chemical nature of these various determinants of growth by speaking of the fat-soluble A and water-soluble B. Both of these are represented in milk. The latter seems to be responsible for its antineuritic properties; both must be furnished if growth is to proceed normally.

At the Wisconsin Experiment Station in Madison, experiments have been undertaken to ascertain the ability of normal female animals to suckle their young when confined to a diet which is known to be adequate for growth when satisfactory amounts of the unidentified A and B are added, and inadequate for growth when either of these factors is omitted. The paucity of such a diet in possible precursors is hardly to be expected, and the results should enable us to decide whether or not these two essential substances pass into the milk only when they are furnished in the diet.[4] From the careful studies reported it seems necessary to conclude, with the investigators, that the two constituents of the diet just discussed pass into the milk only as they are present in the diet of the mother, and that milks vary in their growth-promoting power when the diets of the lactating animals differ widely in their satisfactoriness for the growth of young. It seems further justifiable to conclude that the chemical natures of the fat-soluble A and the water-soluble B, whether these represent in each case a single substance or a group of substances, are of such character that they cannot be formed within the animal body from any of the cleavage products of proteins.

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[1] Vedder, E. B.: Beriberi, New York, 1913, Chapter XII.

[2] Vedder, E. B.: The Relation of Diet to Beriberi and the Present Status of our Knowledge of the Vitamins, The Journal A. M. A., Nov. 18, 1916, p. 1494.

[3] The Relation of Proteins to Milk Production, editorial, The Journal A. M. A., Nov. 4, 1916, p. 1374; Some Factors in Milk Production, Feb. 3, 1917, p. 374.

[4] McCollum, E. V.: Simonds, N., and Pitz, W.: The Relation of the Unidentified Dietary Factors, the Fat-Soluble A, and Water-Soluble B, of the Diet to the Growth-Promoting Properties of Milk, Jour. Biol. Chem., 1916, **27**, 33.

[5] Decaisne, E.: Gaz. méd. de Paris, 1871, p. 317.

More than ever before the progress of scientific investigation points to the importance and, indeed, the absolute necessity, of a suitable dietary for the nursing mother. The greatly superior chance of the naturally fed infant to survive in contrast with its artificially fed brother is everywhere admitted. The advisability of breast feeding being thus assumed, it becomes necessary to fortify the woman of today against the possible detriment which changes in the food customs and the necessities of the times altering the previously usual dietary may bring with them in respect to the subtle qualities of human milk. The experience of the Filipino mother who has subsisted on polished rice should carry its warning to those responsible for the nutrition of the mothers of our own country. Unnatural conditions of life must not be allowed to produce detrimental effects which can be discovered only in the subsequent nutrition of the young.

THE NECROPSY SITUATION IN THE UNITED STATES

Every thoughtful physician recognizes the importance of necropsies for the progress of medicine. The necropsy serves as a mode of instruction: it helps to eliminate error, and enables a rational institution of treatment when subsequent circumstances call for them. The education of the medical profession by accurate postmortem diagnoses is a veritable safeguard for the public welfare. This is axiomatic. Again, the successful institution of a greater number of necropsy records will serve to correct the inaccuracies of present-day vital statistics. It is admittedly a drawback to the intelligent conservation of our vital resources to find, as every student of modern sanitation promptly does, that it is impossible at present to have the exact sanitary or insanitary index to conditions in many parts of the country because of the blatant inadequacies of the death records.

The knowledge gained through the postmortem examinations of the past is permanent; but there is still abundant opportunity for such anatomic findings to help in the solution of the problems arising almost every day in relation to the obscure symptoms of disease. Thus M. C. Winternitz[1] reminds us that the most accurate knowledge we have of the scourge of the present day, infantile paralysis, is its pathologic anatomy. Without the necropsy, the diagnosis even of this disease often cannot be attained. From the anatomic picture the clinical manifestations of the disease are readily understood, and by this means its successful transmission to animals has been verified. Its histology, comparable to that of other infectious diseases, will aid in establishing its etiology, and ultimately may help in unraveling its portal of entry and dissemination in the body. Physicians who have been taught to think anatomically must be given an opportunity to enlarge their experience. It is not sufficient, says Winternitz, that postmortems are carried on in large numbers in Europe—they must be performed everywhere if the health of the public is to be safeguarded.

The unsatisfactory situation in the United States was particularly emphasized by a report of the New York Academy of Medicine published four years ago.[2] It developed that the ratio of necropsies to deaths ranged above 25 per cent. in only four of seventeen large hospitals in this country, in contrast with the decidedly higher postmortem statistics in European public hospitals of a similar status. The evidence that some improvement is beginning to manifest itself here was reviewed a few months ago in The Journal.[3] A new compilation has been attempted by Winternitz[1] through a questionnaire sent to a number of representative American hospitals for records to include the year 1916. In nineteen of the twenty-one hospitals included in the investigation there has been no notable change in either the total number or percentage of necropsies during the past six years. If, however, the ratio of necropsies to the number of deaths for any year — say, 1915 — is compared with similar data from the report of the New York Academy of Medicine, the result is surprising, especially if the twenty-one hospitals included in this investigation are supplemented by the Robert Bent Brigham Hospital, Boston, the Johns Hopkins Hospital, and city hospitals, Bay View, Baltimore, for the same year. Winternitz says that while there are still a large number of hospitals with a small percentage of necropsies, nevertheless it is evident that there is an increasing group of institutions in which the percentage of necropsies is high. Perhaps the selection of hospitals was fortuitous, and probably further investigation of many more institutions would yield a still different result.

Undoubtedly the problem of presenting a convincing argument in seeking permission for conducting necropsies is worthy of careful study. The "stock arguments" as they appeal to the average hospital superintendent have been thus epitomized: the importance of the necropsy in determining the true cause of death;

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[1] Autopsies — Their Value, Methods of Obtaining, and Protection of the Hospital, Mod. Hosp., 1917, 8, 36.

[2] Report on Post-Mortem Examinations in the United States by Public Health, Hospital and Budget Committee of the New York Academy of Medicine, The Journal A. M. A., June 7, 1913, p. 1784.

[3] Recent Necropsy Records in the United States, editorial, The Journal A. M. A., May 27, 1916, p. 1706.

the benefit derived from this knowledge by the family, by the hospital, by the science of medicine and humanity, and the aid of the exact cause of death as revealed by the necropsy in the settlement of insurance claims.

THE VENEREAL DISEASE PROBLEM—VI

The Present Attacks on the Problem

In recent numbers of The Journal[1] we have reviewed briefly some of the important efforts which are now being made to control the venereal diseases. The English and German efforts are most important, because of their extent and because of the expert knowledge behind them. That of Western Australia, while affecting only a sparsely populated province, is of great interest, because here is the first legal effort in an Anglo-Saxon community which is thorough and complete in its provisions.

All agree on the sanitary importance of the provision by the state of universal opportunity for prompt diagnosis and treatment. This is the sanitary measure on which reliance is placed in attacking the diseases. It is recognized that legal provisions, to be completely effective, should compel patients, if necessary, to continue treatment until cured. England and Germany, except in districts under military control, have not yet seen their way to enforce this requirement. Western Australia has taken the signal step of providing this requirement under stringent penalties. In Germany this step has strong advocates.

The requirement of notification of venereal diseases is not included among the measures which have been put into legal force: The British Royal Commission on Venereal Diseases believed that notification is a step which may perhaps come later, but was opposed to it in the present state of opinion, and the English Local Government Board in putting into effect its vast scheme for taking care of the venereal diseases made no provision for notification. In Germany no comprehensive scheme of notification is provided, and there is strong opposition to it. Even Western Australia with its thorough measure does not require complete notification, so long as patients live up to the provisions of the law.

In Germany there is an extensive propaganda to extend knowledge of the means and the usefulness of personal prophylaxis against venereal diseases. The English-speaking countries hesitate at this. Nowhere is any confidence placed in the regulation of prostitution and the inspection of prostitutes as a sanitary measure of importance against the venereal diseases. Competent opinion evidently holds that we have one very effective measure which can be applied in Anglo-Saxon communities against the venereal diseases, and that is the therapeutic attack on them. The second measure on which reliance is placed is personal prophylaxis. In these two measures lie the prospects, and apparently the only prospects, of controlling the venereal diseases.

There is a good omen in the widespread agitation which now exists for the control of the venereal diseases. The interest in the subject has permeated the general population to the point at which those who are competent to lead in this field can rely on a large measure of popular support. With increasing general intelligence on the subject there is little doubt that the time is not far distant when effective measures for attacking these diseases will be enacted in many intelligent states and receive the support of popular sentiment. When that time arrives we may look with considerable assurance to a successful sanitary attack on these diseases — a success which will be the more notable because it has not been attained in any efforts which man has yet made. It need hardly be said that the menace of the venereal diseases justifies beyond all measure the extensive efforts by the state which its control would require; for the venereal diseases rank with tuberculosis and malaria as the great chronic plagues of man.

WHAT CONDITIONS DETERMINE THE EXCRETION OF CREATIN?

Although creatin, one of the most characteristic nitrogenous components of muscle, is regularly found in the urine of children, it is rarely found in that of adults except under unusual circumstances. Creatin appears along with creatinin during inanition; it has been observed in carbohydrate hunger and likewise in diabetes, the pathologic experiment in specific sugar starvation so frequently provided by Nature. Mendel and Rose, as well as many others,[1] have accordingly related creatinuria, in adults at least, with some perversion of carbohydrate metabolism. The probability of such relationship has been fortified by the fact that known instances of the appearance of creatin in the urine have readily been checked by administration of carbohydrate. Underhill[2] has recently pointed out, however, that deficiency of available carbohydrate in the body usually involves an accompanying disturbance in the acid-base equilibrium, an excessive production of acid accompanied by a withdrawal of base from the body. This phenomenon is sometimes, though not always attended with a ketonuria and an acidosis caused by ketogenic substances. As a matter of fact, nearly every type of condition hitherto recognized in

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[1] The Venereal Disease Problem, I, editorial, The Journal A. M. A., Feb. 3, 1917, p. 375; II, Recommendations of the British Royal Commission on Venereal Diseases, Feb. 10, 1917, p. 463; III, The English Venereal Disease Act, Feb. 17, 1917, p. 550; IV, Western Australia's Effort to Control the Venereal Diseases, Feb. 24, 1917, p. 639; V, The Problem in Germany, March 3, 1917, p. 715.

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[1] For the recent literature concerning creatin see Mendel, L. B., and Rose, W. C.: Jour. Biol. Chem., 1911-1912, **10**, 213. Riesser, O.: Ztschr. f. physiol. Chem., 1913, **86**, 415. Myers, V. C., and Fine, M. S.: Jour. Biol. Chem., 1913, **14**, 9; 1913, **15**, 283, 285; 1913-1914, **16**, 169; 1915, **21**, 377, 383, 389. Benedict, S. R., and Osterberg, E.: Ibid., 1914, **18**, 195.

[2] Underhill, F. P.: Studies in Creatine Metabolism, I, Possible Interrelations between Acidosis and Creatine Elimination, Jour. Biol. Chem., 1916, **27**, 127.

which there is creatin in the urine is accompanied by some form of acidosis.

In experiments on rabbits, which ordinarily excrete an alkaline urine, Underhill found that, on a diet of oats and corn containing an adequate supply of carbohydrate, creatin promptly appears in the urine. A marked condition of acidosis, as measured by the hydrogen ion concentration of the urine, is always associated with this phenomenon. Oats and corn are pronounced acid-producing foods. On the other hand, if a base-producing food, such as carrots, is fed to rabbits with creatinuria, this symptom rapidly disappears as the urine becomes alkaline. The protein per se is without special significance in the phenomenon under discussion; for on a diet consisting of oats, corn and carrots, creatin fails to appear in the urine, and the reaction of the latter remains alkaline. Equally significant is the further fact that the ingestion of hydrochloric acid with the mixed diet causes the appearance in the urine of significant quantities of creatin. Simultaneously the hydrogen ion concentration of the urine is markedly increased.

Underhill's conclusion that there is an interrelationship between acidosis, in the sense of base depletion, and the elimination of creatin by the organism, so that the urinary output of creatin may prove to be an index of the disturbance in acid-base equilibrium, has been substantiated by him in other ways.[3] Administration of alkali during the earlier days of starvation may greatly diminish or completely abolish the creatinuria of that condition; though later in the period of inanition, introduction of alkali may not show as marked an influence on the existing creatinuria.

A close relationship between the blood sugar content and the acid-base equilibrium in the body has also been demonstrated. Hypoglycemia and alkalosis often appear to go together. In some of the experimental glycosurias, on the other hand, the administration of large amounts of alkali has been without appreciable influence on the elimination of creatin. Although creatin may find its way into the urine, of the rabbit at least, under circumstances which exclude the possibility of carbohydrate deficiency, alkali depletion cannot be the sole stimulus for the production of creatin.

One is thus forced, with Underhill, to the conclusion that more than a single factor may govern the mechanism of the reactions leading to creatinuria. He is inclined to believe that the urinary elimination of creatin may be induced by at least two different sets of conditions: (1) Creatin may appear in the urine in states of acidosis in which carbohydrate deficiency is not involved, and (2) creatinuria may be present during carbohydrate deficiency even in the absence of acidosis. In view of the present interest in the creatin-creatinin problems, the newest hypotheses which carry some experimental support deserve critical consideration.

Current Comment

ANOTHER SHORTAGE OF SALVARSAN

The indications are that the supply of salvarsan and neosalvarsan in this country has again reached the point of exhaustion. To the medical profession, who know the unfortunate results of a shortage of salvarsan on the health of the present and future generations, the situation is an exasperating one. Is there no remedy? Is our government impotent to relieve the condition? Congress made our patent law; it certainly has the power to suspend the patent on any preparation that the patentee is unable to, or does not, supply when such suspension is in the interest of public health. It is well known that at the time of the previous shortage the Dermatologic Research Laboratory of Philadelphia manufactured the product under the name of arsenobenzol.[1] It is presumed — at least hoped — that in the present shortage the laboratory will again manufacture the product. It should meet with no legal difficulty, as the agents for the salvarsan manufacturers have intimated that they would not object to such supply of the product at times when they themselves were not able to furnish it. But such a relief for the situation is not a permanent relief — it is a makeshift. Monopolies on medicaments such as diphtheria antitoxin, salvarsan and the like are against public interest. The United States has granted process and product patents on salvarsan: even if any one in this country produced a salvarsan product or derivative which would be more curative and more valuable — on account of being less toxic, for instance — the patentees could effectually prevent its manufacture and sale. Again it should be emphasized that the fact that a most important drug is unavailable is the result of an act of Congress, and Congress has the power to modify its action so that the remedy may be made available.

THE BLOOD PRESSURE OF FILIPINOS

If the statistics of measurements relating to blood pressure and the kinetic energy of the circulating medium are to become of use to clinicians and to life or health insurance companies as indexes of normal or abnormal functioning on the part of the organism, they must not only be based on accuracy but must also take into consideration such factors as race or climatic environment which might produce variations in physiologic performance. There is an interest, therefore, in the recent studies on the blood pressure factors of the Filipinos by I. Concepción and E. Bulatao[2] of the College of Medicine in the University of the Philippines. Although the systolic pressures had been measured by previous investigators[3] in our insular possessions in the Far East, the other equally essential factors of diastolic pressure and pulse pressure had not been determined for any large number of Filipinos. Examined with the Erlanger sphygmomanometer, 717 persons with an average age of 28.5 years showed average systolic pressures of 115.5 mm. of mercury in males and 116 in females, average diastolic pressures of 79 and 83 mm., and average pulse pressures of 36 and 33 mm. There is a general rise of all these factors with age; but the Filipino investigators assert on the basis of their observations that hypertension is not a necessary accompaniment of old age. Average data are always liable to harbor unsuspected yet significant variables. For this reason it may be noted that in 76 per cent. of the Filipino subjects carefully examined the systolic pressure ranged from 100 to 140 mm. The statistics, when compared at different ranges of age, are much lower than those reported for Europeans or Americans living in temperate climates, but appear to correspond with what Americans living in the tropics exhibit. The pulse rate in the tropics — still a debated question — was observed in the Filipino to average a few beats above the usual standard of 72 a minute. An acceptable explanation of the lower blood pressure found in the tropics is not forthcoming at present. It has been ascribed to a dilatation of the peripheral blood vessels as well as increased elasticity of the vessel walls. Another view has associated it with an assumed low peripheral resistance attributable to the increased secretory function of the sweat glands, or with the possibility of splanchnic influences originating in the "prevalent sensation of abdominal vacuity" and the frequency of gastro-intestinal disturbances. It would not be without interest to ascertain a more defensible cause of the phenomenon in question, now that the fact of lower pressures in the Filipinos has become established by more abundant statistics.

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[3] Underhill, F. P., and Baumann, E. J.: Studies in Creatine Metabolism, III, The Influence of Alkali upon the Creatinuria of Phlorhizin Glycosuria, Jour. Biol. Chem., 1916, **27**, 147; IV, The Relationship of Creatinuria to Carbohydrate Metabolism and Acidosis, ibid., p. 151. Underhill, F. P., and Bogert, L. J.: Alterations in the Output of Certain Urinary Constituents as Determined by Changes in the Character of the Diet, ibid., p. 161.

[1] A Canadian product, diarsenol, was also, and for that matter, is still available.

[2] Blood Pressure Picture of the Filipinos, Philippine Jour. Sc., Sec. B., Trop. Med., 1916, **11**, 135.

"BONE DRY" BUT STILL MOIST

News items appeared in the Eastern papers recently of which the following, from the Baltimore *Sun* of February 24 is a specimen:

> "Danville, Va., Feb. 23.—So great has become the demand here for a certain proprietary medicine which contains 25 per cent. alcohol, that the city Police Department has laid the condition before the Prohibition Commissioner. An investigation has just led to the discovery that during Saturday and Sunday more than 700 bottles were sold in Danville and Schoolfield.
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> "The police had to deal with more drunkards this week than during the entire month of January and each man admitted that he became intoxicated on the medicine."

The Journal telegraphed to the chief of police of Danville, Va., asking for the name of the proprietary medicine containing 25 per cent. alcohol which was reported to be responsible for several cases of intoxication. The laconic but all-sufficient reply from the Danville chief of police was: "Name medicine Hostetter's Bitters." It is surely more than a coincidence that the alcohol-containing "patent medicines" seem to be most widely advertised and most popular in those parts of the country which are commonly designated as "dry." It is a pity that there are no statistics to show the change in the volume of sales of "patent medicine" "tonics" that follow the enactment of prohibition laws. Far be it from The Journal to deprecate the spread of prohibition. So long, however, as individuals can sell, unrestrictedly, preparations containing small amounts of plant extractives in alcohol one-half the strength of raw whisky under the guise of "tonics," prohibition will not have the terrors for certain persons it might otherwise possess. In view of the new "bone dry" law recently enacted it would seem that now is a good time for the Internal Revenue Department to turn its attention to a class of remedies that might bring to the government considerable revenue — the alcoholic "patent medicines."

INANITION, KETONURIA AND ACIDOSIS IN CHILDHOOD

It has been customary among clinicians to associate certain symptoms, including nausea, vomiting, flushing of the cheeks, rise of temperature and hyperpnea, which are observed during childhood, with acidosis. A notable urinary output of acetone and related compounds has usually been selected as a chemical index of this condition. It would be more appropriate to speak of a ketosis as underlying the features referred to, for acidosis and ketonuria are no longer to be regarded as synonymous terms. Ketonuria represents a form of acidosis distinguished by the excessive formation of so-called acetone bodies — acetone, diacetic acid and beta-hydroxybutyric acid. A faulty metabolism of fats may underlie the pathology of this phenomenon. It has long been known that acetone bodies frequently appear in the urine of fasting persons, as well as in the urine of those with certain febrile and toxic conditions, particularly diabetes. To what extent, then, does the acetone body acidosis of childhood represent an inanition factor? Veeder and Johnston[1] have lately called attention to the lack of information on this subject, which is of particular interest to the pediatrician. As they point out, despite the infrequency of diabetes at this period, acetonuria is common in childhood, and is often associated with narcosis, cyclic vomiting and many febrile and toxic conditions. In all of these clinical conditions there is the possibility that inanition may be a factor to a greater or less degree. But the actual rôle played by inanition is uncertain, for persistent fasting in some cases of diabetes seems to decrease the degree of acidosis. Veeder and Johnston have accordingly observed children before, during and after a twenty-four or forty-eight hour period of inanition. They found under the circumstances that the total quantity of acetone bodies in the urine during short inanition periods varies directly with the duration of the inanition. They also found, as did previous observers, that the amount of beta-hydroxybutyric acid

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[3] Musgrave and Sison: Philippine Jour. Sc., B., 1910, **5**, 313. Chamberlain, W. P.: Ibid., 1911, **6**, 467.

[1] Veeder, B. S., and Johnston, M. R.: The Factor of Inanition in the Development of Acetonuria in Children, Am. Jour. Dis. Child., January, 1917, p. 89.

(in terms of acetone) eliminated was as a rule from two to four times as great as the quantity of combined acetone and diacetic acid. In extreme instances there was a slight actual increase or percentage increase in the ammonia elimination on the first day of inanition; but this was rare. On the second day of inanition, however, a marked increase took place. Although the children were closely watched for the development of clinical symptoms, particularly those which are so frequently regarded as signs of an acetone body acidosis in childhood, not one seemed to be affected in any way by the inanition. The St. Louis pediatricians, therefore, are unwilling to believe that the formation of acetone bodies per se, at least in the amounts produced by inanition, can be the fundamental cause of the symptoms in children so often regarded as due to acidosis.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

COLORADO

Home for Drug Users Approved.—A bill to establish a state home for drug users passed its second reading in the senate, February 15.

New Officers.—The Denver County Medical Society: president, Dr. Samuel B. Childs; vice president, Dr. Charles D. Spivak, and secretary, Dr. R. Gilchrist Smith, all of Denver.

Typhus Fever.—Typhus fever has been discovered at La Junta which is believed to have been brought into the state by Mexican laborers of the Santa Fe System. The patients have been isolated and are well on the road to recovery.

To Bar Physicians with Tuberculosis.—A bill has been introduced in the house of representatives by Representative Cole which provides that every practicing physician in the state shall submit to physical examination within a year after the passage of a bill, and that if found to be afflicted with any contagious disease, he shall be barred from practicing until examination proves that he is free from it. The bill also provides that the board of examiners make examination of physicians in the state every two years.

Personal.—Dr. Ward T. Burdick, city pathologist of Denver, has resigned to take effect, February 15.——Dr. Frank G. McKlveen has been elected president, Dr. Frank M. McCartney, vice president, and Dr. William F. Matson, secretary, of the staff of St. Anthony's Hospital, Denver.——Dr. Will D. Runyon, Colorado Springs, has been appointed medical director of the Woodbury County Tuberculosis Sanatorium, Sioux City, Iowa.——Dr. Erlo E. Kennedy, Basalt, has been elected chief clerk of the house of representatives.

FLORIDA

Eclectic Board Declared Vacant.—Reports state that on March 2 Governor Catts of Florida declared vacant the State Board of Eclectic Medical Examiners. The grounds stated in the reports are that the board was giving fake doctors diplomas and licenses from extinct colleges for $300 to $500. It was also stated that several deaths had occurred from malpractice on the part of the men so licensed. The men reported as members of the eclectic board were Drs. George L. Dickerson, Jacksonville; Frank E. Gavlas, Lake Worth, and V. K. Jindra, Tampa. It is stated that as a result of a suit brought against him Dr. Jindra has become a fugitive from justice.

ILLINOIS

Eugenic Marriage Bill Lost.—By an almost unanimous vote the senate on February 28 struck out the enacting clause of the bill backed by the Eugenic Education Society and introduced by Senator Austin of Oak Park.

Personal.—Dr. Rufus H. Main, Barry, was kicked by a horse, February 24, and seriously injured.——Dr. Frank W. Palmer, Chatsworth, sustained a fracture of a rib and concussion of the brain by the overturning of his automobile, February 22.

Consolidation Bill Passes.—Governor Lowden's consolidation bill, reorganizing the administrative department of the state government, has passed both houses of the legislature and become a law. The conference report was adopted unanimously by the senate and by a vote of 131 to 2 in the house. The bill abolishes or combines about 130 boards, bureaus and other separate governing agencies into nine departments, each under a director. The directors of the boards of finance, trade and commerce, and public welfare are to receive an annual salary of $7,000; the directors of the departments of agriculture and public health, a salary of $6,000, and the directors of the departments of education and registration, labor, and mines and minerals, $5,000 each. From a public health standpoint, the most radical changes are the creation of a department of health with a commissioner in place of the state board of health, and the consolidation of the work of examining and registering physicians, dentists, pharmacists, nurses, osteopaths, optometrists, drugless healers and all other registered professions under a department of education and registration, which will be conducted as a part of the educational machinery of the state.

Chicago

The Scarlet Fever Situation.—March 5, there were 1,900 cases of scarlet fever in Chicago, of which 118 were reported in the last two days of the week.

Vaughan in Chicago.—Dr. Victor C. Vaughan, dean of the University of Michigan, lectured before the Sunday Evening Fellowship Club, March 4, on "The Religion of a Man of Science."

Examination of Postoffice Employees.—The examination of the 7,400 postoffice employees for tuberculosis, made under the auspices of the Municipal Tuberculosis Sanatorium, was commenced, March 4.

Merger of Contagious Disease Hospital.—Health Commissioner Robertson has appointed a committee consisting of Mrs. William R. Cubbins of the Chicago Women's Club, Drs. William A. Evans, William L. Noble, Albert J. Ochsner, A. Augustus O'Neill and Daniel A. K. Steele to investigate the City Contagious Disease Hospital and to make recommendations for its betterment.

Psychopathic Institute for Criminal Court.—The criminal court is to have a psychopathic institute for which aid will be obtained from the Rockefeller Foundation. Judge Hugo Pam has been made representative of the criminal court judges on the committee to direct the work of the institution. The institution will be an extension of the Juvenile Psychopathic Institute, and will be supervised by Dr. Herman Adler.

Lectures on Tuberculosis.—A course of lectures on tuberculosis to be given at the City Club on the remaining Thursdays of March will be as follows:

March 15: "What May Lead the Layman to Suspect Tuberculosis—the Return of the Sanatorium Patient—How to Deal with the Tuberculosis Carrier," Dr. Charles Segal.

March 23: "Crippled Children and Tuberculosis," Dr. Edwin W. Ryerson.

March 29: "The Results of the Tuberculosis Survey," Dr. Clarence L. Wheaton. "Incidental Problems of the Survey," Dr. John Ritter.

Personal.—Dr. Julius Grinker has been appointed on the neurologic staff of Mercy Hospital.——Mrs. Albert H. Hoy, wife of Dr. Albert H. Hoy, formerly of Chicago, was drowned after the torpedoing of the Cunard Liner *Laconia*, recently.——Dr. Frank Billings has been compelled to resign as head of Base Hospital Unit No. 13, on account of ill health, and has recommended Dr. Arthur D. Bevan in his stead. Dr. Billings has gone to Pasadena, Calif., for two months, following his recovery from pneumonia.——Dr. Will P. Walter, Chicago and Evanston, was seriously injured in a collision between automobiles, March 4.——Lieut.-Col. Jacob Frank was reelected president of the Army and Navy Club of Chicago at its annual meeting, February 28.——Dr. Robert A. Smith has been elected exalted ruler of Chicago Lodge, B. P. O. Elks.——Dr. J. Gordon Wilson has returned to Chicago after several months' army medical service in England and France. Dr. Wilson has been especially engaged in investigating the effects of high explosives and concussion on the ear.

INDIANA

Personal.—Dr. William F. King, Indianapolis, assistant secretary of the state board of health, has been elected president of the Indiana Sanitary and Water Supply Association.

Sanitary Survey Complete.—Surg. Carroll Fox, U. S. P. H. S., has completed his sanitary survey of South Bend, and has made recommendation to the council for the betterment of conditions.

New Sanatorium.—An association was organized in Auburn recently to secure a tuberculosis sanatorium for the counties of Steuben, Noble, DeKalb and Lagrange. Dr. Thomas J. Creel, Angola, and Dr. John W. Morr, Albion, were elected second and fourth vice presidents.

Bill for New Medical School Building.—Representative Gentry has introduced a bill appropriating $300,000 for a new building for the Indiana University, School of Medicine, Indianapolis.——The students of the state university have presented to Governor James P. Goodrich an expression of their appreciation of his demand for an adequate equipment for the Indiana University School of Medicine.

MARYLAND

Personal.—Dr. John D. Blake, commissioner of health of Baltimore, has returned to his desk after an absence of two months, due to illness.

Campaign to Raise Funds for Maryland General Hospital.—The ten-day campaign to raise $150,000 for the benefit of the Maryland General Hospital resulted in securing $160,396. Other promised contributions are expected to bring the amount to $165,000.

Medical Preparedness in Baltimore.—The personnel of a base hospital has been enrolled at Johns Hopkins Hospital.——The Medical Reserve Corps of the Army has thirty-eight members in Baltimore. The secretary of the local organization is Lieut. Edgar Smith Linthicum.

MINNESOTA

Infantile Paralysis.—The first case of infantile paralysis for the season was reported in St. Paul, February 22.

Hospital Notes.—The county commissioners of Itaska have decided to build a county hospital at Grand Rapids on a site donated by the village.

Quarantine Ineffective.—Dr. Henry M. Bracken, St. Paul, secretary to the state board of health, in an address, February 24, at Montevidio, declared that quarantines were things of the past and were of no value and that schools should not be closed when epidemics visit communities.

Whole Time Health Officer Wanted.—The St. Louis County Medical Association favors a whole time public health service and to this end has asked applicants for the position of health commissioner to put themselves on record as favoring the health commissioner giving up his entire time to the public health service.

Smallpox in the State.—There were under quarantine in Minneapolis, February 28, fifty-four cases of smallpox, the largest number recorded in any one time during the last three years.——On account of the outbreak of smallpox in the girls' dormitory of the State Normal School in St. Cloud, 600 students have been vaccinated and the school has been allowed to reopen.

Personal.—The resignation of Major Willmar C. Rutherford, M. C., Minn. N. G., St. Paul, was accepted by the president, February 13.——Dr. Charles F. Brigham, St. Cloud, fractured his arm in jumping from his cutter when his horse ran away, February 24.——Dr. Simeon O. Francis, White Bear, has been stricken with cerebral hemorrhage, at St. Augustine, Fla.

NEW YORK

Oppose Health Insurance.—At a meeting of the legislative committee of the Social Insurance Department of the National Civic Federation, held in Albany, March 7, steps were taken to oppose the Mills bill for compulsory health insurance. The committee made sixteen objections to the bill, including statements that it would confer no benefits on employees or employers, but would create needless economic burdens on all concerned.

Lectures on Public Health and Preventive Medicine.—The Albany Medical College offers a course of lectures in public health and preventive medicine in conjunction with a course in preventive medicine which for the first time is being given to second-year medical students. They are held Wednesday afternoons at 5 o'clock at the State Education Building, and are open to the public without charge. They are given under the direction of Dr. Augustus B. Wadsworth, director of the laboratories of the state department of health. Subjects during March are as follows:

March 14: The Administration of Antitoxin, Dr. William H. Park, Director Research Laboratory Department of Health, New York.

March 21: The Influence of Defect and Sexual Disease upon the Public Welfare, Mr. Robert W. Hill, Superintendent, State and Alien Poor, New York State Board of Charities.

March 28: Health Administration, Nuisances, and Communicable Diseases, Dr. Arthur Sautter, Health Officer of Albany.

Bill to Control Drug Habit.—A bill embodying the following provisions is now before the legislature:

(1) Establishment by the state of a dispensary system whereby the confirmed addict may get his drug pending treatment and cure. (2) A state check on narcotic drugs ordered by druggists and doctors by means of a triplicate order blank, one copy of which shall be filed with the state board of health. (3) Registration of addicts with the state board of health, to the end that statistics on addiction may be gathered by the state and state aid offered. (4) Amendment of the existing law permitting magistrates to commit addicts to the care of a physician as well as to a state institution. (5) Provision against the sale of unmixed narcotic drugs under guise of compounded medicine. (6) Amendment of the present law making illegal or forged use of physician's name or official blanks a felony. (7) Authorization of appointment of inspectors by the state board of health to enforce the statute.

New York City

Military Surgery at Columbia University.—The College of Physicians and Surgeons has asked the War Department for an instructor in military surgery.

Harvey Society Lectures.—The eighth lecture in the twelfth course of the Harvey Society Lectures at the New York Academy of Medicine will be given March 17 by Prof. Francis W. Peabody of Harvard University on "Cardiac Dyspnea."

Make Roster of Doctors and Nurses.—Former health commissioner Sigismund S. Goldwater, with the approval of the mayor and the cooperation of the heads of the city departments, is taking a census of the hospital facilities, physicians and nurses of New York City in preparation for any eventualities that may result from international complications.

More Persons Killed in City Streets.—The report of the National Highways Protective Society for February shows that forty-four persons lost their lives in this city during February, thirty of these deaths being caused by automobiles. This is an increase of sixteen deaths from automobiles over the same month of last year. In the remainder of the state twenty-three persons were killed, as compared with fifteen for the corresponding month of last year.

Campaign for Medical Examinations.—The committee on the prevention of tuberculosis of the Charity Organization Society has initiated a city-wide educational campaign for medical examinations. They have distributed 100,000 circulars headed "The Day Before You Die," setting forth the advantages of medical examinations and stating that out of thousands of men and women examined 70 per cent. had defects the correction of which would add materially to their length of life. Preparatory to initiating this campaign, the committee investigated eighty-four firms employing 325,000 persons.

Public Health Activities of the Academy of Medicine.—The public health committee of the New York Academy of Medicine has undertaken an investigation of the medical service of the police department at the request of the police commissioner and under the direction of Dr. W. Gilman Thompson. The committee has also made a study of the district plan of health administration such as is in operation in the Borough of Queens, as well as a study of the laws aimed at suppression of drug habits and the illicit sale of narcotic drugs, which have apparently failed to bring about any radical change in the situation. The committee is also securing information as to the work on poliomyelitis being done by various official and unofficial bodies.

Correction.—In The Journal, Feb. 10, 1917, p. 470, in a news item headed "Council of State Medical Society Reproved" reference was made to a resolution adopted by the Medical Society of the County of New York, and it was stated: "It was acknowledged that the council of the state society had not transcended its powers in taking this action."

We are now informed by the secretary of this organization of the exact wording of this resolution, which was:

"*Therefore, Be it Resolved:* That The Medical Society of the County of New York disapprove and condemn this hasty, inconsiderate, extra-legal if not illegal indorsement by the Council of The Medical Society of the State of New York of a measure not fully approved by the body of the profession either in principle or in policy, while it is still under discussion by those most vitally affected by its provisions."

Personal.—Dr. W. Sohier Bryant sailed for England on the *Orduna*, February 24, to give his services to the cause of the Entente Allies.——Dr. Julien A. Gehrung, who sailed for France, February 13, has arrived in Europe and will work in Paris hospitals.——Dr. Stephen Smith, dean of surgeons of New York, celebrated his ninety-fourth birthday, February 19.——Dr. Joseph A. Blake has accepted the invitation of the French government to become head of the hospital built and conducted by Dr. Eugene Doyen, who died about two months ago. The hospital will be conducted as a war hospital under the American Red Cross.——Dr. Kenneth Taylor, formerly of New York, will have charge of the Robert Walton Goelet Research Laboratories which have been incorporated as a part of the new institution.——Dr. J. Bentley Squier has been appointed professor of urology at the College of Physicians and Surgeons, Columbia University, to succeed Prof. James R. Hayden, resigned.——Dr. Virgil P. Gibney has resigned his professorship of orthopedic surgery at the College of Physicians and Surgeons.——Dr. Emil Mayer has been appointed consulting laryngologist to Mount Sinai Hospital.

PENNSYLVANIA

Larger Library.—John Welles Hollenbach, Wilkesbarre, has presented the Luzerne County Medical Society with $10,000 for the purchase of books.

Personal.—Dr. Henry C. Allen, Schwenkville, was painfully injured recently in an automobile accident.——Dr. Louis S. Dunn, Chester, was injured in an automobile accident, February 19.——Major James F. Edwards, M. C., Pa. N. G., has been mustered out of the service and resumed his duties as director of the Department of Public Health of Pittsburgh.

Philadelphia

Medical Institutions.—The Visiting Nurse Society of Philadelphia, stating that demands for services of its staff of nurses have exhausted its sources, appeals to each physician for a yearly contribution of $1 to carry on its work among poor patients. Some of the latter pay 50 cents per visit; those not able to do this are helped without charge.

Additional City Nurses.—Twenty-two additional visiting nurses and fourteen inspectors have been added to the bureau of health corps by Dr. Wilmer Krusen, director of public health and charities, the result of the $25,000 appropriation made by councils. The nurses comprise a special staff which were employed during the infantile paralysis epidemic of last year. The regular staff already consists of fifty nurses.

RHODE ISLAND

Society Notes.—At the annual election of officers of the Washington County Medical Society, held in Westerly, Dr. Frank C. Pagan, Westerly, was elected president; Drs. Alexander B. Briggs, Ashaway, and Patrick J. Manning, Wickford, vice presidents, and Dr. William A. Hillard, Westerly, secretary-treasurer.——The Franco-American Medical Society, Providence, entertained at a dinner dance at the Narragansett Hotel, January 11.

Licenses Revoked.—At its meeting, held Dec. 14, 1916, the state board of health revoked the license of Dr. Charles Seward Parker, on the ground of gross unprofessional conduct.——On May 25, 1916, similar charges were brought against Dr. Albert B. Jones of Providence, but on the assurance from Dr. Jones' attorney that he had absented himself from the state and did not intend to return, the charges were postponed and his certificate has not been revoked.

VERMONT

Septic Sore Throat at St. Albans.—On account of the epidemic of septic sore throat at St. Albans, where there are said to be 1,200 cases, churches, schools and theaters have been closed, and the state board of health has interdicted public gatherings of every kind. The spread of the disease is believed to be due to the handling of milk by infected persons.

State Board Election.—At the annual meeting of the Vermont State Board of Medical Registration, held at Montpelier, February 13, the following officers were elected for the next biennial period: president, Dr. Schuyler W. W. Hammond, Rutland; vice president, Dr. Percy L. Templeton, Montpelier; secretary, Dr. W. Scott Nay, Underhill, and treasurer, Dr. George I. Forbes, Burlington. All meetings of the board will hereafter be held at Burlington, on the second Tuesday of February and July instead of alternating between Burlington and Montpelier as before. This affords opportunity for the use of the advantages offered by the University of Vermont, College of Medicine, whereby practicable examination may be conducted.

VIRGINIA

Hospital Items.—At a meeting held in Abingdon it was decided to erect in the near future a hospital building to cost $50,000 in memory of Dr. George Ben Johnston. The corporate name of the institution will be the George Ben Johnston Memorial Hospital of Southwest Virginia.

Personal.—The resignation of First Asst. William H. Whitmore, M. C., Va. N. G., was accepted, February 10.——Drs. Andrew D. Parson and J. A. Alexander Lipnick, ambulance surgeons at the Virginia Hospital, Richmond, have been succeeded by Drs. Clark and Edwards.——Mr. C. P. Cardwell, Hanover, has been appointed a member of the board of visitors of the Medical College of Virginia, Richmond, to succeed the late Dr. George Ben Johnston, Richmond.

WASHINGTON

Personal.—Dr. D. R. Forbes, Seattle, has returned after two years of service with the allied forces in France.

Simplification of Death Certificate.—Dr. John B. Anderson, health officer of Spokane, has sent a circular letter to physicians in the city asking their cooperation as regards the standardization of causes of deaths on death certificates. He suggests that in certain cases the international classification number be used instead of the name of the disease.

WISCONSIN

Sanatorium Bonds Voted.—The board of supervisors of LaCrosse County has voted to bond the county for $50,000, the proceeds to be applied to the establishment of a tuberculosis sanatorium. A site has been selected overlooking the Mississippi and Black River valleys.

Proposed Health Legislation.—Senator Pullen has introduced into the state legislature a number of bills on health topics. One provides that teachers shall send home any pupil who is unclean or infested with vermin. Another provides for a health certificate as a preliminary for a marriage license for all persons who have been afflicted with venereal disease, while a third bill provides for the reporting of venereal diseases to the public health authorities.

Hospital Notes.—The city council of Kenosha has appropriated $20,000 toward the cost of an isolation hospital to be operated in connection with the Kenosha Hospital. The balance of $20,000 will be raised by subscription.——One hundred thousand dollars of the $150,000 required to obtain a similar sum from Mr. and Mrs. Ferdinand Schlesinger for the Milwaukee Children's Hospital has already been raised.——The name of St. Olaf's Hospital, Superior, has been changed to the Martin Luther Hospital.

Personal.—Dr. Henry C. Werner, Fond du Lac, has been appointed head of the new State Home for the Feebleminded, Union Grove.——Dr. Joseph P. Donovan, who retired as city health officer of Madison, February 1, after a service of thirteen years, was given a testimonial of thanks and appreciation by the board of health at its meeting, February 16.——Dr. Adellon P. Andrus, Ashland, has accepted the position of assistant superintendent and senior physician to the State Tuberculosis Sanatorium, Waukesha.——Dr. Clarence A. Richards, Rhinelander, has been appointed a member of the state board of health, to succeed Dr. Hasse A. Meilike, Clintonville, term expired.

CANADA

University News.—The names of a number of McGill University graduates who are now overseas have been brought to the notice of the secretary of state for services rendered in connection with the war. They are: Col. Lorne Drum, Ottawa, Ont.; Lieut.-Col. Frederick G. Finley, Montreal, Que., officer in command of No. 1 Canadian General Hospital; Capt. James R. Goodall, Montreal, Que.; Major Lewis E. W. Irving, Edmonton, Alta., and Capt. C. C. Hale, London, Ont.

Personal.—Capt. Harry J. Watson, Winnipeg, is attached to the Perkins Bull Hospital, England.——Capt. Roland W. Young, Oshawa, Ont., after serving for a year in a hospital in Malta, is now medical officer of a prisoners' camp, 9 miles from Cairo, Egypt.——Dr. Charles L. B. Stammers, Smith's Falls, Ont., who has seen service in England, France, Malta, Egypt and Saloniki, is home on sick leave.——Capt. Harold C. Parsons, Toronto, with the University of Toronto Base Hospital at Saloniki, was returned ill to England, and has recently departed for Barbadoes to recuperate.——Dr. James B. Brown, Toronto, who was serving in the Mesopotamia campaign, returned home recently.

The Canadian Army Medical Corps.—Col. Frederick W. Marlow, Toronto, Ont., made a report before Parliament the past week, and recommended the completion of the organization of the service and, where necessary to bring the medical branch of the service up to the required standard, the increase of administrative staffs; the appointment in some districts of officers brought back to Canada from overseas; consideration of the advisability of increasing the permanent army medical corps for duty in Canada; frequent inspections of all districts and camps; the appointment of an officer for inspection, and the placing of the care of all returned soldiers under the Canadian Army Medical Corps, instead of under the Hospitals Commission, as at present. Colonel Marlow also advises the urgent consideration of the desirability of more hospital accommodation.

Canadian Doctors on Army Duty.—The minister of militia, in announcing that the Canadian Hospitals Commission would hereafter confine its work to the business side of hospital work, and that the Army Medical Corps would have charge of returned wounded soldiers, stated that the officers of the Canadian Army Medical Corps now number approximately 1,800, of whom about 500 are in Canada, and the balance serving overseas. A large proportion of those in Canada are assisting in carrying on the work of the Canadian Hospitals Commission. In addition to the numbers given above, there are 400 civilian practitioners partially employed in military work in Canada, and more than 400 Canadian doctors have proceeded overseas to join the Royal Army Medical Corps. It is announced that others who have not as yet been engaged will have an opportunity for valuable patriotic work in the near future.

GENERAL

Missouri Valley Physicians to Meet.—The annual meeting of the Medical Society of the Missouri Valley will be held in Keokuk, Iowa, March 22 and 23, under the presidency of Dr. Charles R. Woodson.

New Naval Medical Officers.—The customary graduation exercises of the Naval Medical School, Washington, were omitted at the last session, and the sixteen members of the class were presented with their certificates after a brief address by Surgeon General William C. Braisted.

New York Central Surgeons Hold Meeting.—At the annual meeting of the Railway Surgeons' Association of the New York Central Lines, held in Columbus, Ohio, February 22, Dr. William A. McMillan, Charleston, W. Va., was elected president; Drs. Harry S. Nobles, St. Marys, Ohio, and Ezra S. Koons, Glouster, Ohio, vice presidents, and Dr. John E. Cannady, Charleston, W. Va., secretary.

Rucker Guest of Honor.—The police and fire surgeons of Philadelphia gave a dinner in honor of Assistant Surgeon General William Colby Rucker, U. S. P. H. S., at the Racquet Club, Philadelphia, February 17, at which Dr. Rucker delivered a lecture, illustrated by lantern slides, showing the conditions that lead to the spread of contagious diseases in the tropics, and also the way in which these diseases are fought.

Tri-State Physicians Meet.—At the annual meeting of the Tri-State Medical Association of the Carolinas and Virginia, held in Durham, N. C., February 21 and 22, the following officers were elected: president, Dr. David T. Tayloe, Washington, N. C.; vice presidents, Drs. James K. Hall, Richmond, Va.; Addison G. Brenizer, Charlotte, N. C., and James R. Young, Anderson, S. C., and secretary-treasurer, Dr. Rolfe Hughes, Laurens, S. C. (reelected). The next meeting will be held in Spartanburg, S. C.

To Study War Medical Needs.—The commission of national defense at its session in Washington, D. C., February 24, discussed the question of the medical and surgical equipment of the army and navy in war. Dr. Karl A. Connell, New York, who had been on duty with the American Ambulance, Paris; Dr. Alexis Carrel, who has been working with the French army, and Col. Herbert A. Bruce, Toronto, formerly inspector general with the Canadian forces, appeared before the council and discussed actual war conditions.

"Medicine and Surgery": A New Publication.—The initial number of *Medicine and Surgery* of St. Louis has been received. The editor-in-chief is Dr. Philip Skrainka, the associate editorial staff consisting of men from various parts of the country. Special numbers on surgery, obstetrics and gynecology, genito-urinary diseases and syphilis are announced to be issued throughout the year. The publication is artistically prepared, and typographically is excellent. The contributions in this initial number cover a variety of surgical subjects and their general character is promising for future issues.

Bequests and Donations.—The following bequests and donations have recently been announced:

City Hospital, Oswego, N. Y., a bequest of $3,000, by the will of Leonard Ames.

Perkins Institution and Massachusetts School for the Blind, Boston; Boston Kindergarten for Blind, and Avon Home, Cambridge, Mass., $5,000 each; Cambridge Home for Aged People, $4,000; Boston Floating Hospital, $2,000, and Industrial School for Crippled and Deformed Children, $1,000, by the will of Mrs. Esther W. Smith, Cambridge.

Home of the Merciful Savior for Crippled Children, Philadelphia, $30,000, by the will of Mrs. Nannie D. Connarol.

Rush Hospital for Consumptives; Free Hospital for Consumptives and Home for Incurables, Philadelphia, each $2,000 and St. Vincent's Maternity Hospital, Philadelphia, $3,000, by the will of Suzanne E. Nead.

Pennsylvania Hospital for the Insane, a contingent bequest of the principal of a trust fund amounting to $100,000, by the will of James Anspach, Philadelphia.

The tuberculosis work of the Vanderbilt Clinic of the College of Physicians and Surgeons in the City of New York, and The Tuberculosis Clinic of the Presbyterian Hospital, New York, each $10,000; the Home Hospital for Tuberculosis, conducted by the New York Association for Improving the Condition of the Poor, $12,000; for the relief of tuberculous soldiers in Europe, $3,000; for research work of the Babbott Memorial Laboratory, of the Lumis Sanatorium, $2,000; for research work in tuberculosis at the Trudeau Foundation at Saranac Lake, N. Y., $2,000, and to the Sunny Side Farm for Tuberculous Children at Liberty, N. Y., $250,000, appropriated by the East River Homes Foundation of New York.

Aid to the Belgian Profession.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the quarter ending Feb. 28, 1917, shows the following contributions:

Dr. L. Waller Deichler, Philadelphia (second contribution)		$ 3.00
Previously reported receipts		7,958.26
Total receipts		$7,961.26
Previously reported disbursements:		
1,625 standard boxes of food @ $2.20	$3,575.00	
1,274 standard boxes of food @ 2.30	2,930.20	
353 standard boxes of food @ 2.28	804.84	
Total disbursements		$7,310.04
Balance		$651.22

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

National Board Examination.—The second examination to be given by the National Board of Medical Examiners will be held in Washington, D. C., June 13, and will continue about one week. Application blanks and information regarding this examination may be obtained from the secretary of the board, Dr. John S. Rodman, 2106 Walnut Street, Philadelphia. The following states have accepted the certificate of the national board: Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, New Hampshire, North Carolina, North Dakota and Pennsylvania. Favorable legislation is pending in twelve other states. Successful applicants may enter the reserve corps of either the army or navy without further professional examination, providing their examination papers are satisfactory to the boards of examination of these services. The certificate of the board is also accepted as a qualification for admission into the Graduate School of the University of Minnesota, including the Mayo Foundation.

Examinations in Ophthalmology.—The American Board for Ophthalmic Examinations held its first examinations at Memphis, Tenn., Dec. 14 and 15, 1916, when twelve applicants appeared for examination. Those who have been passed by the board will be duly certified after its next regular meeting. The regular annual examination for 1917 will be held just before the New York meeting of the American Medical Association. At that time only those whose applications are filed before March 1 can come up for examination. As the number of applicants from any particular section of the country becomes sufficient, special examinations will be arranged at the most convenient place that will furnish the needed facilities, the giving of a practical clinical and laboratory examination being possible only where good clinical facilities are available. Details with regard to these examinations and the requirements to be met can be obtained from the secretary, Dr. Frank C. Todd, 506 Donaldson Bldg., Minneapolis.

FOREIGN

American Surgeons Return to Their Work.—The American surgeons who left Graudenz after the diplomatic break between Germany and the United States have returned and resumed their work.

Ambulance News.—A new section of the American Ambulance left Paris for the front, February 27.——Fifty new recruits for the American Ambulance arrived in Paris, February 25.——A medical unit of ten physicians and ten nurses, financed by Hadassah, an organization of Jewish women, will be sent to Asia Minor to combat epidemics there.——Graduates of the class of 1885 of Harvard University have raised the necessary funds to procure two fully equipped ambulances, which will be presented to the American Ambulance, Paris.

Deaths in the Profession Abroad.—**Surg.-Col. Sir Benjamin Franklin,** aged 72; Indian Medical Service, M. R. C. S., England, 1867, L. S. A., London, 1869; surgeon to the Viceroy of India, and later director general of the Indian Medical Service and honorary physician to Queen Victoria and King Edward VII, died suddenly in London, February 17.——**A. Battelli,** professor of experimental physics at the University of Pisa, aged 55. His principal works were on electricity from the medical standpoint, experimental physics, etc. His pioneer researches in these lines won several important prizes. For some years he has been a member of the Italian national legislature.

Death of Dejerine.—The cable brings word of the death of the well known French neurologist, Jules Dejerine, professor of nervous diseases at the University of Paris. His neurologic service has been at the Salpêtrière in recent years, but during the war he has been in charge of the special central service for nervous affections among the wounded. His wife, née Klumpke, is an able neurologist also, and has been associated with him in much of his work, from their joint "Anatomy of the Nerve Centers" published in 1894, to recent publications on regeneration of nerves after suture, etc. He was a member of many scientific societies at home and abroad, and is said to have been particularly fond of trout fishing.

BERLIN LETTER

(Received March 2, 1917)

Berlin, Dec. 16, 1916.

Women Students in the German Universities During the Second Winter of the War

During the second winter of the war the German universities had 4,820 women students enrolled, an increase of 24 per cent. over the previous year (3,920 students), and an increase of 100 per cent. over the enrolment of 1910. Nine per cent. of all students enrolled at the present time are women; last year the percentage was 7.4, and five years ago it was only 4.4. Last year only 10,000 of the 50,000 male students were in attendance. One third of the enrolled students were women. The registration of the women students in the various courses has changed notably during the last five years. The registration in mathematics, the natural sciences and medicine has shown the greatest increase. At present 24.5 per cent. of women students are registered in medicine. Five years ago 21.8 per cent. were so registered. The number of women medical students now is 1,182; the largest number before was 527. In mathematics and the natural sciences, 894 women are now registered, as against 356 or, in percentages, 18.5 as against 14.8. In dentistry, seventy-four are registered as against forty-nine heretofore. In philosophy, philology and history, the number has increased from 1,370 to 2,393. Political economy, agriculture, law, theology and pharmacy also show increased registrations.

A Hygienic Testament of the Late Professor Czerny

Among the papers of the late Professor Czerny was found the following "hygienic testament": 1. Life is not the greatest gift. Human ideals stand higher. A belief in the future, the hope that man will no longer combat his fellows because of differences of opinion, the fulfilment of true Christian love, will create a heaven on earth. 2. However, life is the only real possession of man. Money and lands are passing possessions. Accomplishment ceases with death. 3. It is therefore your duty to conserve body and soul, and to avoid all things which may endanger or shorten the duration of this precious gift. Not every one is blessed with a cheerful disposition, good will toward others and ripe judgment in meeting the little annoyances of life. Only he who succeeds in winning these virtues for himself will truly enjoy life. All men are not equally endowed. He who stands should see that he does not fall. 4. Look well after the health of body and mind. Divide the day wisely into hours of work and recreation. Eat good, wholesome food. Be clean in every respect and live in a dry, sunny, well ventilated habitation. 5. Eight hours of work, recreation and mental development, eight hours of rest, and eight hours of sleep are best. Two hours of sleep before and two hours of sleep after midnight are the most refreshing. Two hours should be devoted to the three meals of the day, two hours for art and lectures, two hours for the family, your friends and the public, two hours for a sane sport (walking, riding, driving, rowing, swimming, gymnastics and play in the open air). 6. Food should be easily digestible, nourishing and meeting the requirements of the metabolism. No more than 1 liter of food and drink should be taken at each of the three meals. A greater amount than this overloads the stomach. Moderation in eating and drinking should be practiced. An exclusive vegetable diet, in quantities sufficient for the motor activity of the stomach and intestine, does not contain enough calories. Therefore, albumin and fat, in easily digestible form (meat, fish, eggs, butter, milk and cheese) should be added to a vegetable diet. 7. Do not be a slave to your appetite. Alcohol (beer, wine, whisky, liqueurs), coffee, tea and tobacco have no nutritive value, but from habit, extending back through many generations, they have become necessary to man, and it is difficult to substitute anything to meet the requirement. They are all poisons, whose toxic effects have been mitigated by habituation, but in immoderate quantities they shorten the life of the predisposed individual. Tobacco and alcohol disrupt the nervous system, and lead to arteriosclerosis. Coffee and tea disturb sleep, and should not be imbibed after 4 o'clock. At least once during his lifetime every man should deprive himself of the use of any and all of these substances. 8. Children must be taught cleanliness. They should be given at least one sponge bath with cold water each day, should brush their teeth twice a day and likewise cleanse the mouth and wash the face and hands. A full bath should be taken weekly. Clothing and bed linen should be changed regularly. Do not use any dishes or bathtub but your own unless you are positive that they are well cleansed. Your habitation must be roomy, dry and sunny, and sleeping rooms must be large and well ventilated. 9. Do not put any more children into the world than you can educate and feed. 10. When ill do not delay securing the attendance of a competent physician, and follow his instructions closely.

LONDON LETTER

London, Feb. 12, 1917.

The War

VOLUNTARY MOBILIZATION OF THE PROFESSION

The Central Medical War Committee has arrived at the conclusion that the whole situation with regard to the present position of the profession in relation to the war has been changed by the prime minister's statement that the time has come for the adoption of the principle of universal national service. The committee has sent a letter to him pointing out the special position and difficulties of the medical profession. By repeated appeals to the profession under the voluntary system, by its enrolment system, and by its system of calls subsequent to the passing of the military service acts, the committee has been able to provide a large number of surgeons for the army, but it is becoming increasingly difficult to keep up the supply. There are still men of military age in considerable numbers left in civil practice, but unfortunately a large proportion practice in industrial and munition areas in which the supply of physicians in proportion to population, even in time of peace, was not too great, and is now barely equal to the demands made on it. The committee, therefore, was brought to consider whether it would not be necessary to ask the government that some special steps should be taken to organize the whole medical profession for the national needs, civilian as well as military. The committee approves the general principle of mobilization of the medical profession, apart from any question of the general mobilization of the whole community, so that any physician shall give such service, whether in a military or a civil capacity, as he or she is competent to give, when required to do so by the state. The committee had intended to ascertain by an appeal to the profession whether or not its members were willing that the government should be told on their behalf that steps should be taken thus to organize the medical profession, irrespective of what was done for the rest of the community. But while the subject was under discussion, the prime minister's statement materially altered the whole situation, as the government intends that the whole community shall be mobilized for the national service. The committee thereupon resolved to seek an interview with the director-general of national service with the intention of putting the special position of the medical profession before him.

HONOR FOR THE DIRECTOR-GENERAL OF THE ARMY MEDICAL CORPS

Sir Alfred Keogh, director-general of the Army Medical Corps, has received from the king the order of G. C. B. (Grand Cross of the Bath). This is the highest honor which can be conferred on a soldier, and this is the first case in which a medical officer has received it. There has been no greater feat in the war than the swift organization and expansion of the hospital and medical service to meet the needs of our vast army, and that it has been accomplished with so little friction is due not only to the work which Sir Alfred has done during the war, but also to his preparation and planning, which he did during his previous tenure of his present office. When war broke out he had retired, but owing to his experience and capacity he was called back to his post. He has with great success harmonized the military element proper in the army with the great civilian influx, which includes most of the specialists of the country. An Irishman, he has shown all the tact and insight in handling men which has made many of his race great administrators. In the entirely new circumstances with which he was faced, he has exhibited an adaptability and flexibility which would probably be wanting, at his age at any rate, in the surroundings of the most conservative institution—the War Office—in the conservative country, if the post had been occupied by one of the more stolid English race. A remarkable tribute has been paid to him by Lord Esher, who states in a letter to the *Times* that when he was chairman of the committee which was reconstituting the War Office and proposed to put the director-general of medical services under the adjutant-general, Sir Alfred Keogh, in warm and almost impassioned language, tried to induce him to reconsider the proposal. At that time, when we were still under the influence of South African experience, and when only one or two prescient soldiers foresaw the inevitable European war, all military influences were brought to bear on the committee to limit the numbers of the army council. No one except Sir Alfred Keogh envisaged the Royal Army Medical Corps as other than an important but small branch of the "services" attached to an army in the field. It was not realized that to keep a force in the field was at least as vital a necessity as to recruit it. The present war swept away this illusion, but the mischief was done. How much of the suffering undergone by our soldiers then and since was due to the shortsightedness of the committee and notably of himself, Lord Esher says will never be known. The control of the adjutant-general's branch over the Army Medical Corps was responsible not only for the early failure to grip the medical factors of this war but also for the hampering conditions under which Sir Alfred Keogh has worked. His triumphs, and those of the Army Medical Corps have been achieved in spite of obstacles which the subordination of science to ignorance, of elasticity to military discipline, explains but cannot justify. So much for the usual official conservatism.

Increase in Number of Women in Industry

The tremendous increase which has occurred in the number of women engaged in industry since the beginning of the war is officially stated to amount to 850,000. In industrial occupations in July, 1914, there were 2,133,000 women; since then 314.000 have been reported as directly taking the place of men, the percentage of replacement being 14.7. In commercial occupations in July, 1914, there were 496,000 women; since then 264,000 women have been substituted for men, a percentage of 53.3. These two groups have evidently absorbed the largest number of women. But compared with peace-time figures the percentage of women now doing men's work rules highest in banking and finance, in transport, and in government establishments—a section which includes arsenals, dockyards, and national shell-filling and projectile factories. The accompanying table shows how largely women have been taking men's places in these branches of employment during the war.

INCREASE OF WOMEN WORKERS

Employment	Women Employed in July, 1914	Replacements by October, 1916
Banking and finance.........	9,500	37,000
Transport (nonmunicipal)....	17,000	41,000
Government establishments...	2,000	117,000
Local government	184,000	31,000

In industrial occupations the proportion of substitutes has been greatest in the chemical and metal trades. There is an actual drop in the number of women employed in the textile, clothing, and paper and printing trades. The dearth of industrial women's labor is most acute in the typical women's industries, in which the general rate of wages is considerably less than can be earned in munition factories or on men's work. Industrial substitution has been proceeding steadily. Various railways employ women as goods porters; at certain dockyards they are loading and unloading wagons, discharging loads of shale, etc., and working as pitprop and timber carriers and doing light cargo work. Women are also being engaged by plumbers as laborers; in india-rubber work they are curing tires; and in the pottery industry employers are now gradually introducing women as biscuit oven placers, although the heavy nature of the work is a difficulty. A curious side light on the restlessness caused by the war in typical feminine occupations is the estimate that 100.000 women have left domestic service and gone into war work.

PARIS LETTER

Paris, Feb. 8, 1917.

The War

AMERICAN AMBULANCES AT THE FRENCH FRONT

A new sanitary section of American ambulances has just left for the front. Like the preceding ones, this section is composed of twenty automobile ambulances and seven auxiliary automobiles (reserve cars, shop, kitchen, etc.). The initial cost of one of these sections is $30,000 (150,000 francs), and the yearly cost of maintenance is $15,000 (75,000 francs). At present there are eight sections in the service, the initial cost of which is $240,000 (1,200,000 francs), and the yearly maintenance of which costs $120,000 (600,000 francs). All the American ambulance men are students of the large universities who have volunteered for this service. More than fifty of these have already been decorated with the war cross, and two have received the military medal; some have been killed. The funds for the American ambulances have been furnished by American friends of France. The inspector general of the American ambulance field service is Mr. A. Piatt Andrew.

The president of the council of ministers has just received a telegram from Mr. Frederick Allen, president of the National Allied Relief Committee, informing him that the Allied Bazaar at Boston, arranged by the committee, yielded $450,000 and that $447,000 was realized from the bazaar held at Chicago.

NURSES AS ROENTGENOGRAPHERS

The undersecretary of state of the military health service has decided to entrust the roentgenographic work to the nurses of certain sanitary formations. Therefore he has ordered the directors of the service to inform the temporary nurses in the military hospitals subject to their orders that a course in the theory and practice of roentgenography will soon be begun at the Edith Cavell school in Paris, under the direction of Mme. Curie.

WAR NEUROSIS CAUSING GRAVE DIAGNOSTIC ERROR

Dr. G. Lian has published observations which were made on a soldier sent to a hospital with a disease diagnosed as "serious cardiac trouble (incapable of ever rendering further service in the army)." The striking symptom of this patient was a rolling, heaving movement of the body which threw forward the left hypogastric region and the left side of the chest while retracting the left clavicle, accompanied by spasmodic contractions of the muscles of the left anterior half of the thorax. A thorough clinical examination revealed the fact that there was no definite connection between this body movement and the regular radial pulse (25 respirations to 18 radial pulse beats). The patient suffers with insomnia, headache, tremors, mydriasis, and an exaggeration of the tendon reflexes. These symptoms appeared during a four days' bombardment in October, 1914. This disease, then, is not a grave cardiac disease, but a severe neurosis, a so-called war neurosis, the principal manifestation of which is a rhythmic, spasmodic contraction of the muscles of the left anterior half of the thorax.

TREATMENT OF COMPOUND FRACTURES

Dr. Depage of Brussels commends the Carrel method in the treatment of compound fractures. Immediately on the arrival of the patient at the field hospital the wound is laid open widely, bruised tissues are trimmed off, and all foreign material removed. Any bone splinters which appear to be alive are left undisturbed. Absolute hemostasis is produced. A number of Carrel tubes are then inserted, and the wound is irrigated every two hours with Dakin's solution. The dressings are renewed daily, and at each dressing the wound is cleansed thoroughly with neutral sodium oleate. The treatment is controlled by a thorough and careful bacteriologic examination. When the smear is negative for two or three days, the wound is closed by suture. The edges are trimmed, all cicatricial tissue being removed, and a perfect closure is effected. Granulations are left undisturbed. Flap operations are done when necessary, and resort is had to Tiersch grafting when this is indicated. Depage's results have been exceedingly gratifying.

The Apportionment of Sugar and the Use of Saccharin

In certain cities of the province (Pau, Troyes, etc.) sugar is being distributed by card. The central committee of sugar distribution favors using saccharin in the preparation of such products as have nutritive value without sugar, such as biscuits and pastry. The committee is strongly opposed to the substitution of saccharin for sugar in the manufacture of chocolate, because its greatest nutritive value is the sugar, which is an important ingredient in the preparation of chocolate. The committee is also opposed to the use of saccharin in sugar bonbons.

Assistance for the Roumanian Hospitals

A committee, composed of many noted women of the Roumanian colony of Paris, has just been formed to supply Roumanian hospitals with linen, woolen goods, and particularly woolen clothes. Donations will be received at the office of the committee, Avenue d'Antin, 49 bis, Paris.

The joint committee of the Parisian press at its last meeting decided to direct attention to the work of Mme. Lahovary, wife of the Roumanian minister to France, which is being conducted under the patronage of the queen of Roumania. The object is to aid the soldiers and people of Roumania who have become victims of the war. The address of this committee is 114 Champs-Elysées, where all gifts of currency or goods will be received. The names of the subscribers will be published in *Le Figaro.*

Prophylactic Value of Antitetanic Serum

Dr. Thiéry, associate professor at the Faculté de médecine de Paris, at a recent meeting of the Société de Chirurgie de Paris refuted the principal arguments invoked in favor of the prophylactic efficacy of antitetanic serum. It is said that since preventive injections are systematically made, tetanus is no longer observed. But, he asked, was it much observed before they were made? And do those who do not use the serum see more cases of tetanus than do those who use the serum? Before the war, Thiéry had never observed tetanus in a wounded patient who was treated in time and without serum. At the beginning of the war, numerous cases of tetanus were observed; since serum has been used prophylactically none have been observed. But this does not take into consideration evolution in the treatment of fresh wounds. Thiéry has obtained the best results with simple surgical operations and the use of antiseptics. Before the war Thiéry saw tetanus develop in a patient who had been given a timely injection of serum. A wounded soldier discharged from service succumbed to tetanus after his return home; he had also received injections of serum. One would say that in the first case the injection should have been repeated; retarded tetanus would be the verdict in the second case. The fact remains, however, that in both these cases of tetanus and death, serum injections had been given.

Dr. Riche reported the case (related to him by Dr. Desplas) of a man wounded in the shoulder by a bullet twenty months previously who had not received at that time an antitetanic injection. Sixteen days after operation, in which fragments were extracted, and in spite of an antitetanus serum injection given at the operation, and another injection given at a later operation, the patient developed generalized acute tetanus which lasted fifty days. According to Riche this observation may be interpreted in two different ways. The deduction would be that the patient remained for twenty months a carrier of tetanus germs; the bacilli, encysted by cicatricial tissue, as was the projectile, could have been liberated at the time of operation and cause generalized, acute tetanus in spite of one injection of serum made at that time and of a second eight days later. If this is true, then it is reasonable to doubt the efficacy of the preventive serum, not only as it is habitually employed, that is, after receipt of a wound, but also when it is given before receipt of a wound. It is possible that the serum itself caused the clinical picture; not that serum can cause tetanus; but it can produce tetaniform contractions which would correspond with relative apyrexia occurring in the course of generalized contractures. Another point in favor of this hypothesis is the fact that Desplas removed with the projectile the fibrous tissue which surrounded it, thereby eliminating to a great extent the probability of inoculation. It is not, therefore, the preventive efficacy of the serum, but its innocuousness, which would be doubted. And, perhaps, we should find there an explanation for the so-called cases of tetanus overcome by a preventive injection of serum.

At the Battle of the Marne there was a shortage of serum, and therefore, it is said, there were many cases of tetanus. The supply has since been replenished and tetanus has disappeared—proof of the efficacy of the serum. But Riche does not believe this to be the case. The Battle of the Marne was an event to which nothing that has since happened can be compared. Conditions existing at that time explain the extraordinary number of cases of tetanus observed. Among these were the great number of men wounded in a short time, difficulties of administering immediate treatment, ignorance of the necessity of early operation, the multitude of horses used as mounts and for draying purposes, and evolution of surgical technic in a region especially tetaniferous (swamp lands).

Dr. Walther, on the other hand, is firmly convinced of the prophylactic value of antitetanic serum. Among 270 wounded German soldiers, he observed nineteen cases of tetanus. They had all been wounded in the Battle of the Marne, and had been abandoned in the field hospitals by the retreating German army. They were without care for several days. On their arrival at the hospital, they were given injections of antitetanic serum, but there was a shortage of serum which prohibited its administration in some cases. Only one case of tetanus occurred among those who received injections. All the other cases developed among those who had not been treated with the serum. The preventive injection, in spite of delays (from five to eight days after the receipt of wounds) was therefore unquestionably of value. Walther is also convinced of the therapeutic efficacy of the serum. He cites two serious cases of tetanus in which a cure was effected by intraspinal injections of serum in quantities of 200 and 250 c.c., respectively. Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris, did not believe that at the present time the value of antitetanic serum could be doubted. Thiéry contested the efficacy not only of antitetanic serum, but also of all forms of serotherapy. Dr. Proust had occasion to compare the differences of manifestations of primary tetanus in patients who had received injections and those who had not. At the beginning of the war, in August, 1914, he saw many fatal cases of primary tetanus. Unfortunately, antitetanic serum was not available and the wounded arrived at the interior hospitals without having received injections. Since then, on the other hand, under similar conditions of observation, not more than four cases of tetanus were discovered among more than 5,000 wounded soldiers, and even these four cases were attenuated to a considerable extent. All these facts speak volumes for the value of preventive injections of serum in tetanus.

Dr. Leriche claims to have observed in August, 1914, in the Vosges region and in Alsace, numerous cases of tetanus followed by early death. He did not have any serum. In September and October, 1914, there was a tetanus epidemic in the Oise and Somme districts. Toward the middle of October a supply of serum arrived. Following its use, tetanus practically disappeared. Surgical treatment of wounds is not the only cause of the disappearance of tetanus. On the other hand, systematic reinjection before operation eradicates late or retarded tetanus, just as the preventive injection caused primary tetanus to disappear.

Marriages

Lemuel Pinckney Peters, M.D., Clayton, Ill., to Miss Minnie J. Lucas of Timewell, Ill., at Chicago, January 27.

Leo Robert Fitzgerald, M.D., Detroit, to Miss Winifred LaMere of Florence, Wis., at Detroit, February 19.

Lieut. Asa Margrave Lehman, M. C., U. S. Army, to Miss Jessie Evelyn Roberts of Ardmore, Pa., February 2.

John Edward Siebel, Jr., M.D., Chicago, to Miss Pearl Meade of Los Angeles, at St. Louis, February 19.

P. A. Surg. Richard Henry Laning, U. S. Navy, to Miss Marguerite C. Boyer, at New York, February 5.

Asst. Surg. Charles Joseph McDevitt, U. S. P. H. S., to Miss Katherine O'Neill, at Seattle, February 7.

Pasquale Romeo, M.D., Bridgeport, Conn., to Miss Zula Zedeth Williams of New York, February 20.

Alexander Maxwell Glueckstein, M.D., to Miss Frances Davis, both of New York, February 22.

William Clyde Ellis, M.D., to Mrs. Reba Elliot, both of Phoenix, Ariz., February 14.

Deaths

Abraham Mylin Barr, M.D., Pittsburgh; Jefferson Medical College, 1865; aged 82; major and surgeon of the One Hundred and Forty-Second and One Hundred and Ninety-Second Pennsylvania Volunteer Infantry, during the Civil War; for six years a member of the select council of Pittsburgh; for four years a member of the common council and for six years physician to the city of Pittsburgh and county of Allegheny; local surgeon to the Pennsylvania System; died at his home, February 15.

William Bancroft Anderton, M.D., New York; Bellevue Hospital Medical College, 1879; aged 60; a Fellow of the American Medical Association; assistant to the chair of obstetrics and diseases of women and children in his alma mater from 1881 to 1889; attending physician to the DeMilt and Bellevue Hospital dispensaries; a member of the New York Academy of Medicine and the Harvey Society; died at his home, February 23.

Everton Judson Abbott, M.D., St. Paul; University of Wooster, Cleveland, 1875; aged 67; formerly a member of the Minnesota State Medical Association, and president of the Ramsey County Medical Society; professor of clinical medicine in the University of Minnesota, Minneapolis; attending physician to the St. Paul City and County Hospital, and attending surgeon to St. Joseph's Hospital, St. Paul; died at his home, February 25.

A. Miner Straight, M.D., Bradford, Pa.; Western Reserve University, Cleveland, 1870; Bellevue Hospital Medical College, 1874; aged 69; a Fellow of the American Medical Association; local surgeon of the Pennsylvania, and Buffalo, Rochester and Pittsburgh railroads; consulting surgeon to the Bradford Hospital since 1886; died at his country home, Barondale, February 19.

Alva Naylor, M.D., Platte City, Mo.; University Medical College of Kansas City, Mo., 1905; aged 46; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; was instantly killed, February 19, by the overturning of his automobile while making a professional call near Platte City.

Edward Field Walker, M.D., Providence, R. I.; College of Physicians and Surgeons in the City of New York, 1876; aged 70; a member of the Rhode Island Medical Society; obstetrician to and president of the staff of Providence Lying-In Hospital; consulting physician to St. Aloysius Home; died at his home, December 12.

Walter Hildreth Ranks, M.D., Shelburne, Vt.; University of Vermont, Burlington, 1897; aged 41; formerly a Fellow of the American Medical Association; a member of the Vermont State Medical Society; died in the Mary Fletcher Hospital, Burlington, January 17, a week after an operation for gastric ulcer with perforation.

Lewis Watson Smith, M.D., Pittsburgh; University of Pennsylvania, Philadelphia, 1901; aged 43; a Fellow of the American Medical Association, and a member of the American Association of Obstetricians and Gynecologists; a member of the staff of the Pittsburgh Free Dispensary; died at his home, February 23.

Raphael Brodeur, M.D., Cadillac, Mich.; University of the Victoria College, Coburg, Ont., 1873; aged 69; a member of the Michigan State Medical Society; sometime coroner of Wexford County and city physician of Cadillac; died suddenly while returning from church in his automobile, December 21.

N. E. Wilson, M.D., Douglass, Kan.; University Medical College of Kansas City, 1907; aged 40; formerly a member of the Kansas Medical Society; once mayor of Douglass; local surgeon to the Santa Fe System; died in a hospital in Winfield, Kan., February 8, from postpharyngeal abscess.

Arthur Mott Haight, M.D., Indianapolis, Ind.; College of Physicians and Surgeons in the City of New York, 1874; aged 66; a member of the Michigan State Medical Society; for forty years a practitioner of Michigan; died at the home of his daughter in Greenfield, Ind., January 16.

Edward Calvin Culbertson, M.D., Canton, Ohio; Ohio Medical University, Columbus, 1900; aged 44; formerly a member of the Ohio State Medical Association; superintendent of the Canton Emergency Hospital for the last three years; died at his home, February 20.

Edmund Elwood Fall, M.D., Walla Walla, Wash.; College of Physicians and Surgeons in the City of New York, 1887; aged 57; for several years manager of the Walla Walla *Evening Statesman;* died at his home, February 10, from cerebral hemorrhage.

Isaac C. Lambert, M.D., Colfax, Ind.; Curtis, Physio-Medical Institute, Marion, Ind., 1888; Kentucky School of Medicine, Louisville, 1899; aged 67; a Fellow of the American Medical Association; died at his home, January 25, from pneumonia.

John Thomas Curtis, M.D., Abilene, Kan.; Northwestern University Medical School, Chicago, 1867; aged 79; assistant surgeon of the Ninety-Ninth Illinois Volunteer Infantry, during the Civil War; died in the State Soldiers' Home, Abilene, January 11.

Gustavus Pierce English, M.D., Boonville and Utica, N. Y.; Long Island College Hospital, Brooklyn, 1882; aged 59; a member of the Medical Society of the State of New York; a specialist in diseases of the nose and throat; died in Utica, February 15.

Edward George, M.D., Van Buren, Ohio; Medical College of Indiana, Indianapolis, 1876; aged 66; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association; died suddenly at his home, February 21.

Winfield Scott McFarland, M.D., Sharpsville, Pa.; University of Wooster, Cleveland, 1885; aged 69; a member of the Medical Society of the State of Pennsylvania; also a druggist; died at his home, February 15, from cerebral hemorrhage.

Daniel Francis Ayres, M.D., Chicago Heights, Ill.; College of Physicians and Surgeons, Chicago, 1905; aged 47; formerly a Fellow of the American Medical Association; was found dead in his office in Chicago Heights, about February 12.

Edward Stark Parker, M.D., Pawtucket, R. I.; Harvard Medical School, 1900; aged 42; a member of the Rhode Island Medical Society; who was injured in an automobile collision several weeks ago; died at his home, February 18.

William Plunkett, M.D., Waterloo, Iowa; Michigan College of Medicine, Detroit, 1883; aged 83; for thirty years principal of a public school, and for fifteen years township clerk of Bayfield, Ont.; died at his home, February 13.

Howard Marsh, M.D., Russell, Kan.; Marion Sims College of Medicine, St. Louis, 1901; aged 45; a member of the Kansas Medical Society; a specialist on diseases of the eye, ear, nose and throat; died at his home, January 3.

Oramon Weed Burns, M.D., Winneconne, Wis.; Dartmouth Medical School, Hanover, N. H., 1877; aged 66; a member of the State Medical Society of Wisconsin; died at his home, January 17, from heart disease.

William Lee McFarland, M.D., Benicia, Calif.; Kansas City (Mo.) Medical College, 1890; aged 48; formerly a member of the Medical Society of the State of California; died at his home, February 2.

Humphrey M. Burfield, M.D., Bentonville, Ark.; Howard University, Washington, D. C., 1889; aged 73; for many years an official of the Pension Bureau, Washington, D. C.; died at his home, February 8.

Robert Emerson Thompson, M.D., Milwaukee, Wis.; Milwaukee Medical College, 1901; aged 51; formerly a member of the State Medical Society of Wisconsin; died at his home, February 22.

John Lunney, M.D., Darlington, S. C.; Eclectic Medical College of Pennsylvania, Philadelphia, 1864; aged 78; a Fellow of the American Medical Association; died at his home, February 17.

John L. Stearnes, M.D., Salem, Va.; University of Pennsylvania, Philadelphia, 1858; aged 82; a member of the Medical Society of Virginia; died at his home, February 22, from pneumonia.

William M. Clover, M.D., Knox, Pa.; Eclectic Medical Institute, Cincinnati, 1867; aged 86; formerly a Fellow of the American Medical Association; died at his home, February 26.

Edward Randolph Sumpter, Pulaski, Tenn. (license, Tennessee, 1901); aged 58; formerly a member of the Tennessee State Medical Association; died at Jacksonville, Fla., February 20.

Washington Jones Brandt, M.D., Brooklyn; College of Physicians and Surgeons in the City of New York, 1880; aged 58; died at his home, February 14, from cerebral hemorrhage.

Frederick Gilnack, M.D., Rockville, Conn.; College of Physicians and Surgeons in the City of New York, 1867; aged 72; died at his home, January 3, from epidemic influenza.

Ernest Emil Mullen, M.D., Merwin, Ohio, and Apopka, Fla.; University of the South, Sewanee, Tenn., 1894; aged 49; died at his winter home in Apopka, January 11, from influenza.

Herbert John Taxis, M.D., Pyrolite, Colo.; Jefferson Medical College, 1889; aged 52; formerly a member of the Colorado State Medical Association; died recently at his home.

Joseph E. W. Haile, M.D., Rockhill, S. C.; University of Pennsylvania, Philadelphia, 1880; Atlanta (Ga.) Medical College, 1882; aged 57; died at his home, February 11.

Jared Alonzo Greene, M.D., Boston; Eclectic Medical Institute, Cincinnati, 1867; aged 71; for one term mayor of Laconia, N. H.; died in that place, February 16.

Robert McChesney, M.D., Wilford, Utah; University of Virginia, Charlottesville, 1849; aged 89; died at the home of his daughter in Wilford, about January 24.

Henry Thomas Mairs, M.D., Osborn, Mo.; Missouri Medical College, St. Louis, 1888; aged 53; died at his home, December 29, from cerebral hemorrhage.

Duncan B. McFarlane, Tulsa, Okla. (license, Arkansas, 1903); surgeon in the Confederate Army during the Civil War; died at his home, February 8.

William Harvey Sanders, M.D., Paducah, Ky.; Long Island College Hospital, Brooklyn, 1864; aged 73; died at his home, January 26, from facial erysipelas.

J. W. Settle, M.D., Mexico, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1864; aged 79; died at his home, January 30, from senile debility.

William Lincoln Paine, M.D., Westfield, Mass.; University of Vermont, Burlington, 1879; aged 62; died at his home, January 21, from pneumonia.

Frank E. Young, M.D., Canton, Ohio; Cincinnati College of Medicine and Surgery, 1874; aged 64; died at his home, February 3, from asthma.

William Landt, M.D., Mohawk, N. Y.; New York Medical College, New York, 1858; aged 23; died at his home, December 28, from pneumonia.

Walter W. Lee, M.D., Gordon, Ga.; Medical College of Georgia, Augusta, 1884; aged 63; died at his home, January 29, from heart disease.

Thomas J. Vance, M.D., Minden, La.; Jefferson Medical College, 1858; aged 82; a Confederate veteran; died at his home, February 3.

Hiram J. Hazelton, M.D., Barnett, Vt.; Homeopathic Hospital College, Cleveland, 1863; aged 78; died at his home, February 15.

Aurora W. Giddings, M.D., Anoka, Minn.; Albany (N. Y.) Medical College, 1854; aged 86; died at his home, February 3.

John P. Treacy, M.D., Pittsburgh; New York University, New York, 1862; aged 78; died at Chicora, Pa., February 8.

J. R. McCray, Tiffin, Ohio (license, Ohio, 1896); died at his home, February 9, from pneumonia.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

KILLING PUBLIC HEALTH LEGISLATION

Michigan and North Dakota Are Instructed How to Legislate by a Cincinnati Advertising Agency

The "patent medicine" fraternity is again up to its old tricks in attempting to defeat legislation that has for its object the protection of the public health. During the past few months some states, recognizing that the public had the right to know what it is taking when it prescribes for itself, have introduced bills in the legislatures which would regulate to some extent the sale of "patent medicines" and would require, among other things, the statement of the names and quantities of the active ingredients of such medicines. Such a bill was introduced in the legislature of North Carolina and it had the approval not only of the state board of health but also of the newly elected governor of that state. The "patent medicine" interests chloroformed the bill!

There are now before the state legislatures of Michigan and North Dakota, respectively, two bills which the "patent medicine" people are fighting tooth and nail. Not that the opposition comes openly and frankly from the nostrum interests; that isn't their way of doing business. The Thompson-Koch Co., a Cincinnati advertising agency, is the "Bunty" who "pulls the strings." We have just received from Michigan a circular letter which, according to our informant, "has been sent to every druggist in Michigan." It is in opposition to House Bill No. 187 introduced by Representative Littlejohn. Here is the letter:

THE THOMPSON-KOCH CO.
ADVERTISING AGENCY
NEWSPAPERS, STREET CARS, MAGAZINES, BILLBOARDS, ETC.

32 West Sixth Street
Cincinnati, O.

"Please write or wire members of your State Legislature to use every legitimate influence to kill Michigan House Bill No. 187 by Littlejohn so-called formulæ disclosure registration and license bill would result in withdrawal of all advertising and sale of package, household medicines, cosmetics and hair tonics in your state. That is result desired by members of doctors trust who are responsible for and back of this same bill in twenty different states and defeated every time. We believe doctors trust thinks they control the Michigan Health Department. Withdrawal of advertised package medicines and household medicines would result in inevitable increase in useless, dangerous and needless operations and would compel a doctor's fee in every slight ailment. It is monstrous, vicious, mercenary and puts life and death in hands of political doctors without restraint, law or competition. The true object of this bill is to kill self-medication and compel your people to pay doctors fee in every slight ailment. The privacy of homes of people of Michigan in great danger. No possible good can result from this legislation. Advertised package medicines and household medicines are already governed by the strictest United States Food and Drugs Law, the Sherley Law, the Harrison Anti-narcotic Act and the United States Internal Revenue department's rulings on alcohol in medicines and the States Food and Drugs Act of Michigan. Do you know however that the doctors medicines in your state are entirely unregulated, but certainly should be. Doctors trust bill exactly like this one has just been defeated in North Carolina and it should surely be defeated decisively in your state. This is so important that we ask you to wire your Members of Legislature to defeat House Bill No. 187, and you will earn gratitude of the people of your state in defeating what we believe an under-handed attempt of doctors trust to prevent freedom in selling household medicines in your state. Fight it hard. Think, work quick to defeat this unjust bill. Thanks for help.

The Thompson-Koch Advertising Agency."

The State Dairy and Food Department of Michigan has just issued a circular concerning House Bill No. 187. The facts it recites make interesting reading in connection with the highly colored piece of fiction sent out by the Thompson-Koch Advertising Agency. Here it is:

"The State Dairy and Food Department is charged by law with the inspection of all drugs and medicines as well as food in this state. It is made the duty of the department to find out what people put into their stomachs for medicines as well as foods. There are several thousands of proprietary remedies on the market. Many of them have merit, some are useless, and some are plain frauds, like the consumption and cancer cures. To analyze and inspect all these remedies would cost the state a great deal of money and yet the people should be protected from imposition in the medicine line.

"The State Dairy and Food Department, after careful study of the situation, drafted a bill to meet the situation fairly for all concerned. House Bill No. 187, introduced by Representative Littlejohn, is not the product of any so-called 'Doctors' Trust.' It was drawn by the Dairy and Food Commissioner. No doctor except Representative Littlejohn ever saw it before it was introduced. No doctor was consulted in the drafting of it. It is being misrepresented by advertising agencies and others as a 'formula disclosure' bill. There is not a line in it compelling the disclosure of any formula. The bill simply provides that manufacturers of proprietary remedies shall register the names and furnish a sample of their product to the Dairy and Food Commissioner. This saves the state the expense of traveling inspectors to pick up the samples. It provides that each manufacturer shall pay to the department $10 for the first registration and $5 for each subsequent one to meet the cost of inspection and analysis. If the manufacturer wishes to avoid paying this inspection fee he can do so by disclosing his formula and thus save the department the expense of analysis, but if he pays the inspection fee he is not obliged to disclose the formula. No manufacturer of a meritorious proprietary remedy can reasonably object to the provisions of this bill. The objections of the manufacturers of fakes should be disregarded. The bill will make conditions better for the owner of a preparation of merit. The only restriction on advertising in the bill is that advertisements of remedies claiming to cure consumption, cancer and other admitted non-curable diseases, should be prohibited. All reputable newspapers already refuse this kind of advertising. Yearly the manufacturers of proprietary remedies take large sums from the people of this state; most of them are located outside the state and pay no state tax. Why should they object to paying a paltry fee to reimburse the state for its inspection of their products? The bill as drawn does not affect the retail drug trade and preparations made by the local druggist are specifically exempt under the terms of the act."

The physician who sent in the Thompson-Koch letter suggested that "proprietary and patent nostrum interests are in bad straits when they have to hide behind an advertising agency in Cincinnati in order to carry their point before the Michigan legislature." The Thompson-Koch Advertising Agency has, apparently, sent the newspapers of North Dakota telegrams practically identical with the letter printed above. In one of these sent us by a correspondent in North Dakota, a light touch is given by a postscript scribbled at the end of the message, to this effect: "They ought to pass a law prohibiting the sending of such fool messages as this."

The North Dakota papers have also received a shorter telegram from an advertising agency in New York warning the papers that the bill in question is the result of the "secret workings of Chicago's Doctors' Trust" and adds the magic suggestion that should the bill pass "no medicines or allied lines could be advertised in North Dakota."

It remains to be seen whether the druggists of Michigan and the newspaper publishers in North Dakota will jump through the hoop at the crack of the whip of the advertising agencies that are acting as ring-masters for the "patent medicine" interests.

ICHTHYTAR

Report of the Council on Pharmacy and Chemistry

Ichthytar was submitted to the Council with the claim that it was essentially similar to ichthyol in composition and superior to it in therapeutic properties. The statements that were submitted regarding its composition made it impossible to determine whether or not it was similar to or identical with ichthyol. No evidence was furnished in regard to its therapeutic value.

On June 19, 1916, the Szel Import and Export Company was advised that more specific information was desired in regard to the chemical composition of Ichthytar, particularly evidence to substantiate the claim that it is essentially identical with ichthyol and also evidence for the claim that Ichthytar is "far superior" therapeutically to the product "of a similar name manufactured by a certain Company in Germany."

No evidence was received by the Council either in substantiation of the claimed composition or the asserted therapeutic properties of Ichthytar. On the other hand, as late as Oct. 3, 1916, the claim was made that Ichthytar is the "equivalent of the so called 'ICHTHYOL' of German origin."

On the basis of the available information the Council held the claims regarding composition and therapeutic value unsubstantiated and Ichthytar ineligible for New and Nonofficial Remedies.

Correspondence

The Young Doctor and Health Insurance

To the Editor:—In The Journal, Feb. 24, 1917, p. 651, I note a letter from Dr. Emmons under this title in which he speaks of Dr. Lambert's "excellent paper" on the subject of health insurance. He expatiates on the impossibility of making a living such as is due the modern graduate in medicine under present conditions, owing to low prices and strong competition of older men in the business, and inquires whether the proposed health insurance enactment would not be a splendid opportunity for the modern graduate, professionally and financially. He pertinently asks whether the public will receive proper treatment under such a measure. He further suggests that after from five to ten years of service the young physician engaged in public health insurance work might transfer to private practice of a more paying nature and release this work to younger men coming out of the colleges.

As this is the most talked of and important theme before the medical profession, and would have the same importance in the minds of future patients if they were acquainted with the propositions before several state legislatures on the subject of health insurance, I wish to make a few statements and ask a few questions for the general good and welfare.

Compulsory health insurance, as exemplified by the Mills bill, about to be considered by the New York state legislature, is similar to the health insurance measures enacted in England and Germany, where the members of the medical profession were markedly reduced financially and many of them completely beggared. How is this process of practicing to increase the finances of doctors, young or old? The Mills bill practically provides for the extension of lodge work, as can be verified by carefully perusing Sections 15 and 63, and for maternity work on the same line of precedure, as shown by Section 13.

Can any one honestly state that contract practice, as exemplified at the present time in lodges and through the corporation doctor, is a good thing for the public or the physician?

If through the proposed measure the panel physicians receive twice as much as the German physicians received under the compulsory health act, or a capitation pay of $3 a year, and could have the maximum number of patients to treat allowed under the law, they would be able to make something like $3,000 a year for making somewhere in the neighborhood of 17,000 personal consultations a year, allowing for the ten days' sickness averaged by workmen and 2,000 extra calls on account of women and children being more in need of medical attendance than men, and considering the office calls that would necessarily arise from such an amount of work to be at the rate of fifteen per day. This would average the physician somewhere from 15 to 18 cents a visit, house and office, and keep him at work night and day.

Would twice this amount remunerate the young man from college, and would this sort of experience fit him to do careful, scientific work in after years?

I should like to ask if personal choice of a physician (the free birthright of an American) and payment by visitation, or some method giving a living fee, are not fundamental principles in the practice of medicine. Both of these fundamental principles are violated in the Mills bill. While there is mention of "reasonable free choice of physician," the provision of funds to be raised by syndicates employing 250 or more men would nullify such free choice, and furthermore the extension of present society funds would have the same effect, so that a large number of the people to be affected by the measure would be deprived of their personal wishes in this respect. Concerning the remuneration of the physician, there is nothing more to be said than is mentioned above.

Shall the profession give its acquiescence or approval to a method of practice which promotes the loss of the injured man's rights, as in the case of farming out a crowd of men to be treated medically, so that the company doctor and the company lawyer can be on the ground first in case of accident?

Shall we sanction the passage of any measure that on the surface appears to be paternalistic, class legislation, benefiting a few at the expense of the many, without submitting it to a referendum and giving the physicians and their patients a chance to discuss the terms of the law and the probable benefits to be derived from its adoption?

This is the most important measure that has come before the public for a great many years, as it affects about 80 per cent. of the population and is alike important to the doctor and his patients.

We can hardly afford to enact such a measure for the benefit of a few physicians who will hold fine salaried offices, as provided for in the Mills bill in the case of the commissioners and their assistants, and to fill the pockets of a lot of political henchmen who will be sure to benefit by the creation of a machine having at its disposal something like three hundred million to spend for its beneficiaries, a considerable portion of which sum would undoubtedly be used up before it reached the poor workman for whom it is intended, unless this political mechanism worked very different from the routine business of managing political affairs.

Would it not be well for the medical profession to turn constructive and make a counter proposition that would be more adequate to suit the mutual needs of the doctor and patient than is offered by the proponents of health insurance laws now before the different state legislatures?

John V. Woodruff, M.D., Buffalo.
Chairman, Committee on Economics, Medical Society of the County of Erie.

Compulsory Health Insurance

To the Editor:—Referring to the letter of Mr. John B. Andrews, on this subject, The Journal, March 3, 1917, p. 729, I plead guilty to the exercise of poor judgment in quoting an estimate which I had no means of verifying; however, my reference was given. Mr. Andrews states no authority for his figures. It is to be hoped that they are correct. The statement that the British plan permits "free choice of physician" is hardly true, as that plan does permit choice of panel physicians, which is a far different thing to American interpretation. The one material point which I have wished to make is misunderstood by your correspondent, in his closing paragraph. I would not wish preventive medicine to supply "the same medical care as that offered by health insurance," but I do recognize that it has given and can give so much better service as to remove all reason for the makeshift of health insurance. A worker "left without resources" is one without either money or short time credit. This state occurs chiefly in the poorest paid and least thrifty class of workers. These men in their faulty habits of living and their invitations to disease can never be materially changed through health insurance. They can be materially changed through enlightenment and continued supervision. This contention is based on truth and a knowledge of conditions. That its promulgation should prompt a critic to endeavor to hoodwink the medical profession with the assumption that "physician" and "panel physicians" are synonomous terms leads to a query as to the identity of the critic. I would refer all men interested in this point to the remarks of Dr. C. E. Mongan before the Council of the Massachusetts Medical Society, *Boston Med. and Surg. Jour.*, Jan. 4, 1917.

W. D. Chapman, M.D., Silvis, Ill.

Compulsory Health Insurance

To the Editor:—The educational campaign of the advocates of compulsory health insurance has aroused much thought and discussion. Contrary to the course of events in European countries, the medical profession has been aroused in America before any measure has been placed on the statute books. This is fortunate, for the working of any health insurance scheme falls directly on the physicians and tends to change the fundamental basis of the practice of medicine from a personal relation to a corporate or commercial one. Whether this is a desirable change should not be decided hastily.

Wherever health insurance is in operation, the quality of the medical insurance work tends to become poorer, owing to an overworked and underpaid profession. Nothing has yet been brought forward which proves conclusively that the same thing will not happen in the United States. Figures of any kind in regard to medical fees under the proposed health insurance scheme are almost impossible to obtain from its advocates. It has been said that fees may be twice those of the English system. The highest figures obtainable work out to about 40 cents a call. Now physicians as a general rule consider their fee a secondary matter, and their present apprehension is for the quality of service quite as much as for their personal incomes. People get about what they pay for, and value it accordingly. The medical profession does not wish to become a 40 cent profession commanding 30 cents' worth of respect, nor does it wish to see the evils of lodge and contract practice extended.

Is not health insurance an attempt to supplement an inadequate wage, and if so, is there any reason why the burden of it should fall on the medical profession? It is fundamentally an economic question. The average wage is not sufficient for a workman and his family to live on in health; neither can they afford to be sick. To this premise all investigators subscribe. But the remedy! Shall it be a living wage, or various expedients to quiet the social unrest, such as hiring physicians, at a similar inadequate wage, to treat ills that could largely be prevented or cared for in the usual way, if the worker were paid a healthful wage? "Health is purchasable."

General Gorgas tells how good pay, which enabled the workmen in the Panama Canal Zone to live properly, did more to raise the health of the zone community to its very high standard than all the other sanitary measures. Real public health is impossible without adequate wages.

No one realizes more sympathetically than physicians the need for better health and care in sickness among the laboring classes. But health insurance, as at present advocated, merely spreads the burden. We must go to the root of the trouble, and secure for every man, woman and child his right to health through his ability to purchase the requisites for vigorous well-being.

Albert Bowen, M.D., Rochester, N. Y.

Medical Services in Social Insurance

To the Editor:—In the last issue of The Journal for the year 1916, you call for discussion on the compulsory health insurance problem. You also call attention to the fact that the council of the New York State Medical Society endorses the plan of the American Association for Labor Legislation.

It is increasingly apparent that the physicians of New York state are not inclined to agree with the council in commending the plan of the American Association for Labor Legislation.

Discussion of this subject in Buffalo has brought out clearly the main point of contention, namely, the provisions under the act for employment and payment of physicians.

Physicians as a class are only academically concerned with health insurance, considered from the insurance point of view alone. I believe the majority of physicians are heartily in favor of adequate compensation for the laboring man during illness. The question which I and doubtless most of the profession will ask is this: Why must the physician be dragged or dragooned into the measure at all? Why not insure the laboring man according to the best advice of the actuaries and leave the question of medical attendance absolutely open? The physician would be pleased to know that his patient is being well compensated during illness, giving reasonable assurance of payment for medical and surgical services in many cases in which without insurance no payment whatever would be expected. If home or hospital care be called for, that too might be provided for in the act by a more generous compensation, commensurate with the needs of the case.

The act might still provide for the appointment of official medical examiners or diagnosticians to protect insurance funds against malingering and conspiracy.

I have read any quantity of discussion on the question of health insurance, but so far have seen no measure offered which does not in some way propose to regulate medical practice.

As an afterthought, it does not seem practicable to attempt, as this measure obviously does, broadly to regulate or restrain quackery and malpractice by this indirect means. If quackery remains a problem in spite of present legislation, surely it will not be controlled by any form of health insurance legislation. Joseph S. Lewis, M.D., Buffalo.

Another Scheme for Health Insurance

To the Editor:—Allen County, Kansas, has had a good deal of trouble regarding the care and compensation for the county poor. Last December I was elected president of the county medical society, and immediately proceeded to put in operation a plan which seems to have solved the problem satisfactorily to every one. I contracted with the county commissioner to care for the pauper practice for a fixed sum per month. As county health officer, all calls come to my office. They are then distributed among the members of the society. We have a scale of points, and each county service is counted so many points. The accompanying card is issued for each patient, and the funds are divided according to the points received by each physician.

J. S. Sutcliffe, M.D., Iola, Kan.

ALLEN COUNTY MEDICAL SOCIETY

This card entitles..
or family, Residence..
to free medical treatment for one week from date. Should further treatment be required, a new order must be obtained from
Date.............. ....
COUNTY HEALTH OFFICER

This is to Certify that I have rendered the following services
to ....
Diagnosis: ....
State nature of services rendered and dates..................
....
Number of points to be filled in by Secretary..............
Dr..

Note: This card must be presented to the secretary of the medical society not later than three days after the regular meeting, following above dates; otherwise no credit will be allowed.

Bacterial Findings and Their Relationship to Pyorrhea Alveolaris and Interstitial Gingivitis

To the Editor:—In an article on this subject (The Journal, Feb. 10, 1917, p. 414), Dr. A. W. Lescohier made a reference to my article on the subject which needs some explanation.

According to Dr. Lescohier, there appears to be a difference in the bacterial findings in chronic alveolar osteomyelitis (pyorrhea) reported by me and those reported by other observers: my findings would place the pneumococcus as the predominating organism in pyorrhea, while the other observers report the streptococcus to be the predominating organism found.

The fact in the matter is that the organisms found by me and referred to as pneumococcus in chains or *Streptococcus lanceolatus-pneumoniae* are one and the same organism found by Brown and those reported by Hartzell and referred to by them as the *Streptococcus viridans*. The difference comes in, not in the findings, but in the nomenclature of the streptococcus. In an article entitled "Opsonic Therapy in Pyorrhea Alveolaris" (*Boston Medical and Surgical Journal*, Jan. 13, 1910), I called attention to the reason for my referring to those diplococci in chains as pneumococci in chains or *Streptococcus lanceolatus-pneumoniae*. I then gave the following two reasons for referring to them as pneumococci in chains which I wish to repeat here:

1. The individual diplococci making up the chain have their long diameter corresponding to the long diameter of the chains, while the true *Streptococcus pyogenes* has the long diameter at a right angle to the long diameter of the chain.

2. The chains after being shaken up for purposes of standardizing the vaccine were found to be broken up readily into their constituent diplococci, appearing morphologically like typical pneumococci, while the chains of the true *Streptococcus pyogenes* cannot be broken up readily, if at all.

In my article to which Dr. Lescohier refers, I have always spoken of the pneumococcus as found in this disease as the *Streptococcus lanceolatus-pneumoniae* or pneumococcus in chains. To my mind the *Streptococcus viridans* of other authors as reported found in this disease is nothing more than a streptococcus approaching the pneumococcus type rather than the true *Streptococcus hemolyticus* or *Streptococcus pyogenes*. Rosenow's transmutation of the true streptococcus into a true pneumococcus, and vice versa, further emphasizes the close relationship of the two organisms.

I trust that this will definitely explain that we are not finding different organisms in chronic alveolar osteomyelitis (pyorrhea alveolaris), but rather that some observers prefer to call the same organism *Streptococcus viridans* while I preferred to call it pneumococcus in chains.

Leon S. Medalia, M.D., Boston.

Practices of Reserve Medical Officers in Time of War

To the Editor:—Should the country ever be engaged in war, the Medical Department of the Army, in calling reserve officers to the colors, wishes to cause as little hardship and sacrifice to the reserve medical officers as may be consistent with the needs of the country. With this end in view, the department desires that you bring to the attention of the profession at large the necessity of the city, county and state medical societies organizing for the purpose of taking care of the practices of the officers of the reserve who respond to a call for service. In England this plan has proved of great benefit. The idea of the department is that the profession should organize on a similar basis.

For example, should Dr. Jones be called to the colors, the local medical society, through its members, would take care of his practice during his absence. On his relief from active duty, his practice would be returned to him intact. Such a plan will cause no unnecessary hardship on the officer responding to a call for service, while the absence of such a plan would penalize the officer who gives his service to the country in a crisis. The department appeals to the patriotism of the profession to protect the interest of those of the profession who may be called to duty in war.

Robert E. Noble, M.D., Washington, D. C.
(For the Surgeon General.)
Major, Medical Corps, U. S. Army.

Long Nitrous Oxid-Oxygen Anesthesia

To the Editor:—In The Journal, Feb. 17, 1917, under this caption, Dr. J. R. McCurdy says, "As far as my search of the literature has disclosed, there is no case on record as long as the one herewith reported—four hours and forty minutes."

In *Surgery, Gynecology and Obstetrics,* December, 1913, p. 759, I said, "I have administered it (nitrous oxid-oxygen) in point of time from a few seconds to over five hours." The "over five hours" was five hours and five minutes, to be exact. I did not report this case in detail, as there was nothing special about the anesthesia except its length, and Gatch had previously reported a case almost as long—five hours (The Journal, Nov. 11, 1911, p. 1593).

R. C. Coburn, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DERMATITIS DUE TO LAMPBLACK

To the Editor:—I wish to know whether or not there is any recent literature relating to the effect of naphthalene on the skin in causing acute or chronic dermatitis. For several years I have had charge of the surgical work of the employees of the local gas company, which manufactures its gas from California fuel oil. One of the by-products of this manufacture is lampblack which, by pressure and by the addition of a small amount of fuel oil, is later made into briquets. The hot lampblack as it comes from the furnaces is shoveled and otherwise handled by some of the employees. Last summer, during the hot weather, several of these men developed on their hands and arms what appeared to be a dermatitis. The condition was not serious and cleared up promptly when they did not come in contact with lampblack and when a mild ointment was used. The chemist of the gas company thought the effect was due to the fumes of certain hydrocarbons which were given off by the hot lampblack, naphthalene or some similar hydrocarbon being the principal factor. Apparently this condition develops only when the men are hot and perspire freely, which might suggest that naphthalene, etc., might be dissolved in the perspiration, thereby causing irritation, as I have not seen cases develop during the winter months.

I have just read Kober and Hanson's book on "Vocational Diseases," and can find no specific statement on this general point. I should therefore greatly appreciate any literature you can suggest, or any idea which can be utilized to prevent further recurrence.

Otis B. Wight, M.D., Portland, Ore.

Answer.—Employees in machine shops, factories, etc., in which the workmen come in contact with lubricating oils, and especially when the oils are used automatically over and over again, are particularly liable to suffer with dermatitis and furunculosis. This condition is intensified with the use of the higher hydrocarbons derived from the crude oils, such as benzol and naphthalene. Other substances, such as turpentine, anilin, mercuric chlorid, ether and alcohol, act in a similar manner. The British inspector of factories, in his annual reports for the years 1914, 1915 and 1916, refers to the occurrence of furunculosis and dermatitis among employees working in crude oils, and especially in the manufacture of gas. Heat is another causative factor in dermatitis, as has frequently been observed among bakers and stokers. A third possible cause is mechanical irritation of the skin. As a preventive measure it has been suggested that a small quantity of some coal tar antiseptic be added to the lubricating oil.

Further information is given in the Annual Report of the Illinois Department of Factory Inspection for 1916, which tabulates and describes the various occupational dermatoses, and in the Reports of the British Inspector of Factories and Workshops for 1913 and 1914.

SOLUTION OF RED MERCURIC OXID—INTRAVENOUS INJECTION OF POTASSIUM IODID

To the Editor:—1. I am desirous of giving a solution of red mercuric oxid intravenously. Please suggest a method by which I can bring the mercuric oxid into solution so that it can be used intravenously.

2. Would it be possible to inject potassium iodid intravenously in doses of 1 grain diluted with 3 c.c. of water?

Please do not publish my name. F. A. M.

Answer.—1. Mercuric oxid is brought into solution by the addition of sodium iodid. The resultant solution is alkaline and contains the mercury as sodium mercuric iodid. The following reaction may be assumed to have taken place: $HgO + H_2O + 4NaI = Na_2HgI_4 + 2NaOH$. We would suggest the following formula:

Mercuric oxid	1
Sodium iodid	4
Distilled water	q. s. ad 100

Of the solution, from 1 to 3 c.c. are injected daily or every second day. One c.c. corresponds to 10 mg. or about ⅙ grain of mercuric iodid.

We may also refer you to an article by G. P. Grume on "The Intravenous Injection of Mercury," The Journal, Dec. 19, 1908, p. 2155.

2. The dosage mentioned would present no special dangers. It is understood, of course, that the injections would be made slowly, and with the usual aseptic precautions, etc.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

California: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

Colorado: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

District of Columbia: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Idaho: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

Maine: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Minnesota: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

Missouri: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

Montana: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

Oklahoma: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

Rhode Island: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

Utah: Salt Lake City, April 2. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Wyoming: Laramie, March 14-16. Sec., Dr. H. E. McCollum, Laramie.

Kansas October Report

Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Oct. 10-12, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, of whom 7 passed and 1 failed. Twenty-four candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Northwestern University	(1916)	82
Rush Medical School	(1916)	80
Tulane University of Louisiana	(1914)	85
St. Louis University	(1916)	84
Southwest School of Medicine and Hosp.	(1916)	84
Columbia University	(1916)	82
University of Texas	(1912)	80
FAILED		
University of West Tennessee	(1915)	62

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Atlanta Medical College	(1915)	Georgia
Georgia Coll. of Eclec. Med. and Surg.	(1893)	Arkansas
Chicago College of Medicine and Surgery	(1912)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago	(1891)	Missouri
University of Illinois	(1916)	Illinois
Louisville Medical College	(1890)	Kentucky
University of Louisville	(1911)	Tennessee
Coll. of Phys. and Surgs., Baltimore	(1903)	S. Carolina
American Medical College	(1910)	Arkansas
Barnes Medical College	(1906) Oklahoma; (1908)	Nebraska
Missouri Medical College	(1880)	Missouri
National University of Arts and Sciences	(1915, 2)	Missouri
Northwestern Medical College	(1890)	Missouri
St. Louis University	(1915, 2)	Missouri
University Med. Coll. of Kansas City	(1898) (1912)	Missouri
Washington University	(1915)	Missouri
John A. Creighton Med. Coll.	(1901) Iowa; (1915)	Missouri
University of Pennsylvania	(1898)	Virginia
Marquette University	(1915)	Wisconsin

Michigan October Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Lansing, Oct. 10-12, 1916. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 10, of whom 8 passed and 2 failed, including 1 drugless practitioner. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University	(1916)	85.3
Detroit College of Medicine and Surgery	(1916)	78, 83.7
University of Buffalo	(1916)	85.4
Jefferson Medical College of Philadelphia	(1912)	88.5
Medico-Chirurgical College of Philadelphia	(1915)	80.6

College	Year Grad.	Per Cent.
Vanderbilt University	(1915)	84
University of Toronto	(1916)	78
FAILED		
University of Arkansas	(1909)	77 *

* Conditioned in one subject.

Wyoming October Report

Dr. H. E. McCollum, secretary of the State Board of Medical Examiners of Wyoming, reports the written examination held at Laramie, Oct. 3-5, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1916) 88,	80
Northwestern University	(1896)	75
University of Nebraska	(1914)	82

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Kansas Medical College	(1907)	Kansas
Barnes Medical College	(1908)	Illinois
John A. Creighton Medical College	(1896)	Illinois

Arkansas November Report

Dr. T. J. Stout, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, Nov. 14-15, 1916. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 13, of whom 10 passed and 3 failed. Nine candidates were granted reregistration licenses by examination. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Arkansas	(1916)	77.7
Loyola University	(1916)	88.2
Columbia University	(1914)	92
Meharry Medical College	(1912) 76.2; (1916)	75.4
Memphis Hospital Medical College	(1911)	75.2
University of Tennessee	(1913) 78.8; (1914) 75; (1916)	81.8
Vanderbilt University	(1915)	89.7
FAILED		
Meharry Medical College	(1916)	*, *, *,

* No grades given.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Tulane University of Louisiana (1898) Texas; (1915)	(1916)	Louisiana
University of Maryland	(1905)	Louisiana
Marion-Sims College of Medicine	(1901)	Louisiana
Meharry Medical College	(1916,2)	Tennessee
Memphis Hospital Medical College	(1909) (1912) (1913)	Mississippi
	(1911)	Tennessee
University of Tennessee	(1916) Tennessee; (1916,2)	Mississippi

West Virginia November Report

Dr. S. L. Jepson, health commissioner of the West Virginia Health Council, reports the oral, practical and written examination held at Parkersburg, Nov. 14, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 13, of whom 11 passed and 2 failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Columbian University	(1900)	90.2
University of Georgia	(1916)	88.8
Chicago College of Medicine and Surgery	(1916)	85.6
Tulane University of Louisiana	(1906)	82.3
University of Maryland	(1915) 88.6; (1916) 82.6,	93.4
University of Cincinnati	(1916)	90.4
Western Reserve University	(1915)	87
Jefferson Medical College of Philadelphia	(1916)	89.4
Medical College of Virginia	(1915)	83.8
FAILED		
Loyola University	(1916)	77.6
North Carolina Medical College	(1915)	76.3

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Louisville Medical College	(1894)	Kentucky
University of Maryland	(1915)	Maryland
Columbia University	(1894)	Virginia
Leonard Medical School	(1903)	Virginia
Western Reserve University	(1913)	Ohio
Western Pennsylvania Medical College	(1902)	Penna.
University College of Medicine	(1912)	Virginia

Book Notices

The Pathology of Nephritis as Illustrated by Thirty-Two Consecutive Cases. By William Ophüls, Professor of Pathology. Paper. Price, $1. Pp. 103, with 64 illustrations. Stanford University: Division of Pathology, Stanford University Medical School, 1916.

This reports a series of thirty-two cases of true diffuse glomerulonephritis, studied carefully at necropsy and with reference to the clinical picture of each case. It is an excellent example of the careful, valuable anatomic work in pathology which has been, on the whole, poorly developed in this country, where greater emphasis has always been laid on experimental methods, largely of necessity through our deplorable lack of necropsy material. No physician can look through Dr. Ophüls' monograph without having a better understanding of the steps in the development of the renal changes of nephritis, and perhaps a greater appreciation of the value of thorough anatomic study of even the common diseases. The author reaches these conclusions: Diffuse glomerulonephritis is a disease which may occur in acute, subacute or chronic form. The etiology of the acute and subacute forms is evidently to be found in bacterial infection, and this is quite probably true of the chronic form. The bacteria concerned are commonly, but not necessarily, members of the streptococcus family. It is probable that the continuance of the disease in the kidneys is due to the continuance of the infection in some often more or less hidden focus. It is suggested that one should look on the edema, the hypertension, the arteriosclerosis and certain uremic manifestations merely as being frequently associated with nephritis, rather than directly dependent on it. Quite conceivably these manifestations are the result of the fortuitous action on other tissues of the same cause which injures the kidneys.

Acute Poliomyelitis: Its Nature and Treatment. Being the Lumleian Lectures Delivered at the Royal College of Physicians, London, 1916. By Frederick E. Batten, M.D., F.R.C.P., Physician to the National Hospital for the Paralyzed and Epileptic, Queen Square. Reprinted from *Brain*, Vol. XXXIX, 1916. Pp. 104. London: John Bale, Sons & Danielsson, 1916.

A competent medical man who is attending physician to the greatest neurologic hospital in the world and to one of the greatest hospitals for children is in a position to know a great deal about poliomyelitis if he cares to. That Dr. Batten has improved his opportunities is evidenced by this monograph. It covers every aspect of the disease from history and epidemiology to treatment, but neither too fully nor too technically for ready use by the general practitioner. Of especial value is the description of the different clinical forms. Among other things, we can strongly commend his treatment by means of celluloid splints with the affected part placed in the "zero position." It is to be hoped that American hospitals will adopt these light and strong splints. The method of making them is described in an appendix. The book is strongly commended to general practitioners and specialists.

The Mentally Deficient Child. Written Specially for School Teachers and Others Interested in the Educational Treatment and After-Care of Mentally Defective School Children. By Meredith Young, M.D., D.P.H., D.S.Sc., Chief School Medical Officer, Cheshire Education Committee. Cloth. Price, $1.50. Pp. 140, with illustrations. New York: Paul B. Hoeber, 1916.

The author of this little book, which is "especially written for the layman," is a physician and a "barrister-at-law"—judging from his work, we should say probably more barrister than physician. The book may be said to be a collection of hints regarding various aspects of mentally defective children, and there is no doubt that an intelligent teacher would find in it much to interest her and something of value. The author not infrequently makes the attempt to teach his lay readers medical or physiologic technicalities, and occasionally advises them to take on strictly medical functions. This is a mistake because a lay reader practically always takes a distorted view of the subject and his efforts are apt to be not only ineffectual but perhaps harmful. The chapter on the Binet-Simon tests will be helpful to any teacher trying to decide whether or not a given pupil should be sent elsewhere for a real examination.

Medicolegal

Duty Owed to Sanatorium or Hospital Patients

(Durfee vs. Dorr et al. (Ark.), 186 S. W. R. 62)

The Supreme Court of Arkansas reverses a judgment rendered on a verdict directed in favor of the defendants, physicians who, in connection with their practice of medicine, operated a sanatorium, and who were sued by the plaintiff, in his own right and as administrator of the estate of his son on whom an operation for abscess of the liver had been performed by the defendants at their sanatorium, it being alleged that the patient had one night, thereafter, walked out of an upstairs door of the sanatorium and fallen over the banisters, from the effects of which he had died. The court says that the defendants made no attempt to explain the occurrence, but presented the theory that the patient had walked down the stairs and out of the building, and had stumbled and fallen over a pile of grass from 6 to 8 inches high. This court, was, of course, not concerned about the plausibility of any theory which excused or tended to excuse the defendants of the charge of negligence. It had only to consider whether under the evidence offered the jury would have been warranted in finding that the defendants were guilty of a breach of their duty to the patient which resulted in his injury. The principle of law which controlled is one which has been applied to many situations. The keeper of a hospital is liable for damages if he fails to perform some duty which he owes to the patient, and the patient is injured as a result of this failure. The extent and character of this duty depends on the circumstances of each particular case. A jury would be warranted in assuming that a patient will need some care and attention from the very fact that he placed himself, or is placed, in the institution, and as the defendants were in sole charge of this sanatorium, and the plaintiff's son was their patient, it was their duty to give him reasonable care and attention and to have that knowledge of the necessities of his case which would result from this care and attention and from the possession of ordinary skill in his treatment, there being no representation here on the defendants' part of extraordinary skill. The plaintiff had not contracted for the services of a special or individual nurse, but that fact did not absolve the defendants from the discharge of their duty to the patient. It is true it would have been the duty of a special nurse to give the patient individual attention, but it was nevertheless the duty of the defendants to see that he had such attention as his condition apparently made necessary. Here was a man who was desperately sick; the electric lights were off (after an unusual flood) and the building was in darkness, except for the light of the moon; doors were unlocked and the patients apparently could go about as they pleased or as their delirium carried them without attracting the attention of the nurse or nurses who were supposed to be on duty; and it might even have been found that the nurse who finally appeared on the scene had been asleep. The court thinks the case presented the question for the jury to determine whether the defendants discharged their duty to a patient who, according to their own contention, was in extremis.

Bar on Testimony of Physician Suing After Death of Patient for Services

(Kennedy vs. Mulligan et al. (N. Y.), 160 N. Y. Supp. 105)

The Supreme Court of New York, Appellate Division, First Department, reverses a judgment obtained by the plaintiff, and grants a new trial, because the plaintiff, a physician, who had presented a claim for $2,800 for services alleged to have been rendered to an incompetent and after the death of the latter had sued his executors, was permitted to testify that he had attended the incompetent professionally, had a note of a visit from a certain party on a certain date, and on the same date went to Yonkers and there saw and examined the patient. The court says that it seems clear that the testimony in this case was objectionable. Medical attendance involves a transaction as well as communications between the physician and the patient. On the death of a patient, testimony from him as to the facts of that attendance is rendered impossible, and under such circumstances it seems clear that the policy of the provision of Section 829 of the code of civil procedure prohibits testimony by the other party to the transaction. The rule stated in the case of *Griswold* vs. *Hart*, 205 N. Y. 384, 98 N. E. R. 918, which is the latest exposition of the scope and intent of this code provision, is that whatever a person "derives from the personal presence of the deceased by the use of his senses is a communication from the deceased to him within the meaning of the statute." Again, the case says that the object of the statute was "to retain the equality between the parties which otherwise, under the new rule, would have been destroyed by the death of the deceased." Moreover, the objection was sufficient when the question was raised at the beginning of the evidence, and it was apparent that the trial court intended to rule that the section was not applicable, although other like evidence was afterward admitted to which the objection was not made.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
American Gastro-Enterological Assn., Atlantic City, April 30-May 1.
Arizona Medical Association, Douglas, April 17-18.
Arkansas Medical Society, Little Rock, May 1-3.
California State Medical Society, San Diego, April 17-19.
Georgia Medical Association, Augusta, April 18-20.
Kansas Medical Society, Salina, May 2-4.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK

Meeting held Jan. 22, 1917

The President, DR. J. BENTLEY SQUIER, in the Chair

Medical Legislation

DR. FREDERIC E. SONDERN: I have recently been charged with the statement that our society evinced no interest in the welfare of the physician until three or four years ago, and that in direct consequence of this we had lodge practice, and the dispensaries treating patients gratuitously who could afford a physician's fee. Doubtless this was intended as a jest, as both lodge practice and the dispensary which cared for undeserving persons could not exist without the physicians who attended them, and the places in both were usually eagerly sought by medical men. If the profession as a whole objected to these supposed abuses of its rights, why did it lend its services in their support? Appearances indicate that we are on the eve of a new era. Every succeeding session of our state and national legislative bodies shows evidence of investigation, regulation and socialization in medicine. It is our duty, individually and collectively, to be citizens of this great commonwealth in every sense that the term implies. Unless the medical profession exercises its duty in this respect, it, and not this or any other society, is to blame for legislation contrary to its interests.

SYMPOSIUM ON COMPULSORY HEALTH INSURANCE

Needs and Possibilities

PROF. IRVING FISHER, Yale University, President of the American Association for Labor Legislation: Compulsory health insurance is the most prominent public health movement today. If the bill now presented does not do justice to the medical profession, its members should enter a protest. I can assure you that you will have the cooperation of every friend of the medical profession in your protest; at the same time you should endorse compulsory health insurance. It has certainly stood the test of time in Europe, and ours is the only great industrial country today that does not have some form of compulsory health insurance. Thus the only European countries which, like the United States, are without any general system are Italy, Spain, Portugal, Greece, Bulgaria, Albania, Montenegro and Turkey. For four years an able committee of the American Association for Labor Legislation has been studying American conditions and foreign health insurance acts and constructing a standard bill. We have now in the Mills bill the most complete measure yet introduced anywhere in the world. I have been listening to objections to the bill from representatives of 5 and 10 cent insurance, and I have no doubt that there are other private interests which will oppose the bill and it might be that before it was passed it would be altered to suit private and political interests. I hope that private medical interests will not be behind any such step. The American Association for the Study and Prevention of Tuberculosis, and many affiliated organizations have helped the movement. A number of charitable organizations have also favored the idea, and some forty-five other organizations of various natures. Several international unions, including the International Typographical Union, have gone on record as favoring it, and likewise many state federations of labor. Many individual labor leaders of prominence definitely approved it. The bill proposes obligatory insurance of substantially all working men and women. In case of sickness the insured will receive medical or surgical service, medicines, nursing and a cash benefit amounting to two thirds of the weekly wages of the insured for the period of illness up to six months. Maternity benefits are provided for childbirth, and funeral benefits for death. There are two reasons for enacting such a bill. There is the need of indemnification against loss and the need of diminishing the loss itself. Indemnification is the essence of the insurance principle. It is well known that the workman's compensation has had the effect of greatly stimulating industrial methods in accident prevention. According to Dr. Zacher's experience in Germany, twelve years are added to the worker's life span during thirty years of health insurance. This prolongation of life is at the rate of forty years a century, the highest rate of increase known in any country or any period of time. Aside from the reduction of destitution, health insurance tends to raise slightly the entire wage level, since the wage level is influenced by industrial productivity and anything which raises the physical stamina of the working men increases their productivity.

The Economic Disadvantages of Compulsory Health Insurance

Mr. William Gale Curtis, Chairman of the Educational Committee, Insurance Economics Society of America: To economize means to save, and any plan for compulsory health insurance must either save the money loss or else save the time loss which is the equivalent. The plan at present contemplates replacing a few of the wage earner's lost dollars, the state contributing part, the employer part, and the wage earner standing the balance. This is replacement and not saving. Under compulsory health insurance one wage earner out of every ten would fail to pass a physical examination, and when rejected once other employers would turn him away. If one supposes that three out of every ten discards are refused work everywhere, it would mean the loss of 300 working days each year to each permanent outcast. Instead of making a saving of the time already lost, the plan presents additional waste. In addition to the panel physicians there must be special medical directors associated with the carriers, which adds to the expense. Economic disadvantages, however, are not all measured in money. The loss of the American spirit, individualism, thrift and self-dependence are all economic disadvantages. This plan is undemocratic, un-American and paternalistic. Compulsory thrift would be more feasible, more reasonable and more economical. The plan is unconstitutional, since it would tell a large number of persons that they are incompetent and must become wards of the state; this is to deal a body blow at their most precious possession—personal dependence and independence. This country is above the need of any form of compulsory insurance. The conditions in Europe that gave rise to this plan do not exist here. Every state and city has its departments of health, housing, factory inspection, smoke abatement, sewers, water, streets and alleys, garbage disposal, food inspection, etc., and the public is being taxed for their maintenance. These departments should be brought to their highest efficiency and made to do their work, and then two thirds of the present wage loss could be saved.

The Tentative Draft

Samuel J. Kopetsky, Chairman of the Committee on Medical Economics of the Medical Society of the State of New York: Our committee has investigated the subject of compulsory health insurance thoroughly; we have made it our object to see that under the proposed bill for compulsory health insurance the patient shall get a dollar's worth of service for every dollar expended, whether the dollar comes from the employer, the state or a fellow working man's pocket. If the present compulsory health insurance bill is only a step toward the mitigation of present abuses of medical charity it is worthy of consideration. The panel physician who treats a man and his family when that man is earning only $25 a week may continue to keep the practice of that family when the man has raised himself to a more lucrative position. This confidential relation between physician and patient must be retained. To meet this situation it is advisable to have salaried physicians employed by the carriers of the insurance who shall look after their interests. Stress has been laid by both speakers on the importance of the prevention of disease. This has also been recognized by those who have drawn up the tentative draft, and it has been provided for by requiring that the local health officers should be members of the local committee, and their representation is provided for on the state medical advisory board. Only when a dispute that may arise between physician and patient, between physician and physician, or between physician and carrier cannot be settled by the local committee will it be referred to a superior committee with its quota of medical men. It is probable that almost all disputes will be settled by the local committee. There is no doubt that there are some flaws in the bill as it now stands, and if any one has further constructive suggestions to offer, the legislative committee will be very glad to listen to them. We have studied the problem and realize that in different localities different problems must be met, and it is for this reason that local committees are so constituted that they can deal with conditions in their own neighborhoods. The one essential thing is that this subject shall be thoroughly discussed at the present time and that we shall find out what we want and stand before the public as a unit on matters pertaining to compulsory health insurance. We shall then be in a position to demand certain things in the interest of the public and of the profession.

A Criticism of the "Tentative Draft" and Its Promulgation

Dr. Eden V. Delphey: The proposition advanced by the American Association for Labor Legislation in the "tentative drafts" will, if adopted and enacted into a statute law, revolutionize the practice of medicine so that the physician will professionally cease to be an individualist and will be but a cog in a great medical machine. In this case there should have been a publicity campaign conducted in such a manner as to reach all the classes of persons affected; this could have been done by circulars and newspaper articles on both sides of the question, by public hearings, and by communications with all the medical societies and other social bodies personally or otherwise interested in the subject, in order to get a full and complete comprehension of how the great mass of the people would be affected by the proposed law and whether and in what particular they approved or disapproved of it. If it is positively determined that health is a state asset, then the best and simplest way is for the state to take over the plan of health insurance and insure every man, woman and child, whether or not they are employed, and whether or not they pay any share of the cost. It would be more inclusive, more effective, more simple and less expensive than the one advocated by the American Association of Labor Legislation with its heavy overhead expenses. The state furnishes educational advantages, and fire and police protection; why not furnish this also? It is an axiom in political economy that no matter who pays the cost in the first instance, it comes out of the state in the end.

Meeting held Feb. 15, 1917

The President, DR. J. BENTLEY SQUIER, in the Chair

Discussion on Compulsory Health Insurance

DR. ALEXANDER LAMBERT: In discussing any health insurance plan it is well to get before our minds what is proposed in the present bill now before the legislature. Perhaps the best way to do this is by a comparison with the working men's compensation laws. It has been shown that in the course of a year about 6 per cent. of working men have accidents, and it is on this basis that rates and premiums are figured. The experience of the profession in some states, especially Massachusetts and New York, under workmen's compensation laws, has made the profession realize that its interests were not safeguarded, and these laws were passed before the profession realized its duties and responsibilities under the law. It has also been observed that under the workmen's compensation laws today inadequate care is provided to really seriously injured persons. But it must be remembered that the employer bears the entire liability and that he is running an industry for profits. It is to be expected that under these circumstances he will wish to pay the physician as small a fee as is possible. We now have the opportunity to see that the medical profession is properly protected before a compulsory insurance act is passed. A health insurance scheme to be successful must be locally controlled. Mr. Curtis has described compulsory health insurance as simply lifting money from one pocket and putting it into another, and argues that this is of no economic advantage. Mr. Curtis is president of the National Casualty Company, and the trouble is that the plans for compulsory health insurance have left the insurance companies out in the cold. Under the English plan a physician's clientele may be scattered over a large territory. This we have tried to avoid by districting the state in such a way that no district shall have less than 5,000 persons who are subject to compulsory health insurance. We do not claim that compulsory health insurance is a cure for poverty, for shiftlessness, or for pure cussedness, but it will provide a means whereby the working man can be carried over a period of illness without being plunged into debt and destitution. It will not interfere in any way with our present laws and provisions in relation to preventive medicine, but would weld these various agencies together and make them more effective.

DR. EDWARD D. FISHER, Chairman of the Health Insurance Committee of the Medical Society of the County of New York: My committee has directed its attention toward the general idea of health insurance rather than to the details through which it was to be carried out; that part we left to others. In our report to the county society we did not enter into details, but left that to the chairman of the Committee on Economics of the Medical Society of the State of New York. We did not in our report endorse the proposition but simply suggested that if the bill became law we would insist that there be full medical representation on all boards. In other words, we took a neutral position. The Mills bill which was given us to consider was the first Mills bill and did not provide proper medical representation. As many physicians would not get on the panel, the question comes of how compulsory health insurance would affect the general practitioner and his fees. Some think these would be interfered with, and others think not. I do not think the medical profession has studied the many difficult problems that are involved very deeply. Such a study is beset with many difficulties. It is difficult to get the individual practitioner to devote much time to this rather complicated and difficult subject.

DR. WILLIAM S. GOTTHEIL: A discussion of motives for favoring or for opposing this compulsory health insurance law is out of place here. It has been said from this platform that it would be disgraceful for physicians to discuss this measure from the standpoint of their personal interests alone. I am interested in it and discuss it from that standpoint alone. Who is to pay for this health insurance? We doctors most of all, partly with the rest of the community as citizens and partly and much more largely as the small and helpless class that must do much of the work and make most of the sacrifices. The state shall pay one fifth of the money required; that is, we as taxpayers shall pay our part of that fifth. The employer shall pay two fifths; that is, we, as purchasers, shall pay our share of that two fifths in increased prices. The workman shall pay two fifths, and again we shall pay our part of it; for the workman will get his share back in increased wages, and the employer will recoup himself in the greater price of his product. Every penny that will be spent on health insurance will come out of your pockets and mine, and out of the pockets of the community at large. It is calculated that about 50 per cent. of the population of this state will fall under the provisions of the compulsory health insurance law. This 50 per cent. does not include the really poor, for even the workman, when he ceases to work, is shortly no longer insured. Hence the 50 per cent. that is left includes the 10 per cent. or more who are really poor, and we shall have to continue to care for them in the future as we have done in the past. Now 50 per cent. of the employed population means much even to those of us who practice among the well to do; it means everything to most of us, whose patients are those in moderate circumstances. Computations prove that somewhere around $2,000 a year will be paid for work which will take all the practitioner's strength and most of his time; for most of us will be salaried employees of the carriers, and our experience with boards of health and other employers of medical labor prove the essential correctness of the figure. If there are panel physicians employed at all, which I doubt, they will work in competition with the salaried men; for the carrier can choose between the paid employee and the panel. Do you doubt for a moment which he will select? A simple calculation will show that if the panel physician gets 25 cents a visit for his work, he will be getting large pay. Furthermore, surgical operations, specialist consultations and attendance, with many other things, are to be provided for by the carrier, as he likes. If you have any doubt as to what fees for such services will be, let the experience of Germany and England, and above all, let the discredited workmen's compensation fee bill of last year be your answer. When the state once officially fixes the value of medical and surgical services for 50 per cent. of our population, it will inevitably affect private fees; it has done so elsewhere. These services have an officially stamped and "market value," of which any one can take advantage. If the value of an insured foreman is $3, will his employer pay you $25 for the same services? The proponents of the bill say that there is a committee to which all contracts must be submitted. There is, indeed, and of the many useless provisions which the bill contains, this strikes me as the worst. The two parties to the contract, the carrier and the physician, are satisfied. Is there any court in the country that would interfere on the part of a third party whose interests are secondary and subsidiary? The proviso is not a safeguard, it is a delusion and a snare.

DR. WALTER LESTER CARR: When the committee appointed by your predecessor met to take up this subject, we felt that it would be advisable to state its endorsement of health insurance, not implying by such endorsement a recommendation of any bill or particular plan. We then studied the bill. We felt that a subject so largely connected with the health of thousands of people of the state should be, in a great degree, controlled by men educated in medicine and qualified to determine the needs of those who are to be benefited by legislation. In conference with the American Association for Labor Legislation, the committee expressed the opinion that, if health insurance is to be enforced by legislation, the medical profession of the state of New York should expect representation on the commission and on the various boards controlling the administration of the law. It also, both formally and informally, put itself on record as demanding such recognition for the medical profession as is essential to public policy and in justice to the physicians of the state. In presenting the resolutions to this society, the committee held to these basic recommendations, as it believed the details should be settled in the state medical society. Your committee has kept to the purpose for which it was formed, namely, representation for the medical profession and a fair remuneration for all services rendered, and in this it believes it has been successful. At the present time we are placed in the position where, in urging recognition for the medical profession, we are expected to advance a bill which, as drawn, is not satisfactory in many of its paragraphs. I believe that while a free exchange of views should be allowed on the subject of compulsory health insurance, final decision should be delayed until further information is furnished.

Dr. Lewis I. Harris: I do not believe Dr. Gottheil's presentation does justice to him or to certain fundamental demands of society as a whole. I wish to defend in this discussion the principles of compulsory health insurance, and at the same time I wish to express myself as opposed to the Mills bill as it now stands. We hear it said that compulsory health insurance is inevitable. We know it is inevitable just as we know that the struggle for liberal government was inevitable. The achievements in the direction of social justice, such as the protection of child laborers, the protection of women in industry, compensation to laborers, and laws for shorter hours of labor, cannot be confined. It has been stated that the demand for compulsory health insurance has been artificially created. It is necessary in all progressive movements that we should have leadership. The argument that health insurance is an invasion of personal liberty has been made against every proposition to extend liberty, justice and opportunity. It has been argued that compulsory health insurance is class discrimination. This stale argument has been applied to all institutions created for the common weal. The greatest good to the greatest number is properly the ruling principle of democracy. It is claimed that by compulsory health insurance workers will be pauperized and pampered. It is now the fashion for employers to pauperize labor by the so-called "welfare activities," "bonuses," "company stores," etc. The employer now gives the laborer placebos and panaceas to keep him from realizing the need for real welfare work. The working man needs health insurance, and this need will be appreciated if his lot is viewed against the background of low wages and economic pressure, as can be seen from Sydenstricker's and Warren's reports. We are told that the constitution would be violated. We forget that there have been other amendments to the constitution, the fifteenth, for instance. We should halt and pause until physicians have had information from all sources and can express their wishes and desires in the matter.

Dr. I. M. Rubinow: I shall confine my discussion to the problems directly concerning the economic interests of the medical profession. I have heard the opinion expressed that with the broad problem of the necessity of health insurance the medical profession has nothing to do. I thoroughly disagree with this point of view. I shall devote my remarks to the general problem, since Dr. Lambert both here and elsewhere has explained and defended the medical provisions of the Mills bill. I do not discuss this problem in an official capacity. The American Medical Association, as of course you know, has no official opinion on the subject beyond the recognition that the movement is important and requires careful study. Don't you know that the entire opposition of private insurance companies is explained by one fact, namely, that under the bills advanced, insurance companies operating for a profit are excluded from participation? If there is no wage poverty, why is it that 40 per cent. of wage earners when sick go without medical aid? Over a million of the population of this city alone apply for free charitable medical aid. It may be in accord with American traditions for the medical profession to grant all that tremendous amount of medical aid free; but it is required also by American traditions that hundreds of thousands of honest workers are forced to beg for something they ought to be willing to pay for. Perhaps the most serious argument presented is that insurance only indemnifies but does not prevent, or reduce losses. Of course, this is simply not true. The preventive effects of social insurance are too well recognized throughout Europe to need a long argument. If by removing need when a man is sick we cannot improve his chances of recovery, what justification is there for the practice of medicine at all? The medical profession of this or any other state is fully within its legitimate rights when it subjects the provisions concerning medical aid to the closest scrutiny in the interests of both patient and physician; but I would consider it no less than a calamity for the profession, and a reflection on its intelligence, if it would be lured into opposing the principle of this important social reform by clever misrepresentations emanating from private insurance interests.

Dr. Henry W. Berg: Now every physician who has a license to practice medicine is free to bestow his philanthropy where he wishes, and to charge those who are able to pay what he feels is reasonable. Under compulsory health insurance he will have no chance to say what he ought to receive, or he will work under a salary, and he must be prepared to sell his services at a "market value." If he makes a blunder he is now responsible to God, to his own conscience and to the government. Under compulsory health insurance he is responsible to a number of officers and committes from which political and other outside influences cannot be debarred. It is no disgrace for us to look at this subject from the standpoint of our right, as honest and decent men, to earn a living in the community. Compulsory health insurance claims to be altruistic, but is it? When a working man does not pay his premiums for a certain period his insurance ceases. It may fail him when he is most in need of it. I want to ask you how a doctor can do efficient medical work when he is making twenty-four visits a day and receiving only from $1,500 to $2,000 a year.

Dr. Eden V. Delphey: The professional philanthropists are all working for compulsory health insurance; they are trying to put something over on us to our detriment. One may act from altruistic motives and yet be supplying no social need. I should have nothing to gain by the enactment of compulsory insurance. I am fighting because I practice mostly among people who would come under this act. At the same time I am altruistic because I am fighting for the professional life of my brother practitioners. Under the proposed measure a union bricklayer or a housesmith would be aristocrats in comparison with the physician.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

February, XLII, No. 3

1 *Exchange of Energy in Live Animal Tissues. Study on Liver. A. O. de Almeida, Rio de Janeiro.—p. 359.

2 *Catalase in Muscles of Large and of Small Animals. W. E. Burge and A. J. Neill, Urbana, Ill.—p. 373.

3 *Significance of Prothrombin and of Free and Combined Thrombin in Blood Serum. H. S. Gasser, Baltimore.—p. 378.

4 Postural Activity of Abdominal Muscles of Cat. F. H. Pike and H. C. Coombs, New York.—p. 395.

5 *Physiology of Stomach. Ammonia of Gastric Juice. H. L. Huber, Chicago.—p. 404.

6 Differences in Latent Period and Form of Contraction Curve in Muscle Strips from Different Parts of Frog's Stomach. W. C. Alvarez, San Francisco.—p. 422.

7 Differences in Latent Period and Form of Contraction Curve in Muscle Strips from Different Parts of Mammalian Stomach. W. C. Alvarez, San Francisco.—p. 435.

8 Reflex Respiratory Changes and Concomitant Threshold Stimulus. C. M. Gruber, Albany, N. Y.—p. 450.

9 Experimental Glycosuria. Lactic Acid Production in Blood Following Injection of Alkaline Solutions. J. J. R. Macleod and D. H. Hoover, Cleveland.—p. 460.

10 Nerve Conduction in Cassiopea. A. G. Mayer, Washington, D. C. —p. 469.

11 Nature and Time Relations of Fundamental Heart Sounds. C. J. Wiggers and A. L. Dean, Jr., New York.—p. 476.
12 Depressor Function of Thoracic Sympathetic Nerve and Its Connections. R. Burton-Opitz, New York.—p. 498.

1. **Energy Exchange in Liver.**—De Almeida describes a new technic for the rigid measurement of respiratory exchanges of tissues suspended in defibrinated blood, which procedure is also applicable to the more simple process of determining the amount of gases in the blood.

2. **Catalase in Muscle of Large and Small Animals.**—Evidence is presented by Burge and Neill to show that the content of heart muscle in catalase, per unit of weight, bears an inverse relationship to the size of the animal, or a direct relationship to the intensity of the oxidation processes.

3. **Prothrombin and Thrombin in Blood Serum.**—There is only one kind of thrombin in serum says Gasser. This may be formed from prothrombin by the action of thromboplastic substance and calcium or may be liberated from a combination with antithrombin by alkali activation according to the method of Schmidt. The inactive stage from which thrombin is liberated by alkali activation is believed to be a thrombin-antithrombin combination. Thrombin is not liberated from combination with antithrombin by the action of thromboplastic substance. The amount of prothrombin in serum varies inversely as the amount of tissue extract present at time of clotting. The amount of thrombin formed in the presence of a given amount of thromboplastic substance is, apparently, definite in amount; it forms rapidly and is combined rapidly, the system then returning to equilibrium. This rapid inactivation is a potent factor in the maintenance of the normal fluidity of the blood. Plasma is very intolerant of free thrombin.

5. **Ammonia of Gastric Juice.**—Ammonia is normally found in small amounts in the gastric juice of man and dog. The amount is increased by high protein diet, and by the addition of ammonium salts to the food. The fundic mucosa contains the most ammonia, the pyloric mucosa is next in order, while mucosa of the cardiac end of the stomach contains the least ammonia. The duodenal mucosa contains less ammonia than the fundic mucosa. In certain pathologic conditions (especially gastric ulcer and cancer) the amount of ammonia in the gastric juice is definitely increased, but this increase may not be greater than found persistently in certain normal individuals. The origin of the gastric juice ammonia is a complex one. Some of the ammonia is evidently excreted from the blood, and this factor depends on the concentration of the ammonia in the blood. Part of the ammonia represents deaminization processes in the gastric mucosa, and these in turn depend on the quantity of protein in the food. The possible rôle of the gastric flora has not been eliminated.

American Journal of Public Health, Boston

February, VII, No. 2

13 Laboratory Diagnosis of Poliomyelitis. J. B. Neal, New York.—p. 144.
14 Birth Control in Its Medical, Social, Economic and Moral Aspects. S. A. Knopf, New York.—p. 152.
15 Year's Work in Hay Fever Prevention in United States. W. Scheppegrell, New Orleans.—p. 173.
16 Preaching Health on Highways. E. G. Williams, Richmond, Va.—p. 179.
17 Michigan's Part in War on Tuberculosis. A. Mulder, Holland, Mich.—p. 182.
18 Educational Work of Brooklyn Antituberculosis Committee. H. D. Jenkins, New York.—p. 187.
19 Designs for Privies. R. Messer, Richmond, Va.—p. 190.

Archives of Internal Medicine, Chicago

February, XIX, No. 2

20 Osteogenesis Imperfecta; Report of Cases. J. H. Hess, Chicago.—p. 163.
21 *Hereditary Hemorrhagic Telangiectasia; Report of Cases; Review of Literature. W. R. Steiner, Hartford, Conn.—p. 194.
22 *Clinical Study of Secretions on Proximal and Distal Sides of Pylorus. A. S. Robinson, Cleveland.—p. 220.
23 *Relation of Hypertrophic Osteo-Arthropathy to Pulmonary Tuberculosis. L. Kessel, New York.—p. 239.
24 *Typhoidin Quotients; Analysis of Factors of Uncertainty in Cutaneous Typhoidin Test. E. S. Kilgore, San Francisco.—p. 263.
25 *Comparison of Two Methods of Vaccinating Against Typhoid. E. S. Kilgore, San Francisco.—p. 276.
26 Agglutinins and Complement Fixing Antibodies in Serum of Persons Vaccinated Against Typhoid. K. F. Meyer and E. S. Kilgore, San Francisco.—p. 293.
27 d-Glucose Tolerance in Health and Disease. R. M. Wilder and W. D. Sansum, Chicago.—p. 311.

21. **Hereditary Hemorrhagic Telangiectasia.**—From a consideration of the histories of three families affected with hemorrhagic telangiectasis and those previously recorded Steiner concludes that heredity is the only important etiologic factor as yet discovered, and that both sexes are equally affected and equally capable of transmitting the disease. Microscopically, a developmental defect has been found in the dilated capillaries—the elastic and muscle fibers appear to be wanting. The capillaries, consequently, are very liable to produce hemorrhages by their rupture, which is induced either spontaneously or by traumatism. The hemorrhages from the nose are generally seen early in life, while the telangiectases are a later development. The cautery in most instances offers the best results in the treatment of the bleeding telangiectases.

22. **Secretions at Pylorus.**—The secretions on the proximal and distal sides of the pylorus have been studied by Robinson in 125 patients complaining of various gastro-intestinal disturbances. In 40 per cent. of these nothing pathologic could be found in the gastric secretions to account for the distress, except an increase in acidity above that considered as the average. These cases were diagnosed "gastric neurosis," most commonly secondary to an infection, as tuberculosis, syphilis, influenza, chronic constipation and mental or physical strain. In achlorhydria, simple and malignant (gastric cancer, 12 cases), and in pernicious anemia the acidity curve has a tendency to descend, in other conditions to ascend. The highest ascent was in duodenal ulcer. The duodenal secretions found in four patients having more or less typical symptoms of gallstones contained a heavy sediment, which was different from that seen in other cases. It was heavier and of an orange yellow color. Three of these patients were operated on and the gallbladder was found to contain numerous small stones. No abnormal findings were present in the duodenal secretions in cases of cholelithiasis in which only one stone was present. An alkaline doudenal secretion that is cloudy is said to be suggestive of an inflammatory condition in the duodenum or biliary tract. The cloud is due to the presence of bacteria and pus. It does not clear on the addition of sodium hydroxid. Considering the theory that pernicious anemia is caused by a hemolytic agent and that this agent is dependent on a disturbance of the gastro-intestinal tract, Robinson attempted to find out if there were present in the gastric and duodenal secretions any substances which had a greater hemolytic action than in normal secretions. The result was negative. Without a single exception the gastric and duodenal secretions from cases of pernicious anemia caused no more hemolysis than do normal secretions.

23. **Hypertrophic Pulmonary Osteo-Arthropathy.**—The thirty-two patients reported on by Kessel were suffering from pulmonary tuberculosis. They were all in the second or third stage of the disease. Kessel sought to establish some relation between the clinical manifestations of the pulmonary disease and the type of osteo-arthropathy present, but was unable to demonstrate a connection between the two. Pronounced evidence of pulmonary tuberculosis may be associated, on the one hand, with simple clubbing of the fingers, while, on the other hand, less marked manifestations of the pulmonary disease may be accompanied by distinct changes in the long bones. The bone changes, moreover, are not definitely associated with the type of degree of the clinical expression of the pulmonary disease. The author emphasizes, however, that hypertrophic osteo-arthropathy is present more frequently in pulmonary tuberculosis than the usual clinical examination would permit the author to believe.

24. **Typhoidin Quotients.**—The facts brought out by Kilgore in this study indicate even more strongly than those formerly reported that the cutaneous typhoidin test should not be relied on as an index of immunity in individual cases, and that even in a study of groups of cases its results need to be considered with much conservatism.

25. **Comparison of Two Methods of Vaccinating against Typhoid.**—The two methods reported on by Kilgore are the U. S. Army method and the Gay-Claypole method. He reports the following findings, with the understanding that they are to be given weight only in accordance with the number of observations on which they are based: 1. The higher the typhoidin quotient in a given person, the greater the chances of a severe reaction to antityphoid inoculation. 2. The severer local reactions to vaccine tend to occur in those subjects with the higher temperature reactions. 3. The supposedly more severe average reaction to antityphoid inoculation of subjects who have previously had the treatment is probably overrated. 4. The use of army vaccine, or sensitized vaccine sediment if the preparations are fresh, makes little if any difference in the average local and temperature reactions. 5. When either type of vaccine is administered every other day the temperature reactions following the second and third doses are likely to be more severe than when the injections are ten days apart. A difference in the local reactions is not so clear cut. The average impression of the subjects vaccinated every other day is that the second injection gave the greatest local and general discomfort and the third least. The average member of the ten-day group feels that both general and local reactions were less with each succeeding dose. 6. The typhoidin test failed to show any noteworthy differences in effectiveness between the two-day or ten-day schedules, and, in the first few weeks, between the two vaccines used. Later the typhoidin quotients were higher in those who had received sensitized vaccine, but the differences are not decided enough to support definite conclusions that this is the rule. 7. According to the typhoidin test it is suggested that the ones who react least to vaccination tend to profit most by its administration.

Canadian Medical Association Journal, Toronto

February, VII, No. 2

28 Paratyphoid in Army at Dardanelles. E. N. Coutts.—p. 97.
29 Some Clinical Aspects of Acute Anterior Poliomyelitis. C. F. Martin, Montreal.—p. 113.
30 Poliomyelitis as Seen by Surgeon. A. M. Forbes, Montreal.—p. 119.
31 Advantages of Early Sanatorium Treatment. D. Townsend, River Glade, New Brunswick.—p. 125.
32 Dislocations of Spine. C. E. Smyth, Medicine Hat, Alberta.—p. 129.
33 Hay Fever. F. W. Gershaw, Medicine Hat, Alberta.—p. 131.
34 Diabetes Mellitus in Child of Three. L. M. Lindsay, Montreal.—p. 133.
35 Infantile Eczema and Status Lymphaticus. L. M. Lindsay, Montreal.—p. 135.

Colorado Medicine, Denver

February, XIV, No. 2

36 Botulism. G. H. Curfman, Salida.—p. 35.
37 Care of Mentally Disordered in Colorado. S. W. Hamilton, Utica, N. Y.—p. 42.
38 New Growths and Infections Associated with and Following Chronic Suppurative Appendicitis; Report of Three Cases. C. E. Tennant, Denver.—p. 45.
39 Study of Diseases of Chest. J. J. Waring, Denver.—p. 52.

Indiana State Medical Association Journal, Fort Wayne

February, X, No. 2

40 Certain Phases of Disease of Lacrimal Apparatus. W. C. Posey, Philadelphia.—p. 43.
41 *Incidence, Diagnosis and Treatment of Visceral Syphilis. G. W. McCaskey, Fort Wayne.—p. 51.
42 Tuberculosis Plus. A. Henry, Indianapolis.—p. 59.

41. Abstracted in THE JOURNAL, Oct. 28, 1916, p. 1326.

Journal-Lancet, Minneapolis

February 15, XXXVII, No. 4

43 Cysts of Larynx; Report of Cases. G. B. New, Rochester.—p. 99.
44 Surgical Limitations of General Practitioner. J. H. Adair, Owatonna.—p. 102.
45 *Hematopoietic-Hemolytic Index; Differential Diagnosis of Pernicious Anemia Amenable to Cure by Splenectomy. J. P. Schneider, Minneapolis.—p. 105.
46 Acute Dilatation of Stomach in Pneumonia; Report of Cases. A. F. Bratrud, Grand Forks, N. D.—p. 108.
47 Sixty-Five Consecutive Cases of Grave Appendicitis without Death or Impairment. D. V. Moore, Yankton, S. D.—p. 111.
48 Infantile Pyloric Stenosis Necessitatis. J. T. Leland, Herman.—p. 115.
49 Opportunities for Special Work in Obstetrics in New York. A. C. Tanner, St. Louis Park.—p. 117.

45. **Hematopoietic-Hemolytic Index in Differential Diagnosis.**—A total of eighty-eight studies in fifty-nine cases have been made by Schneider. Of these, twenty are patients with pernicious anemia, one with hemolytic icterus, eleven with severe anemias other than splenic, and the remainder with miscellaneous conditions, nonhemolytic in character. Of the patients with pernicious anemia, seven have been splenectomized. That the blood picture and the clinical picture of chronic enteric bleeding anemia may be mistaken for parenteral anemia, was illustrated by the findings in four cases, all of these proving at operation or necropsy to be carcinoma of the stomach. The duodenal pigments presented an oligochemia in degree parallel with the severity of the anemia. Hence, while the blood findings become more and more difficult of interpretation, the severer the bleeding anemia, the more strikingly the duodenal pigment values stand at opposite poles. It is, therefore, of prime importance in a given case to confirm by a quantitative estimation of the duodenal pigments the splenic origin of an otherwise classical pernicious anemia, particularly when splenectomy is contemplated.

The hematopoietic-hemolytic index should be ascertained. Briefly, the H — H index $= \frac{Z + Y}{X}$ in which Z represents the thousands, including the first decimal of the total pigment value as determined quantitatively by the spectroscopic method Y, the same of the blood count in round numbers, and the value of X, 6. To illustrate: in a given case, with the total pigment values around 5,400, the blood count 1,500,000, the H — H index is $\frac{5.4 + 1.5}{6} = \frac{6.9}{6} = 1.1$, which is a plus index. In another case the total pigments are 2,200, the blood count is 1,500,000, the index $\frac{2.2 + 1.5}{6} = \frac{3.7}{6}$, or 0.6 —, which is a severely minus index. In the former case so much pigment could not be obtained unless the marrow still supplied the raw material in great abundance. In the author's series of twenty cases, seven only yielded a plus H—H index, while two approached an index of one. Of these seven, three have been splenectomized with apparently more than the rather usual temporary improvement. However, since less than one year has elapsed since splenectomy, Schneider withholds judgment.

Journal of Biological Chemistry, Baltimore

February, XXIX, No. 1

50 *Excretion of Creatin and Creatinin Parenterally Introduced. J. F. Lyman and J. C. Trimby, Columbus.—p. 1.
51 *Cholesterol and Cholesterol Esters in Human Blood. W. R. Bloor and A. Knudson, Boston.—p. 7.
52 Benedict's Method for Estimation of Total Sulphur in Urine. M. H. Givens, New Haven, Conn.—p. 15.
53 Chemical Composition of Placenta (Bovine). F. Fenger, Chicago.—p. 19.
54 Estimation of Hydrocyanic Acid and Probable Form in which it Occurs in Sorghum Vulgare. J. J. Willaman, St. Paul, Minn.—p. 25.
55 Effect of Anesthetics and of Frosting on Cyanogenetic Compounds of Sorghum Vulgare. J. J. Willaman, St. Paul, Minn.—p. 37.
56 *Factors Involving Accuracy of Creatinin Determinations in Human Blood. A. O. Gettler, New York.—p. 47.
57 Behavior of Chickens Fed Rations Restricted to Cereal Grains. E. B. Hart, J. G. Halpin and E. V. McCollum, Madison, Wis.—p. 57.
58 *Relative Value of Certain Proteins and Protein Concentrates as Supplements to Corn Gluten. T. B. Osborne and L. B. Mendel, New Haven, Conn.—p. 69.
59 *Cholesterol in Human Blood Under Pathologic Conditions. W. Denis, Boston.—p. 93.
60 Epinephrin Uracil Dinucleotide and Structure of Yeast Nucleic Acid. W. Jones and B. E. Read, Baltimore.—p. 111.
61 Mode of Nucleotide Linkage in Yeast Nucleic Acid. W. Jones and B. E. Read, Baltimore.—p. 123.
62 Influence of Intravenous Injection of Witte's Peptone on Sugar Content of Blood and Epinephrin Hyperglycemia and Glycosuria. S. Kuriyama, New Haven, Conn.—p. 127.
63 Variation in Amount of Phosphatides in Corpus Luteum of Sow During Pregnancy. G. W. Corner, Berkeley, Calif.—p. 141.

50. **Excretion of Creatin and Creatinin Parenterally Introduced.**—Subcutaneous injections of creatin into rabbits and man were followed by increased urinary creatinin excretion

which Lyman and Trimby regard as further evidence of an intravital transformation of creatin to creatinin. In man the larger part (76 to 77 per cent.) of the creatin injected was destroyed or stored in the body. The injection of creatinin was not followed by the excretion of creatin in the urine.

51. **Cholesterol and Its Esters in Human Blood.**—In normal human blood Bloor and Knudson found a constant relation between free cholesterol and cholesterol esters. In whole blood the average percentage of cholesterol in combination as esters was found to be 33.5 per cent., in plasma 58 per cent. of the total cholesterol. The variation from the average in individuals was about 15 per cent. of the average. There was no notable difference in these values between men and women. In pathologic conditions the relation between free and bound cholesterol was found normal in all cases except carcinoma and most cases of nephritis, in both of which the percentage combined as ester was low. In pregnancy the values for cholesterol esters were high. The constant relation between free and bound cholesterol, the authors claim, gives further support to the assumption that cholesterol takes an active part in fat metabolism.

56. **Accuracy of Creatinin Determinations in Human Blood.**—In the light of the experimental evidence presented, Gettler does not subscribe to McCrudden and Sargent's view, that all creatinin blood values heretofore reported are useless, because of error in method. The values, in normal blood, of Gettler and Baker are correct and are here again confirmed. Furthermore, in all other reported values, which lie at 2 mg. in 100 c.c. and above, the error is not enough to warrant rejection. A table is given for reading milligrams of creatinin in 100 c.c. of blood directly, in which all the above sources of error have been accounted for. Known solutions of creatinin have been determined with the Folin standard and also with this table, conclusively proving that for values of 0.1 to 0.5 mg. of creatinin the Folin standard gives values much too high. Eleven additional normals have been determined for their creatinin value. These range between 0.1 and 0.4 mg. in 100 c.c., confirming Gettler and Baker's previous report. The values of 1.0 to 2.0 mg. in 100 c.c. as reported by Folin and Denis, and by Myers and Fine, Gettler says, are much too high.

58. **Protein Supplements to Corn Gluten.**—Data regarding the growth of rats are presented by Osborne and Mendel to show the relative nutritive values of a number of proteins and protein "concentrates" when used to supplement corn gluten in an otherwise adequate ration. The products studied included casein, lactalbumin, edestin, cottonseed protein, cottonseed flour, soy bean flour, "milkalbumin," beef tissue, fish meat meal, corn oil cake, "vegetable albumin flour," brewers' grains, distillers' grains, pea meal and peanut meal. The efficiency of these supplements presumably depends essentially on their relative content of lysin and tryptophan; for the addition of these amino-acids, either as such, or in the form of proteins yielding them, renders corn gluten suitable for growth. Of the various proteins employed to supplement the inefficient corn gluten, lactalbumin is by far the most effective. Satisfactory growth is produced with smaller quantities of this protein than of any of the others recorded. The samples of brewers' grains, distillers' grains, and "vegetable albumin flour" used were the least efficient supplements tested, presumably because of their low content of lysin. It is evident that the small additions of the more efficient proteins actually supplement the corn gluten instead of themselves furnishing all of the protein used for growth, because equivalent amounts of these proteins alone in a similar ration are incapable of inducing a comparable degree of growth.

59. **Cholesterol in Human Blood.**—Among the pathologic conditions examined by Denis, hypercholesterolemia was found to exist only in diabetes and only in a relatively small number of cases of this disease. Low cholesterol values are not characteristic of any special pathologic condition but are invariably found in conditions in which marked prostration or cachexia exist. Cholesterol determinations in the blood are therefore at present of no value in the clinical diagnosis or prognosis of disease.

Journal of Laboratory and Clinical Medicine, St. Louis

February, II, No. 5

64 *Histopathology of Autonomic Nervous System in Goiter. L. B. Wilson, Rochester, and T. O. Young, Minneapolis.—p. 295.
65 *Piperazin and Other Organic Urate Solvents. P. J. Hanzlik, Cleveland.—p. 308.
66 *Chronic Colitis and Its Roentgenologic Findings. F. B. McMahon and R. D. Carman, Rochester, Minn.—p. 328.
67 Certain Aspects of Purulent Meningitis. C. E. Kiely, Cincinnati.—p. 341.
68 Apparatus for Use in Examining Feces for Evidences of Parasitism. M. C. Hall, Detroit.—p. 347.

64. Abstracted in The Journal, Nov. 25, 1916, p. 1625.

65. **Piperazin and Other Organic Urate Solvents.**—Hanzlik failed to find any reliable evidence to show that piperazin, in small or therapeutic doses, imparts to urine urate solvent qualities, either by direct addition or after excretion. Excessive doses of the drug produce a slight but practically negligible increase in uric acid excretion, the same being effectively secured by the use of such well known alkalies as bicarbonate and citrate. The solvent action of low concentrations of piperazin on calculi is practically negligible. In very high concentrations a solvent power, though limited and doubtful, seems to exist. There is no reliable evidence to indicate that piperazin can prevent or remove urate deposits. Diuresis is uninfluenced by the administration of even large doses of piperazin. The direct addition of piperazin to urine renders it alkaline. However, after administration the reaction remains unchanged because in its passage though the body enough piperazin is destroyed to markedly reduce its concentration in the urine. Scientific evidence, though limited, and clinical opinion, indicate that piperazin is valueless in gout. The administration of piperazin may be attended with serious side actions. There is sufficient scientific evidence to indicate the worthlessness of the following as urate solvents; urosin, lycetol, sidonal, quinic acid, lysidin, urol, quinolin, colchicum and piperidin.

66. **Chronic Colitis and Roentgenologic Findings.**—The authors' experience suggests that the Roentgen findings when carefully correlated with the clinical history can be made of much use in the diagnosis of chronic colitis. The roentgenogram also enables a more accurate estimate of the extent of involvement and thus may serve as a guide in determining whether the treatment shall be medical or surgical. There are definite organic changes in all the coats of the colon wall in chronic colitis, resulting from chronic inflammatory reaction with edema, lymphocytic infiltration, thickening, scar tissue formation and contraction. The Roentgen examination in these cases shows the colon to be small, smooth and without haustration in the part or parts affected.

Journal of Nervous and Mental Disease, Lancaster, Pa.

February, XLV, No. 2

69 *Stratigraphic Analysis of Finer Cortex Changes in Certain Normal Looking Brains in Dementia Praecox. E. E. Southard and M. M. Canavan, Boston.—p. 97.
70 *Tumors of Thymus in Myasthenia Gravis. E. T. Bell, Minneapolis.—p. 130.
71 *Abderhalden Reaction in Mental Diseases. H. A. Cotton, E. P. C. White and W. W. Stevenson, Trenton, N. J.—p. 144.

69. **Cortex Changes in Dementia Praecox.**—Southard and Canavan present an analysis, chiefly stratigraphic, of certain lesions, notably nerve cell loss and gliosis (including satellitosis) in four cases of dementia praecox. These cases were cases which showed no gross aplasia, sclerosis or atrophy in the gross brain, and yet exhibited symptoms of two years' or greater duration, entitling them to be considered in the dementia praecox group. In connection with this work, a review of Kraepelin's estimate of structural work in dementia praecox brains is offered, and the stratigraphic data are presented in relation to Kraepelin's views as to the functions of suprastellate and infrastellate layers. Absence of suprastellate lesions in a case of the paranoic or paraphrenic group was noted, but there was no special evidence of schizophrenia in this case as clinically viewed; the case did show infrastellate lesions in areas contiguous with one another in the two flanks of the brain. It might be possible to correlate the late catatonia and late hallucinosis in the case with these infrastellate lesions. Other cases possibly more typical

of dementia praecox exhibited lesions both in the suprastellate and infrastellate regions, sometimes numerous, sometimes isolated and apparently capricious in distribution. No good example of lesions chiefly limited to the suprastellate layers has been found. Gliosis and satellitosis do not follow the nerve cell losses. The same holds true of shrinkage changes and axonal reactions. Nor is satellitosis closely associated either with shrinkage changes (which are not numerous in this series) or with axonal reactions. The dissociation of parenchymatous (neuronic) and interstitial (neuroglia) changes previously reported is further emphasized.

70. **Tumors of Thymus in Myasthenia Gravis.**—A benign thymic tumor from a typical case of myasthenia gravis is described by Bell. The tumor is composed of thymic tissue of a fetal type, namely, a dense epithelial reticulum with lymphocytes. The usual thymic rests were found in the adipose tissue around the growth. The thymic tumors occurring in myasthenia gravis seem to form a distinct group unlike any other thymic tumors. Bell says they may be classified as benign thymoma. Some abnormality of the thymus is found in nearly half the cases of myasthenia gravis.

71. **Abderhalden Reaction in Mental Diseases.**—The results of the Abderhalden tests in 289 cases, including the various psychoses and some normal individuals, are reported by the authors. The most important findings from this investigation are in the groups of dementia praecox and epilepsy. In dementia praecox the number of positive cases to sex gland was forty-six out of fifty-eight tested, or 81 per cent., and in nine cases the reaction was negative. Blood counts were made in all cases, but in dementia praecox wide deviations from the normal were noticed. Thus the lymphocytes were present usually in a larger percentage than the polymorphonuclear leukocytes; in smears, lymphocytes were 56 per cent. and polymorphonuclears 38 per cent. There was also a marked increase in the eosinophils, in some cases reaching as high as 6 per cent. The total leukocytes was also low, in one case 2,100 per c.c., and averaging about 6,500. In the other psychoses the blood count was approximately normal. Coupled with this is usually a slightly increased pulse rate with low blood pressure and subnormal temperature.

Reference is made to the fact that 75 per cent. of the cases of dementia praecox die of tuberculosis and that this is more than a coincidence, especially as the group with the next highest proportion of tuberculosis is general paralysis, in which 16 per cent. die of tuberculosis. The acute cases of dementia praecox, the type in which death occurs in from three to five years, practically all die of tuberculosis. The question of the relation of tuberculosis to dementia praecox demands further investigation, but enough data are at hand to formulate the hypothesis that the occurrence of tuberculosis in such a large percentage of dementia praecox is of some etiologic significance. The pathologic changes in dementia praecox also indicate a possible toxic condition due to biochemical changes, probably from a disturbance of the glands of internal secretion. Sixty-nine cases of epilepsy examined were all positive to the suprarenal gland.

Medical Record, New York

February 17, XCI, No. 7

72 Psychiatry and Psychology. C. L. Dana, New York.—p. 265.
73 Birth Control. G. W. Kosmak, New York.—p. 268.
74 Tests for Renal Function in Nephritis. H. M. Moses, Brooklyn.—p. 273.
75 Hippocrates Redivivus. W. B. Konkle, Montoursville, Pa.—p. 278.
76 Fracture of Eleventh Rib by Muscular Action; Résumé of Reported Cases. J. Seilin, New Windsor, Ill.—p. 281.
77 Face and Its Expression in Diagnosis. J. L. Tracy, Toledo.—p. 283.

Michigan State Medical Society Journal, Grand Rapids

February, XVI, No. 2

78 *Insanity and Pelvic Diseases in Women. W. P. Manton, Detroit.—p. 49.
79 *Relationship Between Gynecologic and Neurologic Conditions. R. Peterson, Ann Arbor.—p. 51.
80 Nervous Symptoms Arising in Female Pelvic Organs. R. R. Smith, Grand Rapids.—p. 54.
81 Surgical Prognosis. F. B. Walker, Detroit.—p. 57.
82 How Modern Surgery Began. O. H. Cox, Sault Ste. Marie.—p. 59.
83 Case of Diabetes with Umbilical Hernia. Complete Laceration of Perineum, and Fistulous Openings in Region of Right Labium. Case of Removal of Ovarian Cystic Growths without Aspiration. R. Peterson, Ann Arbor.—p. 64.
84 Case of Transverse Myelitis of Cervical Region of Cord. A. M. Barrett, Ann Arbor.—p. 68.
85 Case of Multiple Sclerosis Developing During Acute Pulmonary Tuberculosis. T. Klingmann, Ann Arbor.—p. 71.
86 Treatment of Diphtheria Carriers; Report of One Hundred and Twenty-Five Cases. D. M. Cowie, Ann Arbor.—p. 72.

78 and 79. Abstracted in The Journal, Sept. 2, 1916, p. 767.

New York Medical Journal

February 17, CV, No. 7

87 Action of Pituitary Extract on Gastro-Intestinal Tract of Man. H. K. Pancoast and A. H. Hopkins, Philadelphia.—p. 289.
88 Clinical Observations on So-Called Grippe. B. M. Randolph, Washington, D. C.—p. 292.
89 Male Impotence and Sterility in Marriage. B. S. Talmey, New York.—p. 296.
90 Benzol in Treatment of Leukemia; Report of Case. H. Weinstein, New York.—p. 299.
91 Enforced Rest. S. Block, New York.—p. 300.
92 Sprayer for Paraffin Treatment of Burns. W. G. Hudson, Wilmington, Del.—p. 301.
93 Stricture of Urethra. M. Stern, New York.—p. 302.
94 Don'ts in After-Care and Treatment of Infantile Paralysis. C. Ogilvy, New York.—p. 305.
95 Research in Epilepsy; Report of Twenty-Five Cases. H. A. Knox, Bayonne, N. J.—p. 308. To be continued.

New York State Journal of Medicine

February, XVII, No. 2

96 Early Diagnosis of Potts' Disease. S. L. Taylor and B. C. Darling, New York.—p. 51.
97 *Tobacco Smoking and Blood Pressure. W. G. Thompson and W. H. Sheldon, New York.—p. 55.
98 Decapsulation for Chronic Bright's Disease. S. Lloyd, New York.—p. 58.
99 Treatment of Maxillary Sinus Disease. C. F. Theisen, Albany.—p. 63.
100 Roentgenography of Eye and Orbit. G. S. Dixon, New York.—p. 67.
101 Effect of Malformation and Infection of Oral Cavity of Child on Its Future Health. S. Palmer, Poughkeepsie.—p. 72.
102 Economic Disadvantages of Compulsory Health Insurance. W. G. Curtis.—p. 75.
103 Need for Health Insurance. I. Fisher, New Haven, Conn.—p. 81.
104 Industrial vs. Private Medical Practice. G. L. Howe, Rochester.—p. 84.
105 Gastric and Duodenal Ulcer. G. B. Eusterman, Rochester, Minn.—p. 88.
106 *Torsion of Pedicle of Ovarian Cysts Complicating Acute Appendicitis. R. G. Loop, Elmira.—p. 94.

97. **Tobacco Smoking and Blood Pressure.**—Fifty-eight patients in middle or advanced life with high blood pressure and arteriosclerosis were examined by Thompson and Sheldon. The maximum effect of cigar smoking was included in different cases within the limits of a rise of systolic pressure of 35 mm. and of pulse pressure of 22 mm., on the one hand, and a fall of 30 mm. in systolic pressure and 34 mm. of pulse pressure, on the other, the effects diminishing usually after about an hour. In the fifty-eight patients there was a rise of systolic pressure in 35 per cent. and a fall in 45 per cent., the remaining 20 per cent. being unaffected. The results were not always uniform in the same patient when recorded at long intervals, the same patient sometimes exhibiting a rise and less often a fall in systolic pressure. The results were not uniformly proportional to the degree of initial blood pressure in the individual patient. That is, patients with an initial systolic pressure of 160 to 170 mm. showed as much variation after smoking as those with an initial pressure of 250 mm. or more. In seventeen patients more than one observation was made, with a total of eighty-two experiments, to include the pulse pressure. In these cases the average rise was found to equal the average fall, being 11 mm.

The pulse pressure did not invariably rise with the systolic pressure, but occasionally fell or remained unaltered. The effects of cigaret smoking corresponded in general to those of cigar smoking and were fully as variable. The average increase in pulse rate was thirteen beats per minute. It is stated definitely by the authors that whereas the risk from any elevation in blood pressure increases greatly the higher the initial pressure in the patient, it is undesirable for any one having a constant systolic pressure much above 200 to smoke, and second, smoking is equally undesirable for any one having a constant initial pressure above 160 mm. when the use of tobacco is found uniformly to produce a considerable rise in blood pressure.

106. Abstracted in The Journal, June 17, 1916, p. 2037.

Northwest Medicine, Seattle

February, XVI, No. 2

107 Paralytic Deformities of Feet. C. R. McClure, Portland, Ore.—p. 33.

108 Clinical Application of Newer Methods of Treatment of Diabetes Mellitus. N. W. Jones, Portland, Ore.—p. 38.

109 Inclusion Tumors. J. E. Else, Portland, Ore.—p. 41.

110 Children—Conveniently Overlooked. F. M. Sprague. Pocatello, Ida.—p. 45.

111 Plea for Earlier Recognition of Squint in Children by Family Physician. C. A. Veasey, Spokane.—p. 47.

112 Conservative Treatment of Convergent Strabismus. J. Clothier, Pocatello, Ida.—p. 48.

113 Nitrous Oxid-Oxygen Anesthesia in Major Surgery. A. J. Browning, Portland, Ore.—p. 50.

114 Novocain Local Anesthesia. W. B. Holden, Portland, Ore.—p. 52.

Oklahoma State Medical Association Journal, Muskogee

February, X, No. 2

115 Etiology and Pathology of Keratitis. P. F. Herod, El Reno.—p. 41.

116 Symptoms and Diagnosis of Keratitis. E. S. Ferguson, Oklahoma City.—p. 43.

117 Treatment of Keratitis. D. D. McHenry, Oklahoma City.—p. 46.

118 Acute Pyelitis. W. M. Taylor, Oklahoma City.—p. 52.

119 Colonic Ulceration, Its Operative Treatment. G. A. Wall, Tulsa.—p. 54.

120 Some of Complications and Sequelae of Lobar Pneumonia. T. H. McCarley, McAlester.—p. 56.

121 Tumors of Testicle. D. D. Paulus and W. H. Bailey, Oklahoma City.—p. 58.

122 Large Perforating Ulcer of Anterior Wall of Stomach; Report of Case. W. H. Livermore, Chickasha.—p. 66.

Tennessee State Medical Association Journal, Nashville

February, IX, No. 10

123 Conservation of Ovarian Influence. T. D. McKinney, Nashville.—p. 385.

124 *Plea for Early Recognition and Treatment of Hyperthyroidism. J. A. Crisler and E. J. Johnson, Memphis. —p. 388.

125 *Acute Middle Ear Troubles. W. Dotson, Lebanon.—p. 390.

126 Hemoptysis and Hematemesis in Typhoid; Report of Case. C. E. Brush, Nashville.—p. 397.

127 Bone and Tendon Transference. J. P. Baird, Dyersburg.—p. 400.

128 Urologic Armamentarium; Its Value in Diagnosis and Some of Its Therapeutic Applications. I. Simons, Nashville.—p. 403.

129 Acute Infective Osteomyelitis. E. T. Newell, Chattanooga.—p. 405.

130 Fat Indigestion in Infancy. J. M. Lee, Nashville.—p. 409.

124 and 125. Abstracted in The Journal, April 22, 1916, p. 1347.

Wisconsin Medical Journal, Milwaukee

February, XV, No. 9

131 Chronic Appendicitis. F. G. Connell, Oshkosh.—p. 309.

132 Better Service in Diphtheria Diagnosis. L. L. Gilman, Madison.—p. 316.

133 Industrial Welfare Work as Applied to Railroads. C. W. Hopkins, Chicago.—p. 318.

134 Lip Reading for Adult Deaf and Hard-of-Hearing. V. Sinclair, Milwaukee.—p. 323.

135 Fundamental Principles of Protein Poisoning Manifestations. R. C. Brown, Milwaukee.—p. 327.

136 Interpretation of Laboratory Reports on Wassermann Tests. J. J. Seelman, Milwaukee.—p. 328.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

January, XXI, No. 8

1 Case Reports: Air and Fluid in Left Cranium. Charcot's Joint Associated with Myositis Ossificans. S. G. Scott.—p. 237.

2 Power of Electrolysis to Cure Suppuration. C. Russ.—p. 241.

3 Roentgen Ray Spectrum of Tungsten. A. W. Hull.—p. 245.

Indian Medical Gazette, Calcutta

January, LII, No. 1

4 Study of After-Treatment of War Injuries and Disabilities. M. H. Thornely.—p. 1.

5 Surgical Notes at War Hospital. L. P. Stephen.—p. 4.

6 *Chronic Splenomegaly in Lower Bengal with Special Reference to Prevalence and Clinical Differentiation of Kala-Azar. L. Rogers.—p. 7.

7 Case of Fever Resembling Brill's Disease. J. W. D. Megaw.—p. 15.

8 Prevention of Sepsis in Cataract Extraction. H. Herbert.—p. 18. To be continued.

6. **Chronic Splenomegaly in Lower Bengal.**—Spleen punctures in 166 cases of chronic splenomegaly cases in lower Bengal have revealed the parasites of kala-azar in only 40 per cent. Of 114 cases showing fever while in hospital, Leishman-Donovan bodies were found in 57 per cent. The size of the spleen and liver, the degree of anemia, and the seasonal incidence, of the admissions, Rogers says, afford no material help in distinguishing between kala-azar and chronic malaria. Great leukopenia, such as less than 1 white to 1,500 red corpuscles, is greatly in favor of kala-azar, and if the fever has persisted for less than one year, it is practically diagnostic of that disease. Marked loss of weight, especially if it continues under treatment in hospital, is much in favor of kala-azar as against chronic malaria. In cases of splenomegaly, a history of fever on and off for three years or more is almost diagnostic of chronic malaria as against kala-azar. The temperature curve affords the greatest diagnostic aid in chronic splenomegaly in lower Bengal. If fever is absent, or ceases within seven days, with or without quinin, active kala-azar can practically be excluded; while if fever persists beyond a week in spite of 20 to 30 grains of quinin a day, the case is so extremely likely to be kala-azar that the patient should be treated as such by tartar emetic intravenously, which is a specific remedy for the disease.

Lancet, London

February 3, I, No. 4875

9 *Bladder in Gunshot and Other Injuries of Spinal Cord. J. W. T. Walker.—p. 173.

10 Method of Concentrating Entameba Cysts in Stools. J. W. Cropper and R. W. H. Row.—p. 179.

11 Case of Suppurative Meningitis with Glycosuria Simulating Diabetic Coma. F. E. Taylor and W. H. McKinstry.—p. 182.

12 Recurrent Type of Trench Fever in Mesopotamia. C. F. Coombs.—p. 183.

13 Trench Fever. F. C. Davies and R. P. Weldon.—p. 183.

14 Acute Pneumonia with Hyperpyrexia Followed by Heart Block. J. Porter-Parkinson.—p. 184.

15 Case of Foreign Body in Rectum. N. S. Bonard.—p. 185.

February 10, No. 4876

16 *Five Hundred Emergency Operations for Abdominal Wounds. C. F. Walters, H. D. Rollinson, A. R. Jordan and A. G. Banks.—p. 207.

17 Treatment of Secondary Hemorrhage, with Special Reference to Gunshot Wounds. C. A. Morton.—p. 213.

18 *Types of Tubercle Bacilli in Cervical and Axillary Gland Tuberculosis. A. S. Griffith.—p. 216.

19 *Seventy-Three Cases of Cerebrospinal Fever. S. Neave.—p. 219.

20 *Treatment of Scabies and Some Other Common Skin Affections in Soldiers. H. G. Adamson.—p. 221.

21 Blinded Sailors and Soldiers. A. Lawson.—p. 223.

22 Case of Intestinal Obstruction by Thrombosis of Mesenteric Veins. S. C. Ghose.—p. 224.

23 *Case of Apparent Disappearance of Carcinoma of Cervix. E. C. B. Ibotson.—p. 224.

24 *Case of Sarcoma of Fourth Ventricle. H. M. Galt.—p. 224.

25 Food of the Nation. E. I. Spriggs.—p. 234.

9. **Bladder in Gunshot Injuries.**—Walker says that over 90 per cent. of cases of spinal injury arriving at the Star and Garter Hospital, London, have a serious infection of the urinary tract, and all cases have at some period passed through a stage of severe infection. Of the total 111 patients, nineteen have died, all from urinary infection. At the King George Hospital 339 cases of spinal injury have been admitted, twenty-two were transferred and 160 have died, practically all from urinary infection. Speaking of the treatment of septic complications, Walker has this to say in regard to the newly introduced chlorin preparations. The solutions are intensely irritating to the bladder, and should be used with caution. A solution of 1 in 20,000 is sufficiently strong to use at first, and this may cautiously be increased in strength. Vaccine treatment in Walker's experience has proved of great value in treating the chronic cystitis of these paraplegic cases. Walker advises that in gunshot injuries to the spinal cord an early operation offers the best chance for the patient; that fear of the presence of sepsis need not deter the surgeon from operating; and that not until the surgeon has exposed the

spinal dura mater can he speak with any certainty as to the mode in which pressure is being exerted on the cord. At present all that the surgeon can do is to relieve pressure and to hope that the cord will be able to recover, in part, at least, from the injury which it has sustained. Experience has shown that in a certain proportion of cases of injuries of the spinal cord much may be done, though in others all the surgical knowledge and skill which we now possess are insufficient to do any good.

16. **Operations for Abdominal Wounds.**—An analysis of the first 500 operations for abdominal war wounds is made by the authors. They emphasize the fact that statistics are fallacious; they may show but little difference in the mortality of a series operated on four hours after wounding and another in which eight or nine hours have elapsed. The time element is of the highest importance; an abdominal patient's chances diminish with every hour of delay. The vast majority of patients reached the authors after nine or ten hours, and a large percentage in half that time, but a certain number of cases arrive at much later periods up to three or four days. The treatment of such late cases must be entirely different from the early ones. Every case must be judged on its own merits, but operation thus late has a very high death rate. A good working rule is that a man in fair condition who has been wounded more than thirty-six hours should always be watched, unless there is some clear indication that there is a condition which must be fatal without interference. The only complete contraindication to operation observed by the authors (apart from the condition of the patient) is a complete spinal lesion with paralysis. An almost complete contraindication is a wound of the chest definitely involving the lung (with hemoptysis or surgical emphysema). Such patients' chances are almost always better if left alone. Operation should be confined to such a rare case as where, with protruded viscera or otherwise, a hopeless abdominal condition can actually be seen, and in addition, for some reason, the patient's general condition is reasonably good.

18. **Tubercle Bacilli in Cervical Gland Tuberculosis.**—The number of cases of cervical gland tuberculosis examined bacteriologically by Griffith now is 102. The figures show that in childhood cervical gland tuberculosis is caused more frequently by the bovine than by the human type of tubercle bacillus, nearly three quarters (72.1 per cent.) of the cases in children under 10 years of age having yielded bovine tubercle bacilli. In persons over 10 years of age infection of human origin is more common; bovine infection accounting for about a third of the cases in the 10 to 20 years age period, and for rather less than a fifth of the cases in persons over 20 years of age. The material used in this investigation of cervical gland tuberculosis has been derived mainly from cities and towns in England and Scotland, and, while the cases from the different localities are too few for comparative statistical purposes, it is noteworthy that a proportion of the cases from each center of population has yielded tubercle bacilli of bovine type. If the figures for the whole of England are compared with the combined figures for Scotland, it is found that the proportion of bovine infections in children under 10 years of age is about the same for the two countries. In persons over 10 years, on the other hand, the proportion of cases in which the infection was bovine is much higher in the Scotch than in the English series.

19. **Isolating Meningococcus from Cerebrospinal Fever.**—The meningococcus was obtained by Neave from the cerebrospinal fluid by cultivation in thirty-six out of fifty-five cases, where it was seen in the purulent sediment of the fluid. In one case no organism was seen in the fluid, but a cultivation was successful. In one case no organism was found in the first place, but a cultivation was obtained from the fluid during a relapse a month later. In ten cases the organism was not found, and here the probabilities of a positive diagnosis lay in the clinical tests for meningitis generally, the cytology of the fluid and the clinical symptoms. In one case, while the fluid was clear and no organism was found in it, it was found in a throat swab. An excess of lymphocytes was found several times in a clear fluid that later became purulent. In one case the meningococcus was found alive in the fluid after it had been in the incubator for twenty-three days, but as a rule the organism was very difficult to keep alive on any medium more than half that time. It was found that the fluid for diagnosis drawn from the cisterna magna after death gave better information than that from the lumbar region both in the case of cerebrospinal fever and tuberculous meningitis.

20. **Treatment of Scabies and Common Skin Affections.**—The important points in dealing with cases of scabies, Adamson says, are (1) to make sure of the diagnosis, if possible by finding an acarus; (2) then to carry out a very thorough treatment for a strictly limited period. Doubt in diagnosis often leads to ineffectual treatment; treatment ineffectual but too long continued leads to eczema or sulphur dermatitis and still further confuses the diagnosis. The simplest and most efficacious treatment is to make use of soap and sulphur as follows: saponis mollis, 24 ounces (700 gm.); ung. sulphuris, 24 ounces (700 gm.), enough of each, soap and ointment, for three applications. A hot bath of half an hour's duration is taken on three consecutive days. During the bath the body and limbs, especially the hands and wrists and buttocks are scrubbed with soft soap by a flesh brush. After each bath the patient himself rubs in the ointment and puts on an old sleeping suit, gloves and socks and goes to bed, where he remains until it is time for the bath on the next day. The baths and inunctions must on no account be continued beyond the three days. The patient gets up and dresses after the three days and usually requires no further treatment, but is kept under observation for another three days. If, as sometimes happens, some itching continues he is given the following lotion to mop on night and morning:

	gm. or c.c.	
Liq. picis carbonis	4	flʒ i
Aquae	600	fl℥ xx

If the treatment has been thoroughly carried out the patient is cured and free from infection after the three baths and inunctions. If a case is not cured in this way, it is probably not scabies, but either a papular urticaria or chronic eczema. For ringworm Adamson uses the following ointment:

	gm. or c.c.	
Acid. benzoici	1	gr. xv
Acid. salicylici	1	gr. xv
Ol. cocois	12	ʒ iii
Petrolati ad	30	℥ i

In cases in which there is vesication the inunction should be preceded by fomentation with hot water. Many cases quickly clear up with this treatment, but sometimes part of the eruption in the groin, or between the toes, or on the soles remains obstinate, and for these cases a useful treatment is: First thoroughly mop the affected parts with tincture of iodin, then rub on argenti nitratis 10 grains (0.6 gm.), spiritus etheris nitrosis 1 ounce (30 gm.). Repeat this treatment if necessary and apply the benzoic acid ointment betweenwhiles.

23. **Disappearance of Carcinoma of Cervix.**—A woman, aged 45, had her left breast amputated for cancer in 1914. In July, 1916, symptoms of uterine cancer appeared, and also nodules developed in the operation scar, with offensive vaginal discharge tinged with blood, obstinate constipation and vomiting, painful and difficult micturition, and pain in the left sciatic nerve area. She was too weak to stand another operation so extensive as hysterectomy, hence palliative treatment combined with enemas and vaginal douches was all that was done. She has steadily improved. The nodules in the scar disappeared in September, there was nothing abnormal in the cervix, and the uterus is now freely movable. Also the constipation and vomiting have quite ceased. She has still pains in the left sciatic nerve area, and is exceedingly thin. She sits up in a chair daily.

24. **Sarcoma of Fourth Ventricle.**—A girl, aged 14, was admitted to the hospital with a history of having had meningitis some months previously. Apparent complete recovery from the meningitis occurred, but since that time the patient had occasional periods, lasting a few days, during which she appeared to be in a state of coma. In the intervals she appeared to be practically normal, and at no time was there headache, vomiting, paralysis, or any physical sign suggesting the presence of tumor. Death occurred about three weeks

later during one of the spells of coma. At the necropsy there was found a soft tumor about the size of a large walnut, apparently originating in the valve of Vieussens and separating rather widely the two lateral halves of the cerebellum. There was no definite pressure on the floor of the fourth ventricle, and the lateral ventricles of the brain were not distended. The tumor showed several comparatively large recent areas of hemorrhage within it. In structure it was, histologically, a small round-cell sarcoma. There was no visible stroma and no gliomatous elements. The cerebral and cerebellar tissues were normal in structure and all the other organs of the body were normal.

Annales de Gynécologie et d'Obstétrique, Paris

November-December, 1916, LXXII, pp. 321-384

26 *The Surprises of Exploratory Curetting of the Uterus. M. Muret. —p. 321.
27 Necrobiosis of Retained Portion of Placenta. (La nécrobiose placentaire. Contribution à l'étude des prétendus polypes placentaires.) E. Zarate (Buenos Aires).—p. 343.
28 *Hernia through the Vagina. (La hernie vaginale.) H. Hartmann. —p. 351.
29 Partitioning Off of the Pelvis and Thread Drainage. (Le cloisonnement et le drainage filiforme du bassin, et leurs variétés.) H. Chaput.—p. 358.
30 *Advantages of Lumbar Puncture of the Fetus during Breech Presentation to Save the Child. M. R. Costa (Pavia).—p. 367.

26. **The Surprises of Exploratory Curetting in Diagnosis of Uterine Cancer.**—Muret comments on the baffling cases in which the curet brings evidence of malignant disease but then further curetting and even microscopic examination of the uterus removed soon after fails to reveal a trace of cancer. In one of the four cases of this kind which he reports the curet brought scraps of an unmistakable adenoma-papilloma-carcinoma of the body of the uterus. The uterus was removed but then, even with the microscope, it was impossible to find a trace of carcinoma in the organ. Two years later a tumor developed in the left ovary of exactly the same structure as the scraps curetted from the uterus. It was evidently a metastasis, and the patient succumbed to the malignant disease. The microscopic examination had been made at a two years' interval, and by different pathologists, the concordance between their reports on the histologic structure of the growths thus confirming Muret's view as to the metastasis. Even one case of this kind should convince the most skeptical of the possibility of the curet's scraping out entirely an incipient carcinoma; even a nonpedunculated tumor. Muret cites others who admit the possibility of this occurring. In another case in his experience, the exploratory curetting gave positive findings but nothing malignant could be found in the extirpated uterus at first. Renewed search finally revealed unmistakable signs of malignant disease. This case teaches that negative findings are not conclusive unless microscopic sections have been examined from all parts of the uterus. In another group of four cases from the literature and one in Muret's practice, the positive curet findings were not followed by removal of the uterus, and yet the patient has had no further signs of trouble. It is theoretically possible that the curet actually removed every scrap of the tumor; this is possible with a polypoid tumor or other small superficial growth. But this is so exceptional, and the fact that a clinical cure is not always an anatomic cure, imposes the necessity for removal of the organ with any suggestion of malignant disease. At the same time, he emphasizes that it is useful for physicians to know that such cases can occur, so that they will not think they had made a mistake in their previous diagnosis. In another group of cases, of which he relates an example, the most painstaking curetting failed to reveal the presence of cancer but, the severity of the symptoms having compelled hysterectomy, unmistakable malignant disease was found at some point that had escaped the curet. His patient was a woman of 42 who had borne two children. There were two foci of cancer, and both had developed at such a depth in the wall of the uterus that the curet gave no signs of their existence.

28. **Vaginal Hernia.**—Hartmann compares with the few cases on record of what is generally called pudendal hernia, a case of true vaginal hernia in a woman of 30. Eight years before she had had the perineum lacerated at the birth of her first child, and this had been followed by supposed genital prolapse requiring operative treatment. The supposed prolapse recurred at a second pregnancy and again at the third, and it was found that the trouble was a hernia in the pouch of Douglas, the lax vaginal walls permitting the tumor to protrude from the vulva. The trouble then was easily corrected by reducing the bowel and taking two stitches to close the pouch of Douglas on a level with the uterine cervix. The woman has passed through another normal pregnancy since but forceps were required. In all the cases on record of vaginal hernia, plastic operations to correct the supposed genital prolapse had proved ineffectual to ensure a permanent cure. The vaginal enterocele developed anew after anterior fixation of the uterus; or after this and anterior colporrhaphy. The anterior fixation of the uterus may possibly have contributed to favor the sliding down of the intestine into the pouch of Douglas.

30. **Lumbar Puncture of Fetus with Breech Presentation as Aid to Safe Delivery.**—Costa's favorable experience with this measure has already been described in The Journal, Oct. 14, 1916, p. 1190. He does not aspirate the fluid; it spurts spontaneously as the head is compressed. He regards this measure as indicated when there is danger to apprehend severe compression of the head with pelvic presentation with insufficiently dilated os or deformed pelvis.

Bulletin de l'Académie de Médecine, Paris

January 16, LXXVII, No. 3, pp. 63-101

31 Prophylaxis of Diphtheria in the Schools. E. Mosny.—p. 66.
32 *Extensive Resection for Chronic Ulcer of the Stomach. Témoin. —p. 75.
33 The Medical Department of the Army at Far Eastern Firing Line. (Fonctionnement du Service de Santé à l'armée d'Orient.) Picqué.—p. 84.
34 Improved Technic for Roentgen Localization of Projectiles. (Nouveau compas localisateur chirurgical à réglage direct sous l'écran radioscopique.) J. Abadie.—p. 86.
35 The Ear Reactions in Aviation. (Les réactions de l'oreille chez les aviateurs pendant les Vols.) P. Lacroix.—p. 84.
36 *Apparatus for Treatment of Myopia. Bacchi.—p. 97.

32. **Chronic Gastric Ulcer.**—Témoin analyzes the clinical picture and outcome in 186 operative cases of chronic ulceration in the stomach. The return of symptoms after gastroenterostomy or meager resection was of such frequent occurrence that he now makes a practice of extensive resection. He expatiates here on the numerous and important advantages of thus doing away with the entire diseased area and its possible complications later, while the stomach is left a vertical canal which cannot breed intoxication. The outcome has been most satisfactory in every one of the 117 cases in this class. He adds that the technic he describes is free from danger. The stomach must be released from all adhesions. Another feature of his technic is that he loosens up the vessels from the stomach wall before resecting it, leaving the vessels intact; they are easily detached from the wall, rubbing them loose with a compress.

36. **Mechanical Treatment of Myopia.**—Bacchi gives an illustrated description of an apparatus which exerts pressure directly on the eyeballs, aiming to shorten and widen them. He describes favorable experiences with it, the myopia being materially improved after a few sittings at all ages.

Correspondenz-Blatt für Schweizer Aerzte, Basel

January 20, XLVII, No. 3, pp. 65-96

37 *Serotherapy of Acute Febrile Jaundice. (Zur Serumbehandlung der Weil'schen Krankheit—Spirochaetosis icterohaemorrhagica Inada.) Inada, Ido, Hoki, Ito and Wani.—p. 65.
38 *Electrotherapy in Heart Disease and Arteriosclerosis. (Behandlung von Herzkrankheiten und Arteriosklerose mit Kondensatorströmen.) H. Weber.—p. 73.
39 *The Reflex-Eliciting Zone for the Cremaster Reflex. A. Rodella. —p. 85.

37. **Serotherapy of Acute Febrile Jaundice.**—This article brings down to date the research of these Japanese investigators. The immune serum they use is from the horse; 0.01 c.c. protects a guinea-pig against 1 c.c. of a pure culture (ten spirochetes in one microscopic field), injected at the same

time into the peritoneum. The serotherapy has been applied in thirty-five clinical cases; 50 per cent. were severe cases. The results showed that the serum in doses of 40 or 60 c.c. destroyed the spirochetes in the blood in from five or six to twenty-four hours. The mortality was 11.4 per cent. It had previously averaged 30.6 per cent. in this clinic, and elsewhere in Japan 40 or 48 per cent. The various findings are tabulated, but the most conclusive testimony as to the value of the serotherapy is afforded by the case of a man of 65 taken suddenly ill. The fourth day sixty-five spirochetes were found on one cover glass, in seventy microscopic fields. Then 17 c.c. of the immune serum was injected subcutaneously and 20 c.c. intravenously five hours later. Two hours after this no spirochetes could be found on repeated examination every two hours. A guinea-pig inoculated the fifth hour with 2 c.c. of the patient's blood has shown no signs of illness during the ten days since. Inoculation of another guinea-pig the twelfth hour with 3 c.c. of blood has also been negative. The results in this case confirmed in every respect the results obtained in the experimental research on guinea-pigs.

38. **Electrotherapy of Heart Disease and Arteriosclerosis.**—Weber remarks that with electrotherapy we are now realizing results unachievable with repose and digitalis alone in heart disease and arteriosclerosis, and not even when supplemented with massage, gymnastics and carbonated baths. The electric current has long been utilized in strengthening subnormal muscles, and failing compensation is nothing but muscular insufficiency. The same can be said of the walls of the vessels, and Weber cites a recent writer to the effect that electricity in the form of the interrupted current is an actual specific against vascular disturbances, relieving spasms, and transforming paresis to normal conditions. Weber prefers what he calls the condensator current, and reports here nineteen cases in which he treated patients with cardiovascular trouble with this form of galvanic electrotherapy. Lost compensation, an extremely irritable nervous system, and contracted kidney are about the only contraindications. He tests the heart functioning by having the patient hold his breath in the midst of quiet breathing. Figures below thirteen or fifteen seconds strongly suggest insufficiency of the heart musculature. Another test is the difference between the pulse reclining and standing. If the heart is working normally, the pulse becomes slower after a change from the vertical to the horizontal position. His third test is Herz' auto-inhibition, that is, the patient slowly flexes his right arm at the elbow, and then extends it again, concentrating his entire attention on the procedure. The pulse before and after shows little difference if the heart is sound, but with myocardial disease the pulse is materially retarded. With nervous heart affections, on the other hand, it is much accelerated.

39. **The Cremasteric Reflex.**—Rodella relates that in about 30 per cent. of the persons he has examined, the cremasteric reflex could be elicited by stroking the sole of the foot, the same as with the usual technic. The proportion of cases is still higher in which it could be elicited in this way on one side alone. This plantar cremasteric reflex was most pronounced in patients with sciatica.

Medizinische Klinik, Berlin

December 31, 1916, XII, No. 53, pp. 1385-1392

40 War Wounds of the Knee. (Erfahrungen über Kniegelenkschüsse, insbes. über primäre Gelenknaht.) H. Klose.—p. 1385.
41 *Tincture of Iodin in Treatment of Erysipelas. W. Keppler.—p. 1387.

41. **Tincture of Iodin in Treatment of Erysipelas.**—Keppler asserts that a 10 per cent. solution of iodin generally has a prompt and certain curative action in erysipelas, as he has proved by ten years of experience in a septic ward. He calls attention further to the fact that during his entire service in the field since the war began he has encountered only one case of erysipelas, and none at all have been encountered by other surgeons of whom he has enquired. He suggests that the custom of prompt iodin treatment of the wounds may be responsible for this rarity of erysipelas. It is the rule to paint the region around the wounds anew with tincture of iodin each time the dressings are changed.

Münchener medizinische Wochenschrift, Munich

December 12, 1916, LXIII, No. 50, pp. 1749-1784

42 *War Diet Advantage for Some Children between Two and Six. (Kleinkinderkost im Kriege.) M. Pfaundler.—p. 1749.
43 *Lumbar Puncture in Treatment of Epidemic Meningitis. F. Riedel. —p. 1751.
44 *Treatment of Nephritis. H. Machwitz and M. Rosenberg.— —p. 1752. Continuation.
45 Staphylococcus Vaccine Therapy of Furunculosis. Doctor.—p. 1755.
46 *Medical Examination of Candidates for Matrimony. (Aertzlicher Ehekonsens und Eheverbote.) Trumpp.—p. 1756.
47 *The Hypophysis As Regulator of Diuresis and of the Specific Gravity of the Urine. H. Bab.—p. 1758. Commenced in No. 48.
48 Artificial Arms and Legs under Muscular Control from the Stumps. (Weitere Fortschritte in der Verwendung willkürlich beweglicher Prothesen für Arm- und Beinstümpfe.) F. Sauerbruch. —p. 1769; (Neue Wege zur Schaffung aktiv beweglicher Prothesen der unteren und oberen Extremität.) H. Plagemann. —p. 1772.
49 Training in Pronation and Supination for Long Stump of Forearm. H. Spitzy.—p. 1770.
50 *Nephritis in the Field. E. Magnus-Alsleben.—p. 1774.
51 "Five-Day Fever." (Zur Kenntniss des Fünftagefiebers.) W. Thörner.—p. 1775.
52 Malaria Dangers and Their Prevention. W. Wick.—p. 1777.
53 *Simplification of Operation for Inguinal and Scrotal Hernia. (Methoden zur Vereinfachung der Radikaloperation der indirekten Leistenhernien und Leistenhodenbrüche.) Hoepfl.—p. 1777.
54 Injuries from Air Torpedoes. (Verletzungen durch das Lufttorpedo.) G. Kelemen.—p. 1778.
55 Cuff to Correct Paralysis of the Flexor Digitorum. (Eine Faustschlussmanschette.) E. Kröber.—p. 1778.
56 Support for Flatfoot. (Ein Fussstutzriemen für plattfussleidende Soldaten.) W. Wolff.—p. 1779.
57 Hammock Bed. (Neues Feldbett für Heereszwecke.) Huntemueller.—p. 1780.
58 Hygiene of Field Latrines. (Zur Hygiene des Stellungskrieges. II.) K. Hannemann.—p. 1781.
59 *Spiral Springs to Drain Fistulas. D. Sarason.—p. 1782.
60 *Micromethod for Determination of Albumin Content of Urine. E. Deiters.—p. 1782.
61 Indemnity for Traumatic Neuroses. (Die Versorgung der funktionellen Kriegsneurosen.) Hoche.—p. 1782.

42. **The War Diet and the Children.**—Pfaundler shows that the food now available for children between 2 and 6 conforms closely to the diet that has long been advocated as an auxiliary means to correct inherited taint and ward off spasmophilia, etc.

43. **Lumbar Puncture in Meningitis.**—Riedel reports the prompt and complete recovery of four out of five soldiers with epidemic meningitis treated with lumbar puncture and withdrawal of enough fluid to restore the pressure to normal, repeating this daily as long as necessary, changing the site each time. No by-effects were noted, but the disease ran its usual four or five weeks' course. His experience has convinced him that the abnormal pressure is the most serious factor in the symptoms. In one case he repeated the puncture eighteen times. At the tenth day the pressure was still 410 mm., but then soon dropped to normal.

44. **Treatment of Nephritis.**—This communication from Umber's clinic gives the minute details of several cases of edematous nephrosis to show the prompt benefit under restriction of salt and water. The article is to be continued.

46. **The Physician and the Marriage of the Unfit.**—Trumpp insists on the necessity of a medical examination for candidates for matrimony, and outlines a plan to render it feasible. He also outlines a campaign for educating the public to the necessity of getting married and raising good families, paying more attention to physical and mental qualities than to name and fortune, and emphasizing the evils from marrying a mate physically or mentally below par.

47. **The Hypophysis as Regulator of Diuresis.**—Bab states that his experimental and clinical research has confirmed the assumption that the flow of blood through the kidneys, and hence the diuresis, are influenced by hormones from the glands with an internal secretion. The hypophysis seems to act as a central station, so far as the physiologic functions of the urogenital system are concerned, regulating this hormone action. When this regulator is working inadequately, pathologic polyuria is liable to develop, as in diabetes insipidus. Subcutaneous injection of extract of the posterior lobe of the hypophysis restores to normal the inadequate regulating

function, and the pathologic polyuria subsides, while the specific gravity rises and the general health improves. By the mouth, the extract has no action, and its effect lasts only while it is in the system, no durable action being apparent. Tests with extracts of other glands showed them to be inert in this respect. The hypophysis extract modifies the concentration of the urine not only in diabetes insipidus, but also in other affections. He adds that in diabetes insipidus the kidneys are to be regarded as sound, because as soon as normal functioning is restored, they behave in every respect like sound kidneys. Injury of the hypophysis in animals entails polyuria. This is not observed with injury of any other of the ductless glands, but suprarenal extract is also able to increase the specific gravity. In Addison's disease, the hypophysis is intact and thus presides over the diuresis, preventing polyuria notwithstanding the destruction of the suprarenals, the hypophysis being evidently the commanding officer. The direct or indirect participation of the hypophysis in affections with a tendency to retention of water (dropsy, hydrocephalus and hydramnion), calls for further study. He suggests that as the diuresis-regulating function of the hypophysis seems to work automatically and always along the same lines, it might be possible to utilize persons with pronounced diabetes insipidus for standardization of hypophysis extracts. Bab is assistant at the second university gynecologic clinic at Munich, and he reports a number of cases of diabetes insipidus and also of adipose-genital dystrophy to illustrate the action of the hypophysis extract.

50. **Nephritis in the Soldiers on Active Service.**—Magnus-Alsleben says that the nephritis in question is proving to be merely the familiar acute glomerular nephritis with a tendency to edema, such as we see after scarlet fever. Experience has shown further that moving is bad for these cases, and now they are kept at the one hospital till cured. About half the men had a high blood pressure, 150 to 180 mm. mercury, but recovery was complete at last, except that the urine still showed a little albumin, a few casts and a few red corpuscles. These findings in the urine kept up even after two or three months' quiet in bed, with exacerbations in a few cases. Aiming to spare the diseased partial function, the amount of fluids allowed was calculated strictly according to the output of urine, and the nitrogen and salt in the food were materially restricted, although the supply of calories was ample. The favorable influence of this function-sparing diet was remarkable. Copious diuresis soon set in, without other measures, and the blood pressure dropped to normal. In the last fifteen cases he gave the men absolutely nothing to eat or drink for three or four days and then let them drink copiously. This is Volhard's method of treating nephritis in soldiers; he claims that a flood of diuresis follows and the blood pressure drops at once. But Volhard's assertions were not confirmed in his experience. The flood of diuresis did not always follow, and when it did appear, the blood pressure did not always decline, so that the results were disappointing and this method is now abandoned.

53. **Improved Technic for Hernia Operations.**—Hoepfl remarks that the war has made it necessary to operate in large numbers of cases in which in ordinary circumstances operative measures would never have been required. His extensive experience with indirect inguinal hernias has shown that considerable advantages result when the hernial sac is slit crosswise and the lower half is left. He does not draw the hernial sac out, but pushes aside the tissues around and incises the hernial sac about on a level with the anterior inguinal ring, aiding reduction of the contents of the sac by raising the pelvis. The side ends of the incision are then drawn apart with forceps which brings up the posterior wall of the hernial sac in a transverse fold, which is then slit its entire length. The proximal and the distal cut edges are then seized and raised with forceps, and the upper half of the hernial sac is then separated from all adhesions down into the internal inguinal ring. It is sutured to close it, and it is then allowed to slide back; the operation is completed with Bassini's or Girard's technic, leaving the lower half of the hernial sac unmolested throughout. For congenital hernia with intra-abdominal testicle, the invagination method has given best results, as he describes in detail.

59. **Spiral Spring for Fistula Drain.**—Sarason comments on the difficulty in inserting a tampon to drain a winding fistula, and also the disadvantages of a stiff rubber drain. He has found extremely useful for the purpose a finely twisted wire spiral spring. This adapts itself to the fistula, while there is nothing to obstruct the outflow of secretions. The end is provided with a floor, so that it will hold a guide, and can thus be readily introduced into the narrowest fistulas, ensuring keeping them open to the air.

60. **Micromethod Test for Albumin in the Urine.**—Deiters relates that the findings are more distinct when a small amount of urine is used, as he describes. An ordinary test tube is heated until the rounded bottom can be pushed in to make a small ball-shaped or conical depression in the lower end of the test tube. This can be treated with six or eight drops of nitric acid and the urine poured on top as usual. The turbidity resulting is more distinct than with the ordinary technic, as more light gets to the fluid in proportion to the amount of the fluid. The findings are distinct, even at 1 : 200,000.

Wiener klinische Wochenschrift, Vienna

December 21, 1916, XXIX, No. 51, pp. 1611-1642

62 *Parenteral Injection of Albumin. (Beiträge zur Proteinkörpertherapie.) W. Weichardt.—p. 1611.
63 Malformed Ears and Eyebrows as Signs of Degeneracy. (Die Bedeutung der Ohrmuschel und der Augenbrauen, sowie anderer Abnormitäten für die geistige Beurteilung eines Menschen.) S. Suchy.—p. 1614.
64 Traumatic Neuroses and War Hysteria. E. v. Nesnera and E. Rablorzky.—p. 1616.
65 *The Precipitation and Wassermann Tests after Supposed Abortive Treatment of Syphilis. A. Perutz.—p. 1619.
66 *Prophylaxis of Venereal Diseases. (Zur Bekämpfung der Geschlechtskrankheiten.) H. Hecht.—p. 1622.
67 *Study of Bergell's Reaction. G. Raudnitz.—p. 1623.
68 *Improved Technic for Percussion and Auscultation. J. Tornai.—p. 1625.
69 *Jaundice in Soldiers. (Zur Frage der Gelbsucht an der Front.) B. Schwarzwald.—p. 1639. Conclusion.

62. **Parenteral Injection of Albumin in Therapeutics.**—Weichardt here reports further laboratory research on the principles of what he calls "protein body therapy." He gives a brief historical review of the work that has been done by himself and others in this line, and emphasizes the practical importance of the exactly opposite action of small and large doses of the parenterally introduced protein substances. Bessau has recently pointed out that the favorable therapeutic action in infectious diseases corresponds to Pfeiffer's old conception of means to increase the resisting powers. R. Pfeiffer declared that many kinds of interventions in acute infections induced an immediate increase in the resisting power. Bessau further insisted on the importance of inflammatory processes in the cure of infectious diseases. Weichardt has been studying the action of the higher molecular products of the splitting of albumin, as they act on isolated organs and systems of organs, either increasing their functional capacity or reducing it. He has tested them on the isolated heart of the frog, also in the test tube, and gives a number of charts showing the action of a 0.005 per cent. solution of a blood clot, filtered. The results showed that the blood-producing system can have its chemical functional capacity (*chemische Leistungsfähigkeit*) materially increased by minimal doses of albuminoid substances, and also by other substances. This probably is the explanation for the improved functioning under injections of salt solution to which Engländer has recently called attention as a therapeutic principle. Weichardt reports further the action of succinimid in this line; under its influence the paralyzing products of metabolism seem to be destroyed more rapidly. He calls the substances, including succinimid, which act in this way "retardins," as they retard the fatigue process. The whole comes under the general biologic law of activation of protoplasm, and he is convinced that this plays an important part in the living organism. In respect to the practical application of this protein body therapy in the clinic, he warns that in his experiments with intravenous or subcutaneous introduction of the albuminoid sub-

stances, he frequently noted in animals the development of a chronic condition of cachexia, the weight progressively declining and the temperature showing slight fluctuations. Some of the animals threw off the cachexia finally but others died. The cachexia-inducing property of the parenterally introduced albumin products seems to be connected with their constitution. Dold as well as Weichardt has called attention to this "proteinogenous cachexia."

65. **Serodiagnosis of Syphilis.**—Perutz tabulates the findings in fifty cases of recent syphilis tested repeatedly with the Porges-Herman-Perutz precipitation test and also the Wassermann test, before, during and after the so-called abortive treatment. The data show that the course of treatment never actually aborted the syphilis whenever these tests still elicited a positive reaction, even although no symptoms of syphilis could be detected at the time. The syphilis progressed also in all but one of the nineteen cases in which the precipitation test was positive, although the Wassermann was negative. But in fourteen cases in which both tests were negative there have been no manifestations from the syphilis since. His findings show further that the precipitation test reveals generalization of the syphilis at a much earlier stage than is possible with the Wassermann test. It is positive also in a much larger proportion of cases in the primary phase of the disease. A negative Wassermann before starting treatment is no guarantee that the abortive course is destined to cure the disease, and it does not guarantee that the syphilis is not already generalized. The most favorable conditions for successful abortive treatment are when both the precipitation and the Wassermann tests fail to elicit a response.

66. **Prophylaxis of Venereal Diseases.**—Hecht writes from barracks near Prague that the custom of giving the men a brief leave of absence just before they set out for the front is responsible for the fact that when they return they have to go to the hospital instead of starting out on the long march. He insists that leave of absence for a visit home should never be granted to a man who has acquired venereal disease during his service or who is still in the first years of the disease. It is fortunate, he says, that the military authorities have it thus in their power to prevent the man's infecting his family. In his corps, records are kept now of every man with venereal disease, and a certain mark opposite the name of a man on the register indicates that in no circumstances is he to be granted home leave. This seems cruel, but in the long run it is kind. This restriction of home leave is already enforced for typhoid carriers. Hecht adds that no one seems to class the venereal diseases with infectious diseases, but this neglect to apply the measures that have been found reliable with other infectious diseases will avenge itself sooner or later.

The number of syphilitics in the army now must certainly be several hundreds of thousands. They are being treated in hospitals, while sound and healthy men are being shot down in their stead. This actually places a premium on sexual infection, for the healthy have no chance of a few months' respite in the hospitals from the fighting. The effect likewise is to spare the syphilitics while the sound get killed off. He suggests that the diagnosis should be the signal for sending the man to the front. This would have a deterrent effect: at present many prefer to take their chances with syphilis, rather than with the enemy's shells. It might be possible to form special companies of syphilitics, as soon as the ulcers have healed over, so that the treatment could be conveniently continued and applied on the firing line, while infection of other troops would be prevented. Neisser long insisted that courses of salvarsan and mercury could be given perfectly well in the trenches. Hecht declares that it is impossible to reiterate too often the frightful danger for the populace from syphilitics in the primary phase. They have many chances for infecting others in a garrison town, but on the firing line they are comparatively innocuous, and this from every point of view has its advantages. Since the war began, a total equivalent to sixty divisions have been temporarily withdrawn from the fighting for venereal diseases. In conclusion, he insists on the necessity for enlightening the public in regard to the danger of venereal disease in candidates for matrimony. He endorses Zinsser's suggestion that the daily papers should carry a big display advertisement something like this: "Beware of Sexual Diseases. Every young couple should mutually demand a certificate of good health before the wedding." He would like to render this certificate obligatory for all.

67. **The Bergell Reaction.**—The Journal described Feb. 6, 1915, p. 550, Bergell's copper sulphate urine test alleged to reveal a predisposition to diabetes even before it has actually developed. Raudnitz has applied the test to the urine of sixty-seven children and adults including nine children of a diabetic parent. The findings for all are tabulated. The index was high in febrile patients, but the children from diabetic families did not have a specially high index. Only six children from diabetic families were discovered among 15,000 Jewish refugees. Raudnitz is inclined to agree with Seegen that the supposed prevalence of diabetes in Jewish families is due to the fact that the Jews affected with it, or fearing it, flock to the specialists, while other classes of the population seldom go to the trouble and expense of a trip to the specialist or health resort.

68. **The Phonoscope.**—Two illustrations are given of Tornai's improved phonograph-stethoscope which magnifies the sounds heard on percussion and auscultation.

69. **Jaundice in the Troops.**—Schwarzwald says that the *Frontikterus* he has encountered so often is a mild, transient, almost secondary disturbance, occurring practically exclusively in men under the conditions of trench life. Troops under conditions permitting greater opportunities for respite and relief, did not develop this "firing line jaundice." Cases were rare also when there was active fighting. It seemed to be the monotonous trench life that predisposed it, superposed on the longing for home that became almost unbearable as the spring opened. In only seven of the fifty cases examined was there a history of severe fright from a shell explosion. This psychogenous jaundice seems to confirm the importance of nervous factors in the functioning of the liver.

Riforma Medica, Naples

1916, XXXII, No. 44, pp. 1201-1228

70 *Diagnosis of Cancer of the Liver. (Diagnosi dei tumori maligni del fegato.) A. Ferrannini.—p. 1201.
71 Tuberculous Meningitis Simulating Sclerosis in Patches. A. Camarata.—p. 1208.
72 Present Status of Diagnosis, Treatment and Prophylaxis of Typhus. U. Gabbi.—p. 1213.

No. 45, pp. 1229-1250

73 Action of Toxins of Fatigue on Certain Internal Organs. L. Ferrannini and S. Fichera.—p. 1229.
74 Poisoning from Asphyxiating Gases. P. Sisto.—p. 1234. To be continued.
75 Substitute for Salvarsan. (Sul Luargol. Il nuovo antisifilitico di Dauysz.) G. Pollio and C. Kühl.—p. 1238. Commenced in No. 44, p. 1205.

70. **Diagnosis of Cancer of the Liver.**—Ferrannini says that when it is difficult to decide whether the liver trouble is malignant or merely echinococcus disease, the age over 50 speaks in favor of cancer; also the sudden onset of intense pain in the liver region, the enlargement of the liver and discovery of hard bunches in it. Also the absence of eosinophilia and of leukocytosis in general, the reduction of nitrogen and increase in urobilin in the urine, the coexistence of stomach trouble, similar to what is observed with gastric cancer, although in fact the stomach may be entirely free from involvement in the malignant disease. The cancer is more liable to be a sarcoma than a carcinoma if there are no extra-abdominal metastases, no ascites and no jaundice.

Brazil-Medico, Rio de Janeiro

December 30, 1916, XXX, No. 53, pp. 417-424

76 *The Contradictory Facts in Regard to Antitoxin Treatment for Diphtheria. (Factos contradictorios sobre a sorotherapia antidiphterica.) O. Clark.—p. 417. Commenced in No. 50.—p. 394.

76. **Antitoxin Treatment of Diphtheria.**—Clark's statistics from various countries emphasize anew the vital importance of commencing treatment of diphtheria at the earliest possible moment. The early diagnosis is the main thing. He mentions parenthetically that at Rio de Janeiro diphtheria

is exceptionally mild and rare. Some statistics recently published, covering the last forty-six years, show an annual average of only forty-three deaths from diphtheria.

Acta Scholae Medicinalis Univ. Imp. in Kioto

1916, I, No. 3, pp. 283-411. German and English Edition. Last indexed August 5, 1916, p. 474

77 *The Chemical Composition of the Placenta. I and II. (Ueber die N-haltigen Extraktivstoffe der menschlichen Placenta.) T. Harada.—p. 283. (Ueber die Bildung von d-Milchsäure bei der Autolyse der menschlichen Placenta.) Id.—p. 291.
78 *The Chemical Composition of Ovaries. (Ueber Fermente in Corpora lutea der Kuhovarien und in der von den ersteren befreiten Ovarialsubstanz.) Y. Taniguchi.—p. 299.
79 *Physiologic Studies on Spermatozoon, Especially its Life Duration. S. Ochi.—p. 341; On the Life Duration of the Horse Spermatozoon outside of the Body. S. Sato.—p. 361. (In English.)
80 Behavior of Grape Sugar in Hen's Egg during Incubation. (Ueber das Verhalten des im Eierklar sowie im Dotter Vorhandenen Traubenzuckers bei der Bebrütung der Hühnereier.) G. Sato.—p. 375.
81 On the Effect of Osmotic Pressure. IV. The Relation between Osmotic Pressure and Electric Resistance of the Nerve. H. Tanemura.—p. 381. (In English.)
82 *Physiology of Osmotic Pressure. V. (Ueber den Parallelismus der Erregbarkeit und der Leitfähigkeit.) R. Shoji.—p. 395.

77. **The Chemical Composition of the Placenta.**—Harada describes his research on 120 freshly expelled placentas which resulted in the discovery of the presence in the placenta of xanthin, adenin, arginin, histidin, cholin, lysin, uracil, leucin, alanin, prolin, glutaminic acid, and possibly of hypoxanthin and phenylalanin. In a second communication he asserts that d-lactic acid is formed during autolysis of the human placenta.

78. **The Ferments of the Cow Ovary.**—Taniguchi reports that several ferments, which he enumerates, were found in the corpora lutea and also in the other parts of cows' ovaries, but several others which might have been expected were not detected.

79. **How Long Can Spermatozoa Live Outside the Body.**—Ochi experimented with the spermatozoa of white mice, studying the effects of physical and chemical stimuli on them, especially the effect of alkaline and acid solutions, of temperature, light, osmotic changes, the nonelectrolytes, the action of ions, of nitrogen, oxygen, hydrogen and carbon dioxid, and of changes in atmospheric pressure. The most favorable conditions for long survival were when the animal was mature and well nourished, and the spermatozoa were kept at room temperature (22.5 C. or 72 F.) in a 3.3 per cent. solution of dextrose. A 0.7 per cent. solution of sodium chlorid seemed to have practically the same effect. He ascribes it to the osmotic tension. Acidity at any concentration was found injurious, a 0.02 per cent. solution of hydrochloric acid arrested at once the movements of the spermatozoa.

Sato reports research with the spermatozoa of horses, saying that artificial fertilization has proved so successful in horticulture that florists can now send pollens to a distance for crossbreeding of plants. He adds—both Ochi and Sato write in English—"As to an animal, such a practice as this is not only so difficult but also religious and moral prejudices of the people have greatly hindered its progress in this line. Recently, however, religion has lost its influential power and the views on morality have become reveral. And many are making effort to improve national wealth and happiness from economical and military view points. Therefore the prejudice on the artificial fertilization of the animal has removed to some extent." He gives eighteen tables of details as to the various experiments made showing the length of the survival of the spermatozoa in various mediums and under different conditions. The moment when all active movements ceased was taken for the limit, but he found that application of warmth, when they had been kept at room temperature for five or six hours, sometimes revived part of them so that they resumed active movements, but this never lasted for more than thirty minutes at most. The most favorable conditions to keep them alive outside the body were found to be a temperature of 13 or 15 C. (55.4 and 59 F.) with an osmotic tension corresponding to a 5.2 per cent. solution of dextrose. In this solution the spermatozoa maintained active movements for from ten to thirty hours, to a maximum of seventy hours.

82. **Physiology of the Osmotic Pressure.**—Shoji discusses in this fifth report on his researches the parallelism between the excitability and the conducting power of a nerve. They do not seem to be two separate attributes of the nerve, but seem to be of the same nature.

Russkiy Vrach, Petrograd

1916, XV, No. 45, pp. 1057-1080

83 Patches of Atrophy of the Skin in Adult. (Poikilodermia atrophicans vascularis Jacobi.) V. I. Terebinsky.—p. 1057.
84 Congenital Absence or Retroperitoneal Location of Vermiform Appendix. (Vrozhdennoe otsutstvie cherveobraznago otrostka, etc.) A. M. Nikolsky.—p. 1061.
85 *Dietetic Treatment of Rachitis. I. A. Shabad.—p. 1067. Concluded.
86 Extension in Treatment of War Injuries of the Spine. (O traum. povrezhdeniakh pozvonochnika.) S. M. Dukhovsky.—p. 1070.
87 War Wounds of the Skull. (Ognest. raneniakh cherepa.) M. S. Astroff.—p. 1074. To be concluded.
88 *Treatment of Cholera in Children with Intravenous Infusion of Saline. M. D. Tushinsky.—p. 1077.

85. **Dietetic Treatment of Rachitis.**—Shabad is in charge of the children's clinic at Petrograd where his extensive research on rachitis has been done. In this communication he gives the results of the mixed diet—with very little milk—advocated by Czerny-Keller, comparing the metabolic findings with those on a diet of unlimited milk and bread, both in periods with and without cod liver oil. The intake and outgo of calcium, phosphates and nitrogen during each period are also compared for each, several tables showing under ten headings the various findings under the test diets. All the testimony is in favor of unlimited milk with bread. The children assimilated and retained calcium better and gained in weight, and all the metabolic findings were more nearly normal on the milk *ad libitum*, and the benefit was still more pronounced when cod liver oil was given with it. The two children were not quite 2 years old, and the cod liver oil was given in a teaspoonful dose twice a day. The fact that the children seemed to do a little better on the Czerny-Keller mixed diet when cod liver oil was given with it shows, he declares, that this diet (241 gm. milk; 247 gm. soup; 512 gm. tea; 138 gm. bread; 85.5 gm. cutlet, and 332.2 gm. mashed potatoes in the course of the twenty-four hours), lacks essential therapeutic efficacy, while the children are unable to utilize it as well as plain milk and white bread.

88. **Intravenous Infusion of Saline in Cholera in Children.**—Tushinsky infused from 400 to 2,000 c.c. of a 6.5:1,000 solution of sodium chlorid, according to the age of the child, and thirty of the forty-four over 3 years old recovered. The four under 3 all died, and nine of the fourteen between 3 and 5. In these thirteen fatal cases in children under 5, all but three were in the algid phase when first seen. Other children with the severer form of cholera, not treated with these intravenous infusions, developed a hornlike dryness of the tissues, entailing superficial lesions. Nothing like this was observed in the infusion-treated children. The epidemic of cholera in question developed slowly until there were 654 cases, and then it suddenly died out. The hardships of the refugees were as severe as before; nothing had been changed in regard to the water supply, and there was no central water supply to be incriminated, as in classical epidemics of cholera at Hamburg and at Petrograd. The epidemic did not develop with many cases at once but spread slowly—a typical example of a contact epidemic, presupposing a protracted course. But, instead of that, after six or seven weeks the epidemic suddenly died out. Tushinsky thinks there is only one explanation possible for this course of the epidemic, namely, that so many persons had been vaccinated against cholera that the epidemic died out for lack of fuel.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 23, 1916, II, No. 26, pp. 2245-2320

89 *Cancer Mortality in the Netherlands. (Kankersterfte in Nederland.) H. T. Deelman.—p. 2251.
90 *Bile Pigments in the Urine. (Onderzoek op galkleurstoffen in de urine.) L. de Jager.—p. 2271.
91 *Congenital Absence of Hair with Atrophic Condition of Skin and Its Appendages in Boy of Five: Progeria. J. C. Schippers.—p. 2274.

89. **Cancer in the Netherlands.**—Deelman's statistics are presented in charts for ready comparison. The average mortality from cancer in the years 1909 to 1914 in the various towns and districts are shown in graded maps per 10,000 inhabitants. The range is from 4.5 to 16.6: 10,000. Only 4 per cent. of the deaths from cancer were in persons under 40. The range otherwise is from 23.5 to 52.5: 10,000 inhabitants over 40. He presents further statistics from physicians who have practiced continuously in one district with a steady population of about 24,000. One had eighty-six cancer cases, 1885 to 1889, and 168 in 1910 to 1914. A similar increase is apparent over the entire country; cancer is recorded as the cause of death in 80 per cent. more cases than twenty-five years ago. The data cannot be explained by assuming that in certain regions there are more elderly persons. The increase is a trifle less pronounced in the cities than in the rural districts, and in the regions at the mouth of the large rivers the increase is less than 50 per cent. Otherwise no connection between the lay of the land and incidence of cancer could be detected. He gives other charts which show that the relative proportions of cases of cancer of the stomach, liver, intestine, sexual organs and mamma, in both men and women, keep within a certain range throughout the different districts, showing comparatively little relative fluctuation. The conclusion from the whole study is that the increase in cancer in the last twenty-five years is real and not due to better methods of diagnosis. The northeastern provinces and cities have the highest and Limburg, the most southern province, the lowest cancer mortality for 10,000 inhabitants over 40, but the relative proportions of the organs involved are the same in both. Deelman remarks that the more radical treatment of cancer nowadays is curing so many cases that the time is approaching, if not already here, when the number of deaths from malignant disease will be no longer an index of the actual prevalence of cancer.

90. **Bile Pigments in the Urine.**—De Jager comments on the various inconveniences of the different technics in vogue for determination of the bile pigments in the urine, and describes two methods which he has worked out that he thinks are an improvement. The first is a modification of Gmelin's technic. The green ring at the zone of contact extends into the colorless fluid below, instead of up into the more or less naturally tinted urine. This renders the color reaction much more distinct and unmistakable, and this technic has still other advantages which he enumerates. He uses for 5 c.c. of urine two drops of a 0.5 per cent. solution of sodium nitrite. Then, on top of the urine, is poured a 5 per cent. solution of the ordinary dilute hydrochloric acid. If salt is previously mixed with the urine, the two fluids blend less readily. In his second method he utilizes the insolubility of the zinc compounds of bilirubin. The urine is treated with a few drops of zinc chlorid. The resulting precipitate is filtered out, and over it on the filter is poured a mixture consisting of 1 c.c. strong hydrochloric acid; 9 c.c. alcohol and two drops of a 0.5 per cent. solution of sodium nitrite. The first drops which filter through are yellow; then comes an emerald green fluid the tint of which persists unmodified even if more nitrite is added. The depth of the green tint depends on the proportion of bile pigment present. Larger amounts can be used, 10 or 20 c.c. of urine with five or ten drops of a 10 per cent. solution of zinc chlorid. This method is very sensitive, simple and convenient. Various modifications of these tests are described, to adapt them to different conditions.

91. **Progeria.**—Schippers describes a case of premature external senile conditions in a boy of 5. The skin is atrophied and pigmented, the few hairs left are grey, and some of the joints are abnormally prominent. He reviews the literature on the subject, his final conclusion being that the cause of progeria is still a mystery.

Upsala Läkareförenings Förhandlingar

XXII, Supplementary Number. pp. 1-408

92 *Differential Atmospheric Pressure and Intratracheal Insufflation of Air for Intrathoracal Operations. (Studier öfver tryckdifferensandning enligt Sauerbruch och öfver konstgjord andning—rytmisk luftinblåsning—vid intrathoracala operationer.) K. H. Giertz.—p. 1 to 257; (Om experimentella lungexstirpationer.) Id. pp. 1-151.

92. **To Maintain the Respiration During Intrathoracal Operations.**—This bulky and handsomely illustrated number is entirely devoted to Giertz' research on the physiology and pathology of artificial respiration, especially with over and under differential atmospheric pressure, done at the Institute for Physiology of the University of Upsala. He reviews the history of attempts to control the atmospheric pressure, and the present status of our knowledge of the blood pressure in different arteries under normal and differential pressure, and under artificial respiration, illustrating the various points by reports of his experiments on animals and comparing them with experimental and clinical experiences of others, especially Meltzer, Auer, Tigerstedt, Møllgaard, Tiegel, Cloetta and von Rodhen. Eighty-one pages and eleven three-page tracings are devoted to the details of the findings minute by minute on human subjects, rabbits and dogs, under differential pressure methods. He relates that he soon saw that the whole system of differential pressure methods has one serious fault, namely, the reduction in the ventilation of the lungs. The differential pressure cabinet, he adds, by no means obviates all dangers when the thorax is opened, as Sauerbruch claims. On the other hand, Giertz' experiments of and tests with rhythmic insufflation of air showed that this is a reliable and effectual method of ventilation while it does not affect injuriously either the greater or the lesser circulation. All this research was preparatory to experimental operations on the lungs, which he describes in minute detail with thirty-two pages of photographic reproductions of the findings later. The literature on pneumectomy is also reviewed to date and various discrepancies are noted and some explained. He deplores the tendency of late to minimize the dangers of pneumothorax. In all operations on the lungs the main point is to keep up normal ventilation, and he declares that this research has confirmed and established that rhythmic insufflation is reliable and, when correctly applied, is harmless. He states that it is indispensable to have the cannula fit tight to the walls of the trachea. This can be realized by fastening an inflatable rubber bag around the laryngeal end of the intratracheal tube. The tube connected with this inflatable balloon, running along beside the ventilation tube, allows it to be inflated as soon as the ventilation tube is in place in the larynx. With the proper pressure provided for the insufflation air and a safety valve, the air previously warmed and filtered, all danger is obviated. The only disadvantage of this method is the necessity for introducing a tube into the throat, but with the Kuhn tube this is reduced to the minimum. Wide clinical experience with Kuhn's flexible tube has shown that it is quite free from danger. In opposition to this comparatively slight drawback, the method has two great advantages. The ventilation of the lungs proceeds and continues undisturbed, even with the lungs extensively exposed on both sides, and there is no danger of air getting into the stomach. This latter is liable to be directly fatal; when it occurred in Giertz' experiments it caused great inconvenience. He did not experiment much with the Meltzer-Auer technic but his impressions with it were so favorable that he says it is merely a matter for individual choice whether to use the ordinary rhythmic blowing in of air or the Meltzer-Auer method. Both provide ample and reliable ventilation without the subject's incurring new dangers. He had occasion a number of times to apply the rhythmic insufflation to save the life of the animal suffocating from the imperfect ventilation under the differential pressure procedure. He describes further the technic which he advocates for resection of the lung, the outcome in the nineteen dogs confirming its superior advantages. In conclusion he discusses the changes liable to occur inside the chest after an operation on the lung; they are almost all purely physical. The tissues adjust themselves to the conditions after the air left in the thorax has been absorbed, this forces the remaining lung tissue to expand more. Eight of his dogs that he left alive from four months to two years to date differ in no respect from ordinary dogs in aspect or behavior, but occasionally four of them cough, especially after pressure on the trachea. Other operations with the lungs exposed are reported on both dogs and rabbits.

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THE DIAGNOSIS AND SERUM TREATMENT OF ANTERIOR POLIOMYELITIS *

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In the treatment of the acute stages of poliomyelitis the application of immune serum from human beings who have recovered from the disease has been recommended by Netter,[1] who used such serum in a small series of cases. His conclusions were that the serum was beneficial in poliomyelitis. Later, Flexner and Lewis[2] carried out some experimental work in monkeys, and showed that the intraspinal injection of immune serum twenty-four hours before the intracerebral inoculation of a fatal dose of virus acted as a preventive against the disease.

On the basis of these results, the work with immune serum was taken up at the Willard Parker Hospital, at the Minturn Hospital and in the private practice of a number of physicians to whom the serum was supplied for treatment of suitable cases. It was soon realized that the cases in the preparalytic stage of the disease would be the most suitable for serum treatment, and that late cases with well developed paralysis and normal temperature would probably not be influenced by the administration of serum. The serum was also used, however, in cases in which the temperature was still high, the paralysis had developed in some parts, and was progressively involving other members of the body.

It was in the group of early cases, treated in the premonitory or preparalytic stage of the disease, that we could expect to obtain much more tangible results. If paralysis did develop after the use of serum, the following points were noted:

1. The number of doses and amount of serum used each time.
2. The group to which the serum belonged.
3. The number of days the patient had been ill.
4. The number of hours or days which had elapsed since the first dose of serum was given.
5. The degree of paralysis.
6. The rapidity with which the paralytic phenomena began to clear up.
7. The final result: recovery, paresis or paralysis, and the actual groups of muscles affected.

It was only by comparing a larger group of early cases treated with immune serum, with normal human serum, and with no serum at all, that we could hope to arrive at any certain data as to the efficiency of the serum treatment.

To help in the diagnosis of early cases, the following symptoms and findings in the spinal fluid were found of value. The macroscopic changes in the spinal fluid to be described cannot replace the more careful laboratory examination, but will be found of great value, especially where immediate laboratory facilities are not at hand, and the diagnosis of poliomyelitis has to be confirmed for purposes of isolation and treatment.

SYMPTOMS OF EARLY CASES

A certain group of symptoms have been found significant, especially if occurring during an epidemic, in the early stages of infantile paralysis. These symptoms are present in part or in whole in most of the cases. In addition to the history of exposure, which is especially important during an epidemic, we have: (1) fever; (2) hyperesthesia; (3) slight rigidity of the neck, with pain on forward traction, and occasionally a slightly positive Kernig's sign; (4) muscular tremors, irregular from fine to coarse, noticeable especially in the fingers and hands, but also apparent in the entire extremities; (5) weakness of the limbs, especially of the lower extremities, with early diminution or loss of the patellar reflexes; (6) headache; (7) nausea, vomiting and constipation or diarrhea, and (8) the character of the spinal fluid obtained by lumbar puncture in suspicious cases.

This fluid, with a few exceptions, is quite characteristic even in the early stages of the disease. There is a distinct increase in the total number of cells, from 20 to 600 or more. These cells are mostly lymphocytes, with a small proportion of large mononuclear and polynuclear cells. During the earliest stages of the disease there may be a transient relative and absolute polynucleosis. The chemistry of the fluid is also characteristic. There is an increased amount of albumin, globulin, and a substance which reduces Fehling's solution. Often on the surface of the spinal fluid, as it is being drawn into a test tube, a thin filament of fibrin appears, which breaks up into small flakes when the fluid is gently shaken. The diagnosis in a large percentage of cases can be established in the early cases during the acute stage of the disease, even before the laboratory examination of the spinal fluid, by noting a slight but characteristic opalescence to the fluid which gives a ground-glass appearance throughout the fluid when it is examined in a clean test tube by transmitted light. This appearance is caused by the increased number of white blood cells (lymphocytes), which can be distinctly seen with the naked eye, and still better with a pocket magnifying lens. The large number of lymphocytes appear as dustlike little specks uniformly

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* From the Research Laboratory and the Willard Parker Hospital.

[1] Netter, A.: Serotherapie de la poliomyelite nos resultats chez trente-deux malades: indications, technique, incidentes possibles, Bull. de l'Acad. de méd., Oct. 12, 1915. Netter, A., and Salanier, M.: Bull. et mém. Soc. méd. d. hôp. de Paris, March 10, 1916.

[2] Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, Seventh Note, The Journal A. M. A., May 28, 1910, p. 1780; Eighth Note, Aug. 20, 1910, p. 662.

suspended in the fluid. These particles can be put into motion by a slight shaking movement of the test tube. A normal spinal fluid, or a poliomyelitis fluid which has been standing for a number of hours, and in which the cells have settled to the bottom, does not present this appearance unless the cells are distributed again by shaking. It looks limpid and gives the appearance of distilled water. The examination of the spinal fluid is best made in the dark room with the test tube held against an artificial light. It is not as accurate a test of cell increase as the exact count, but is of great practical value.

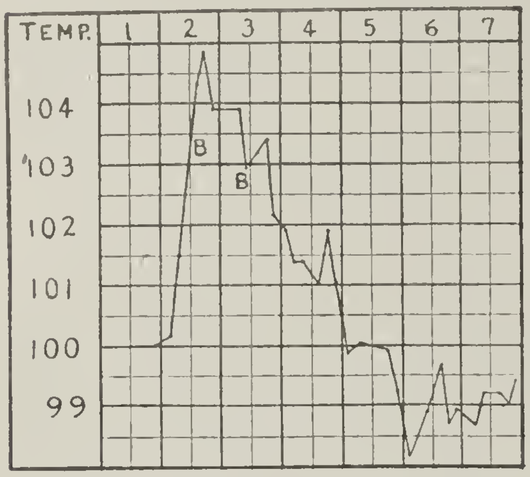

Chart 1.—Typical curve in preparalytic case of poliomyelitis in which immune serum was given and which ended in complete recovery: *B*, injection of 15 c.c. immune serum B.

Any bedside test by which cases of poliomyelitis can be diagnosed during the early stages is important both for purposes of isolation and for serum treatment. Several precautions must be observed in utilizing this test. First, there must be no red blood cells in the spinal fluid. Red blood cells, if only few in number, cannot be distinguished macroscopically by the appearance of the fluid, and the opalescence produced by these cells may be mistaken for that caused by white blood cells. When more numerous, however, the red cells are recognized by a characteristic yellowish shimmer to the fluid. A subsequent microscopic examination should, at any rate, always be made to exclude the presence of red blood cells. Second, white blood cells (lymphocytes and polynuclears) are found increased in the spinal fluid in a variety of other conditions, especially tuberculous meningitis, epidemic cerebrospinal meningitis, syphilitic involvement of the meninges and vessels of the brain, etc. The typical macroscopic ground-glass appearance of the fluid cannot, therefore, be of absolute, but is of great relative diagnostic value during an epidemic, if the precautions mentioned above have been observed.

In the later stages of poliomyelitis, generally after the seventh to tenth day, the cells in the spinal fluid rapidly diminish in number and soon reach a normal count. It is often important to establish the diagnosis of these later stages of the disease, especially when no paralytic phenomena have appeared after the attack. A simple and yet fairly accurate way of diagnosing these cases is to remove the spinal fluid by lumbar puncture and examine its albumin and globulin content. For a period of from eight to ten weeks, a majority of persons who have passed through an attack of poliomyelitis will show an increased amount of both these substances. This is strongly suggestive of an attack of the disease during an epidemic, especially with a history of some or all of the preparalytic symptoms of poliomyelitis.

Table 1 shows rather strikingly the persistence of the albumin increase (the globulin is generally in proportion to the albumin content) even as late as eight weeks after the onset of the symptoms. It is interesting to note that the maximum amount of albumin is found in a much larger proportion of cases during the second week rather than during the first of the disease. It is possible, therefore, to clear up the diagnosis of some of the abortive types of poliomyelitis even during the later stages of convalescence.

In addition to the ground-glass appearance of the fluid, which is a useful test to determine an increased number of cells and of value in the early stages of poliomyelitis, there is a second macroscopic test, of value both early and late in the disease. This is the so-called foam test, and depends on the pathologically increased amount of albumin and globulin in the spinal fluids in cases of poliomyelitis. When a test tube which is half filled with spinal fluid is thoroughly shaken, a persistent foam appears on the surface, which may last for half an hour to an hour or even longer. Compared with a normal spinal fluid, the foam produced by shaking a fluid obtained from poliomyelitis patients is much denser, finer, more voluminous and more persistent. Here, also, the presence of blood must be excluded before any definite deductions from this test are made.

The importance of getting a spinal fluid free from blood, which occasionally results from the lumbar puncture, is evident from the diagnostic value attached to the findings in a clear spinal fluid obtained from early and late cases of poliomyelitis. After using a variety of lumbar puncture needles, I have become thoroughly convinced that the needle for diagnostic puncture should not be larger than a No. 18 gage and not longer than 3 inches. Such a needle is easily handled, does not bend, and causes little trauma and very little pain. With the patient placed in the proper recumbent position, and the back properly arched, the needle is introduced almost vertically, but with a slight upward direction, in the median line between the third and fourth lumbar vertebrae on a level with the crest of the ilium. Anesthesia, either local or general, is, as a rule, unnecessary. When the child struggles considerably, and the examination of the spinal fluid is of great importance in clearing up the diagnosis, a light ether anesthesia for a few minutes is justifiable and indicated.

SERUM TREATMENT

The diagnosis in the early cases having been established by clinical symptoms and examination of the spinal fluid, the next step is to administer the serum into the spinal canal. It is here that the bedside confirmation of the diagnosis by the macroscopic appearance of the spinal fluid becomes most important. In cases in which the fluid indicates it, the serum can be promptly administered without any further delay for laboratory examination and without the necessity of another lumbar puncture, although the confirmatory laboratory examination can be made later.

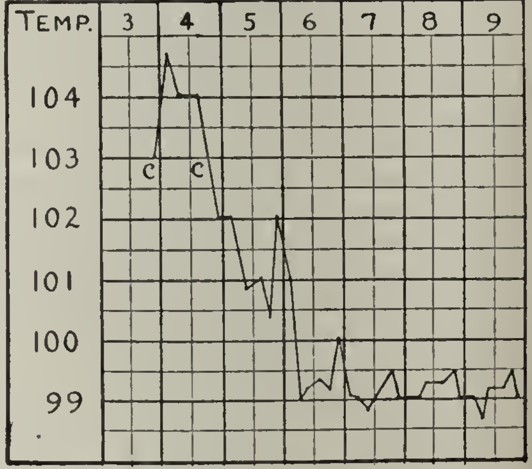

Chart 2.—Typical curve in preparalytic case of poliomyelitis in which immune serum was given and which ended in complete recovery: *C*, injection of 15 c.c. immune serum C.

Fifteen c.c. of the serum are injected by the gravity method after the removal of a slightly larger amount of spinal fluid. The dose is repeated every twenty to twenty-four hours until two or possibly three injections have been made. In the more severe cases, especially with an advancing involvement of the respiratory muscles, the serum should be given every twelve hours. In considering the frequency of the repetition of the dose, and especially of the interval of time between the injections, it is important to remember what is taking place in the cerebrospinal meninges after an injection of the serum. A marked polynuclear cellular reaction is produced, which probably should be given time to exert its full effect before the spinal canal is tapped again and the rich cellular fluid removed, for the administration of a second or third dose of serum. If, however, one delays the reinjection of the serum for forty-eight hours longer, there will be noticed a rapid clearing up of the artificially produced cellular increase in the spinal fluid. Considering this therapy as a possible nonspecific cellular stimulation obtained by the injection of a rich protein fluid, we would consider that an interval of from twenty to twenty-four hours between the injections is best; but it is fair to state that in three severe cases the readministration of the serum was made every twelve hours with apparently good results. The serum is rapidly absorbed from the spinal canal, so that the daily repetition of the dose is indicated, especially if the efficiency of the serum is considered as being based in part on its antibody content.

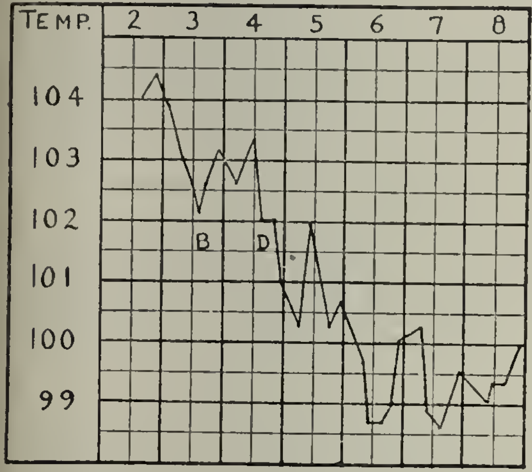

Chart 3.—Typical curve in preparalytic case of poliomyelitis in which immune serum was given and which ended in complete recovery: *B*, injection of 15 c.c. immune serum B; *D*, injection of 15 c.c. immune serum D.

SOURCE OF SERUM AND GROUPS OF IMMUNE SERUM

The immune serum used in the treatment of cases of infantile paralysis was obtained from convalescents and from immune donors who had had the disease from one to several years previously. For the sake of accuracy, and to facilitate the proper study of its action, the serum was classified into groups, according to the number of years which had elapsed since the immune donors had had the disease. It was important in choosing donors for immune serum to establish the fact that they had really suffered from infantile paralysis, and not to accept the diagnosis of the donor on his word, as cases of Bell's palsy, tuberculous disease of the bones and joints, hemiplegias, syphilitic and otherwise, could be found among such so-called immune donors.

The groups into which the serum was divided are:

Early convalescent serum, from two to six months after an attack.
Late convalescent serum, from six to twelve months after an attack.
Group A Serum, from one to five years after an attack.
Group B Serum, from five to fifteen years after an attack.
Group C Serum, from fifteen to thirty years after an attack.
Group D Serum, from thirty years up after an attack.

METHOD OF OBTAINING AND PREPARING SERUM

(*a*) *Amount.*—To obtain the immune serum, the blood is drawn from suitable donors in quantities varying with the age, weight and apparent hemoglobin content of the individual. On an average, it is safe to withdraw 2 ounces from children 9 to 10 years of age, 3 to 4 ounces from children 12 to 13 years of age, and from 4 to 6 ounces from persons 18 years of age and over. Adults, especially robust, full-blooded persons, can furnish from 10 to 16 ounces of blood. Similar amounts of blood can be safely withdrawn again at the end of two to three weeks.

(*b*) *Technic—Obtaining the Blood.*—The blood is obtained by means of a No. 15 gage steel or platinum needle, to which a small piece of rubber tubing is attached. In children, adults and stout persons with small or indistinct veins, the blood is withdrawn by means of a 1 ounce record syringe, and a No. 17 gage needle. The blood is collected in small square bottles in quantities of from 1 to 2 ounces and given a long slant so as to obtain as broad a surface for the separation of the serum as is possible.

(*c*) *Preparation of the Serum.*—The blood is allowed to clot, and the bottles are placed in the ice box during the following twenty-four hours to allow a separation of the serum. This is decanted the following day and centrifuged to free it from pieces of blood clot and red blood cells. To the serum is next added a preservative in the form of 0.2 per cent. tricresol. This is added in a 25 per cent. solution in quantities of 4 c.c. to every 500 c.c. of serum. The serum is then allowed to remain in the ice box for forty-eight hours, so that a fine precipitate, which forms after the addition of the tricresol, separates out and is removed. The serum is then passed through a Berkefeld stone filter, either by suction or by pressure, bottled in quantities of 15 c.c. in dark amber or blue bottles, and kept cold in the ice box. The tricresol was found to increase the local irritant effect of the serum, and it may be advisable not to add it as a preservative.

(*d*) *Duration of Efficiency of the Serum.*—If the serum has been preserved with tricresol, or handled with sterile precautions after it has been passed through the Berkefeld filter, and is afterward kept in a cold place, it will probably remain efficient in its specific antibody content for a number of weeks. So far the serum has been used up almost as fast as it has been obtained. Some of the serum which had been kept for from four to six weeks seemed to be as active therapeutically as the more recently drawn serum.

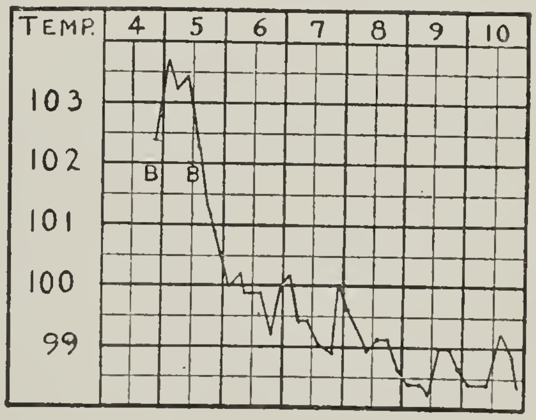

Chart 4.—Typical curve in preparalytic case of poliomyelitis in which immune serum was given and which ended in complete recovery: *B*, injection of 15 c.c. immune serum B.

In an emergency, or when the facilities for treating the serum are not obtainable, the blood is simply drawn in a perfectly aseptic condition into a vessel with glass beads, shaken and centrifuged; or the serum drawn in the usual way is allowed to separate during the next few hours, and promptly used, the presence of a few suspended red blood cells being disregarded entirely. When immune serum is not obtainable, fresh normal serum is procurable at any time from the parents or other relatives of the patient, and can be used within a few hours. Certainly it is advisable not to fail to administer human serum in the treatment of any case of poliomyelitis, because of a lack of already prepared serum.

It is important to note in the preparation of serum, either for stock or fresh without a preservative, that no heat is applied either for inactivation or for sterilization.

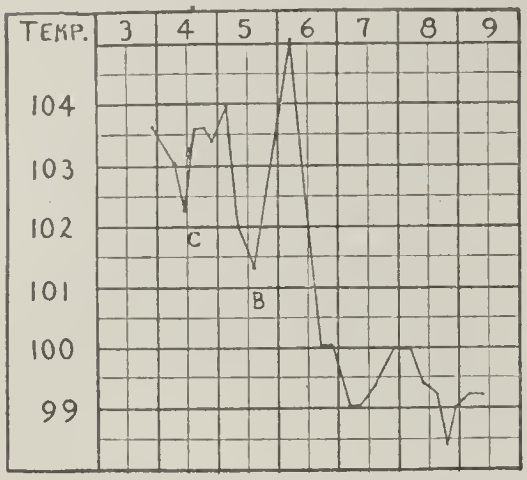

Chart 5.—Temperature curve of a patient with poliomyelitis who developed a facial paralysis eighteen hours after the first dose of immune serum. This patient made a complete recovery: *C*, injection of *20* c.c. immune serum C; *B*, injection of 15 c.c. immune serum B.

Each donor should be otherwise healthy and give a negative Wassermann reaction.

RESULTS OF SERUM TREATMENT

The most evident action of the serum was a marked cellular response of the cerebrospinal meninges in the presence of the serum injected by lumbar puncture. This cellular reaction consisted of a very decided increase of the polymorphonuclear cells, which preponderated in some of the cases to the extent of 95 per cent., while the total cell count increased from 500 to 10,000 cells per cubic centimeter. This increase of cells was at times so pronounced that the spinal fluid obtained at the end of twenty-four hours had a very marked turbid, almost purulent appearance, and a heavy sediment of cells was found in the test tube within a few hours after the lumbar puncture. Culturally, these fluids were always found sterile. This cellular response also followed the injection of normal human serum, of normal horse serum, and of the secondary albumoses of Jobling when these serums were used in the same early stages of disease. This high cellular reactivity of the cerebrospinal meninges is probably due to the very marked congestion of the vessels of the pia-arachnoid and of the cerebral cortex. It is probable that in the use of immune serum we have, in addition, the helping factors of antibodies against the virus of poliomyelitis which stimulate the polymorphonuclear cells to increased phagocytic activity. We cannot estimate the phagocytic action of the cells, as the virus is too minute to be seen. It must not be overlooked, however, that we have probably obtained therapeutic results as good after the use of serum from Group C or Group D as from Group A or B. Such serums may have only a problematic value as antiserums, and almost their entire action may depend on the rich protein content of all blood serums. Further experimental work will no doubt have to be carried out in monkeys to determine whether the previous injection of immune serums into the spinal canal of monkeys will have a greater protective value to subsequent infection with active virus than after the injection of normal human serum.

If the injection of immune or of normal human serum was made in the later stages of the disease, when the temperature had already subsided, the cellular response was found much poorer, and only an opalescence of the spinal fluid was noticeable at the end of twenty-four hours. This lessened cellular response is probably due to a subsidence of the acute congestion of the brain and meninges.

Clinically, the injection of immune or of normal human serum was followed within twenty-four hours in the early preparalytic cases by an intensification of the meningeal symptoms. There were increased rigidity of the neck, opisthotonos, marked Kernig's sign, hyperirritability, headache, vomiting and increased temperature which reached in the most severe reactions up to 104 or 105 F. At times, when the reaction was especially severe, there were twitchings or even convulsive movements of the extremities. These symptoms represented merely a more severe degree of the early preparalytic phenomena of the disease. In some of these cases the temperature was simply caught in its upward rise, and had, therefore, no significance. Definite temperature reactions were, however, noted after the primary and also after secondary injections of serum. The typical curve can be seen in Charts 1 to 4: A rise in temperature, persistence for another twenty-four hours, generally without any further increase after a second dose of serum, and subsidence by a rapid lysis. Charts 5 and 6 show temperature curves of patients who developed paralysis during the course of treatment.

TABLE 1.—ALBUMIN CONTENT OF SPINAL FLUID IN POLIOMYELITIS

Days Ill	Total No. Spinal Fluids	Maximum		Large Amount		Moderate Amount		Slight but Distinct Increase	
		No.	Pr. Ct.	No.	Pr. Ct.	No.	Pr. Ct.	No.	Pr. Ct.
1- 7	52	8	15.4	22	42.3	18	34.6	4	7.7
7-14	39	20	51.3	10	25.6	6	15.4	3	7.7
14-21	35	12	34.3	7	20.0	11	31.4	5	14.3
21-28	31	8	25.8	12	38.7	7	22.6	4	12.9
28-35	26	3	11.5	4	15.4	14	53.9	5	19.2
35-42	37	1	2.7	8	21.6	18	48.7	10	27.9
42-49	51	4	7.8	14	27.5	20	39.2	13	25.5
49-56	50	2	4.0	11	22.0	26	52.0	11	22.0

The other symptoms, like rigidity of the neck and Kernig's sign, persisted for from two to three days after the temperature had dropped to normal. Gradually the symptoms cleared up and the patient, if there was no complicating paralysis, made a rapid and uneventful convalescence.

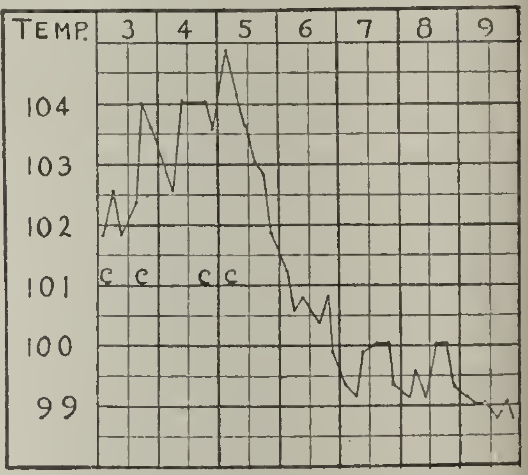

Chart 6.—Temperature curve of a patient with poliomyelitis who developed paralysis of both lower extremities and partial paralysis of both deltoids on the day of the third injection of immune serum. This patient made a partial recovery: *C*, injection of 15 c.c. immune serum C.

The cases treated with immune serum may be divided into three groups:

1. Cases treated at the Willard Parker Hospital.
2. Cases treated at the Minturn Hospital.
3. Cases treated with other physicians.

1. Willard Parker Cases.—A. *Immune Serum Cases.*—(*a*) Preparalytic Cases: Twenty-five:

Type of Serum		No. of Doses	
A	0	One	20
B	1	Two	4
C	17	Three	1
D	7		
	25		25

Results.—(1) Twenty-four remained free from paralysis; (2) one had weakness of both quadriceps extensor (Serum C); (3) none died.

(*b*) Paralytic Cases: Eighty-eight: 1. Thirty-eight patients died: (*a*) Eighteen died in less than twenty-four hours after first dose of serum; (*b*) nine died within forty-eight hours after first dose of serum; (*c*) five died in more than forty-eight hours after first dose of serum; (*d*) two died of tuberculous meningitis; (*e*) one died of gastro-enteritis, and (*f*) three died of pneumonia.

Type of Serum		No. of Doses		Type of Case	
Convalescent	1	One	23	Bulbar	7
A	4	Two	13	Bulbospinal	6
B	10	Three	2	Spinal	22
C	23			Cerebral	1
				Tuberculous	2
	38		38		38

A large proportion of the fatal cases were in children in the last stages of an advancing Landry type of poliomyelitis. Of the eighteen who died within less than twenty-four hours, a majority were moribund, and passed out within a few hours after the administration of a single dose of serum. Many of the patients in this group received the serum only as a last resort. The bulbar cases had well pronounced respiratory difficulty before the serum was injected.

2. Fifty lived:

Type of Serum		No. of Doses		Type of Case	
Convalescent	1	One	39	Bulbar	8
A	6	Two	9	Bulbospinal	2
B	21	Three	1	Spinal	40
C	20	Four	1	Cerebral	0
D	2				
	50		50		50

These patients, at the time of treatment already had a well developed paralysis, but were in a still active stage of the disease, as shown by temperature and a spreading type of lesion. These children recovered and showed a definite clinical improvement; but it is difficult to state how much of the improvement, which is also generally seen in the untreated cases, was due to the administration of the serum, and how much would have taken place during the natural course of the disease.

B. *Normal Serum Cases.*—To determine whether a similar cellular reaction would be produced by the intraspinal injection of normal serum and similar therapeutic results obtained, a series of preparalytic and paralytic cases was treated with serum obtained from persons who had never, to their knowledge, had poliomyelitis. It is, however, recognized that persons who have never had the lesion may have protective substances in their blood.

(*a*) Preparalytic Cases: Ten:

No. of Doses		Results	
One	7	Remained free from paralysis	9
Two	3	Developed bulbar symptoms within 12 hours and died	1
	10		10

(*b*) Paralytic Cases: Thirty-three: 1. Five patients died: (*a*) three died within less than twenty-four hours after first dose of serum; (*b*) one died of sepsis, and (*c*) one died of pneumonia.

No. of Doses		Type of Case	
One	3	Bulbar	1
Two	2	Spinal	4

Two of the children who died within less than twenty-four hours had advanced ascending spinal cases of the Landry type, and one a bulbar case.

2. Twenty-eight patients lived:

No. of Doses		Type of Case	
One	21	Bulbar	5
Two	7	Spinal	23

There was a distinct clinical improvement in the patients who recovered, but whether more than would naturally take place without the use of serum it is difficult to say.

The final results of the Willard Parker Hospital cases were obtained from the hospital records, since I followed up some of the cases for only a short time after the injections of serum.

2. Minturn Hospital Cases.—(*a*) Preparalytic Cases: Fifteen:

Type of Serum		No. of Doses	
A	0	One	0
B	5	Two	11
C	9	Three	2
D	1	Four	2
	15		15

Results: (1) Nine remained free from paralysis; (2) two developed paralysis within less than twenty-four hours: (*a*) bulbar, with complete recovery (B), and (*b*) facial, with complete recovery (C); (3) four developed paralysis after forty-eight hours: (*a*) facial, with complete recovery (B); (*b*) internal strabismus, with complete recovery (C); (*c*) both lowers and left deltoid, with marked improvement (C), and (*d*) both lowers, both deltoids, with final improvement (C).

This series represents an interesting and valuable group of cases. Each patient was fully treated and carefully observed for a period of eight weeks, and the clinical results lead one to the conclusion that the serum was distinctly beneficial in the treatment of these preparalytic cases.

(*b*) Paralytic Cases: Eighteen:

Type of Serum		No. of Doses		Type of Case	
A	3	One	7	Bulbar	2
B	3	Two	7	Spinal	16
C	12	Three	2		
D	0	Four	2		18

Results: Fifteen recovered with improvement of paralysis; three died: (1) two Landry spinal, and (2) one bulbar.

The cases in this group represent chiefly the usual spinal type, in an active stage of the disease, as shown by the short history and the presence of high temperature. The fatal cases were seen and treated at a time when the prognosis seemed to be very doubtful.

In addition to the serum-treated patients there were at the Minturn Hospital forty-one patients who received no serum. The majority of these cases came under observation during the stage of convalescence.

3. Cases Treated with Other Physicians.—These patients were personally observed and treated.

(*a*) Preparalytic Cases: Fourteen. No patients died.

Type of Serum		No. of Doses	
A	3	One	7
B	2	Two	3
C	7	Three	4
D	2		
	14		14

Results: Eleven remained free from paralysis; three developed paralysis: (1) facial and strabismus with complete recovery (A); (2) anterior tibial groups with marked improvement (D), and (3) paresis of both upper eyelids with recovery (C).

This group of cases treated in the preparalytic stage of the disease is also interesting in the large number of complete recoveries which followed the treatment with immune serum.

(*b*) Paralytic Cases: Thirteen:

Type of Serum		No. of Doses		Type of Case	
A	1	One	6	Bulbar	2
B	3	Two	2	Bulbospinal	1
C	8	Three	5	Spinal	10
D	1				
	13		13		13

Results: Nine patients recovered with improvement in paralysis; four died: (1) three Landry spinal, and (2) one bulbar.

The bulbar patient died within two hours. It was a far advanced case, and the prognosis was poor. Of the three Landry spinal patients, two died within less than twenty-four hours after treatment.

In addition to these cases that were seen personally, the serum was supplied to physicians for over 200 cases. The reports obtained from the physicians are not complete, but the cases reported indicate results similar to those detailed above.

4. Control Cases.—It is very difficult indeed to state definitely to what extent the results obtained with serum could

be ascribed to the action of the serum alone, either as a specific or as a nonspecific form of treatment. As stated above, the natural course of the disease is variable. For purposes of control, therefore, a series of twelve nontreated preparalytic cases was taken without selection from the records of the Willard Parker Hospital.

Control Preparalytic Cases: Twelve: (*a*) Five remained free from paralysis; (*b*) seven developed paralysis: (1) bilateral ptosis with little movement of eyeballs; (2) complete facial paralysis; (3) paresis of right arm and left leg; (4) paresis of right leg; (5) paresis of neck muscles; (6) paresis of both quadriceps extensor; (7) paralysis of both lower extremities.

At the Minturn Hospital there were three nonparalytic patients, admitted eight days after the onset of the symptoms, who remained free from paralysis. Of two preparalytic patients, one developed strabismus and one paresis of both lower extremities.

Table 2 gives a summary of the cases treated with immune and with normal human serum. It is interesting to see that of fifty-four preparalytic cases treated with immune serum, forty-four remained free from paralysis, while of the ten who developed some form of paralysis, five made a complete final recovery. The results with normal serum seem to be very favorable, but the number of cases treated in the preparalytic stage of the disease is too small, and a larger series of cases should first be treated before final deductions are made. The high mortality among the paralytic cases is explained by the desperate condition of many of the patients at the time the treatment was administered.

TABLE 2.—SUMMARY OF CASES

Institution	Total	1. Preparalytic				2. Paralytic			
		No Paralysis	Paralysis with Final Recovery		Died	Total	Recovered		Died
			Complete	Partial			Complete	Partial	
Treated with (a) immune human serum:									
Willard Parker Hospital	25	24	..	1	0	88	5	45	38
Minturn Hospital	15	9	3	3	0	18	2	13	3
With other physicians	14	11	2	1	0	13	1	8	4
Total	54	44	5	5	0	119	8	66	45
Treated with (b) normal human serum:									
Willard Parker Hospital	10	9	..	..	1	33	4	28	5

COMMENT

It is known that in poliomyelitis we have a group of abortive nonparalytic patients who go through the premonitory symptoms, but do not terminate in paralysis. It is difficult to state, therefore, how many of the patients treated with serum would have remained free from paralysis without serum treatment. The results and the conclusions from any form of treatment in a disease which is so variable in symptomatology and in prognosis, both as to life and disability, must be given with reserve. It seemed to me, however, that the action of serum in poliomyelitis is beneficial; that the use of serum from recent immune donors is preferable to normal serum, but that human serum is indicated in the treatment of the acute stages, especially in the preparalytic period of the disease. When carefully observed and controlled, the treatment is harmless. A distinct reaction follows in some of the cases after the first dose; the reaction is less marked after the second, and little, if any, is noted after the third injection of serum.

Two groups of cases seemed to give an unfavorable prognosis even in the earlier stages of the disease. One was the fulminating bulbar type with a rapidly progressive involvement of the respiratory center. The second type was a spinal paralytic form which impressed itself by the possibility of mistakes in diagnosis, the very acuteness of the course of the disease, and the hopelessness of any form of treatment. The type referred to is one which begins with symptoms of rapid respiration which suggest for a few hours the diagnosis of pneumonia. The paralytic phenomena, however, soon became manifest and rapidly spread, involving all the extremities and resulting fatally within from twelve to eighteen hours after the onset of respiratory symptoms. The clinical picture suggests an overwhelming involvement of the cerebrospinal axis, in which the intercostal and other accessory muscles of respiration show, because of their vital functional activity, the earliest paralytic symptoms.

In the later cases, which were treated after the paralysis had already made a distinct headway and was beginning to involve the muscles of respiration, the serum showed possibly in a certain proportion of cases an inhibitory effect on further progress, which resulted in a saving of life. It is difficult to forecast, however, what the natural result of the disease would have been in these cases. Control patients without serum, in whom the muscles of respiration were involved at the time the patients came under observation, have also recovered. It seemed, however, that a larger number of serum-treated patients of the same degree of severity had remained alive than would have without the use of serum. No very definite judgment of the value of serum can be based on the results obtained in these cases. Yet, as a possible life-saving procedure, we should continue to use the serum even in these cases and in the course of time obtain more definite results.

SUMMARY AND CONCLUSIONS

1. The injection of immune and of normal human serum into the spinal canal during the acute febrile stage of poliomyelitis causes a distinct cellular reaction which is mostly polynuclear in type.

2. The phagocytic action of these cells is beneficial in poliomyelitis.

3. Such action is enhanced in immune serum by the presence of specific antibodies.

4. It is preferable to use fresh serum, or serum which has been obtained under sterile precautions, passed through a Berkefeld filter and bottled without the addition of a preservative.

5. The presence of a preservative and of hemoglobin in serum enhances its irritating effect, and gives rise to the more severe types of reaction.

6. For purposes of treatment, it is important to diagnose the cases during the preparalytic stage of the disease by the typical group of early symptoms and the changes in the spinal fluid.

7. These symptoms are fever, slight rigidity of the neck, jerky movements and fine tremors of fingers and hands.

8. The diagnosis of poliomyelitis can generally be confirmed in the early stages of the disease by a bedside examination of the spinal fluid which shows macroscopically the ground-glass appearance and a positive foam test. The laboratory examination will show an increased number of lymphocytes, an increased amount of albumin and globulin, and a marked reduction of Fehling's solution.

9. Parents should be instructed to recognize the early symptoms so as to notify promptly the family physician. This is especially important in detecting secondary cases in the same family.

420 West End Avenue.

COMMUNITY TREATMENT OF MALARIA

A. J. OCHSNER, M.D.
CHICAGO

My personal interest in the treatment of malaria began at the time when a number of my friends returned from Cuba suffering from this disease. They had been treated for months without obtaining permanent relief. I became more directly interested when some of my friends went to Mexico to take charge of a plantation in what proved to be a region thoroughly infested with malaria.

They went with instructions to take the precautions given in medical books. The plantation was located at sea level within the tropics, traversed by a stream varying in width from 100 to 500 yards. There was a good current and the water was clear. They arrived in November. When I visited them, the following March, I found every white person on the plantation severely ill with malaria. One of them was so ill that the local physician, a graduate of one of the best American schools, told the patient that she would have to return to the United States or go up into the mountains to live if she wished to regain her health, because all the methods which he had found effective in an experience of over twenty years in this vicinity had failed in her case.

It then became known to me that this particular region had been shunned by white people and Indians alike, because of the universal prevalence of malaria. The governor of the state refused to permit members of his family to accompany him on the occasion of his presence in this part of the state at a public celebration, for fear of having them infected with malaria. I mention these facts to make it clear that we had to deal with a serious condition.

It became evident at once that the local physicians, whose experience should have fitted them especially for the treatment of these cases, were entirely unable to produce bearable conditions, and that our Americans would be forced to abandon their enterprise unless we could provide efficient relief.

To work out a plan of procedure, I secured recognized books on tropical diseases, and government bulletins, and learned as much as possible from the natives concerning their experiences.

It soon became clear that many persons thought they were ill from malaria when, as a matter of fact, they were suffering from intestinal infection. An especially intelligent native asserted that bananas caused malaria. On investigating, I found that the bunches of bananas were cut green and hung up to ripen. Flies deposited infectious material on the peel, causing black areas. The natives handled this while eating the fruit, and suffered from fever accompanied with diarrhea. The flies had access to the dejecta, and a vicious circle was established. The disease, called *calentura,* a term generally applied to malaria, was not malaria at all, but another disease quite as bad for the patient. When the bunches of ripening bananas were placed in a carefully screened store room, the peel remained free from black spots and the fruit could be eaten without harm.

It was also found that during the treatment of malaria with quinin, the natives had learned that they made much more rapid progress if they kept the bowels active by the use of some cathartic, and especially by subsisting on hot soups entirely and avoiding beans, meat, eggs and cornmeal cakes.

The form of malaria with an attack of chills every second day was most common, but in some cases exacerbations occurred once a day, and in others once every third day. In most of those that failed to have exacerbations every second day, these would occur every seventh day or on days that were multiples of seven. It was also found that certain patients who had apparently fully recovered would have an exacerbation on a day which was a multiple of seven. In other words, the tropical malaria acted as it does elsewhere.

In view of these facts and the literature on the subject, the following plan of treatment was developed. It differs in several important elements from that employed by the local physicians and physicians in this country in malarial regions, but it is so simple that the ignorant foremen on the ranches and the local druggist have applied it in many hundreds of cases, and it has proved effective in their hands in acute cases in which it has been applied according to the exact directions, and has cured even those patients who had never been free from malaria for years. Several of these had suffered from the disease known in this country as dumb ague for more than twenty years. The local physicians, of course, with a few exceptions, still adhere to the form of treatment which they have employed for years.

The treatment depends on certain well known facts which should be borne in mind:

1. Quinin will kill the adult *Plasmodium malariae.*
2. Quinin will not kill the plasmodium in spore form.
3. Quinin will prevent spores from developing into adult forms.
4. Quinin, if given continuously, will consequently keep malaria spores in the body, which will later cause a recurrence.
5. Quinin must be absorbed in order to be effective.
6. Quinin must be kept constantly in the circulation, at least for forty-eight hours, in order to kill all plasmodia which belong to the one, two and three day type.
7. Quinin taken by mouth will not be entirely eliminated in three hours.
8. Quinin taken by mouth may all be eliminated in six hours.
9. It is consequently necessary to give quinin *night* and *day* at sufficiently short intervals to keep fresh quinin in the blood for at least forty-eight hours continuously.
10. The alimentary canal must be in a condition suitable for the absorption of quinin.

11. Hot water in large quantities should be given with each dose of quinin in order to insure solution and absorption.
12. The use of quinin should be completely interrupted for a sufficient interval after all adult plasmodia have been killed to permit the spores to develop sufficiently to be killed by quinin, but not long enough to permit new spores to form; that is, the interval should be less than seven days.

To avoid tediousness, it will be well to give the plan of treatment in the same simple way in which it was given to the foremen on the ranch, although, when the patients could be kept under personal observation, the treatment was begun on the morning on which the exacerbation was to be expected, that is, at the time when there was a marked increase in the number of parasites in the blood; but practically it seemed that if this was not done, the results were perfectly satisfactory. It should be stated, however, that the treatment was applied, as a rule, not in absolutely latent cases, but in those with active symptoms.

RULES FOR TREATMENT

1. Give an exclusive diet of hot soup for ten days' treatment.
2. On the evening of the first day give 2 ounces of castor oil in fruit juice or in beer foam.
3. At 6 a. m. of the second day begin giving a 2 grain capsule of quinin (preferably bisulphate) with cover taken off, with one-half pint of hot water, every two hours night and day for thirty doses, being absolutely sure not to miss a dose, in order to keep fresh quinin in the blood constantly. It is important to insist on waking the patient at night in order that the intervals shall not exceed two hours at any time.
4. For the following six nights and five days give *absolutely no* quinin, but give a pill containing 1/50 grain of arsenious acid with one-half pint of hot water at 6, 9, 12, 3 and 6 o'clock.
5. Give castor oil as in rule 2 on the evening of the fifth day.
6. At 6 a. m., following the sixth night, again begin to give 2 grains of quinin precisely as under Rule 3.
7. After that give general tonics and simple nourishing food.
8. Avoid reinfection by the use of screens and remaining away from locations where infected mosquitoes abound.

COMMENT

By this plan, persons who were nearly discouraged after living on the plantation for four months, and whose only hope for recovery, according to the local physicians with a life-long experience in the treatment of malaria, was to return to the North, became entirely free from the disease in ten days by the use of one-fourth ounce of quinin, while they had not been benefited by the use of twenty times this amount administered according to the generally accepted plan of treatment. These people remained free from malaria for years on the same plantation, until they were forced to come to the United States because of the revolution.

Hundreds of natives were also cured in the same manner, and it seems as though the general application of this method should free any community of malaria, if a ten days' course of treatment were simultaneously instituted for all infected persons.

It seems, however, that physicians are the least likely portion of the community to apply this method without permitting a flaw in the treatment to creep in, which makes the method as unreliable as the methods which are generally employed and which work so satisfactorily in acute malaria of the two or three day type, but which are useless in the chronic forms.

The errors usually committed lie in:

1. Neglecting to give the quinin with no greater interval than two hours, especially at night.
2. Not emptying the alimentary canal before beginning the course of quinin.
3. Giving quinin in some form during the interval of six nights and five days.
4. Failing to remove the cap of the capsule.
5. Not giving hot water with each dose of quinin.
6. Giving a lot of meat or other albuminous food.

It may seem strange to those who have been accustomed to read my articles on surgical subjects that I should undertake the discussion of this subject. Recently, however, I encountered a condition similar to that which existed in Mexico a few years ago in the beautiful tide water region of Virginia, where a large number of university men have purchased plantations which they are conducting in a scientific way, and where they have been annoyed by this condition. There we have instituted the same plan of treatment that was carried out under my direction in Mexico with such beneficial results that it has seemed to me worth while to give other communities the benefit of my observations.

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THE SIGNIFICANCE OF HIGH PULSE PRESSURE *

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In former papers I have taken up the questions of the point at which diastolic pressure should be read and the significance and importance of the diastolic pressure. The value of the diastolic pressure reading, together with the systolic pressure reading, lies in the determination of pulse pressure. The last named is the real force which drives the blood toward the organs and causes the mass movement of the blood.

As I have stated previously, we consider the normal range of the pulse pressure to be between 30 and 50 mm. of mercury. A pulse pressure under 30 mm. is not often found continuing over a long period of time. This pressure is evidently not enough, as a rule, to send the blood through all the numerous channels and force it back to the right side of the heart. On the contrary, pulse pressures of 100 mm. or over are compatible not only with health, but also with considerable bodily and mental vigor.

The changes which take place in the organs of circulation in order to compensate for these unusual pulse pressures often observed have never to my knowledge received more than passing attention. I believe that we should derive a better understanding of the physiologic pathology of the circulation if we had facts which explained the high pulse pressures which we encounter daily.

A moment's thought will suffice to convince any one that very radical and probably demonstrable anatomic changes take place in the heart and aorta when the pulse pressure increases from 40 to 100 mm. of mercury. Suppose we take Howell's figures for an average left ventricular charge, from 75 to 90 gm. It is believed that the left ventricle empties itself completely at every systole. The aorta at the begining of systole is full of blood, in fact is slightly distended, and by its elastic recoil is forcing the blood forward to the periphery. Into this aorta, in this condition, are thrown from 75 to 90 gm. of blood in less than half a second under normal conditions. Only one thing can happen. The aorta, chiefly the arch, must be stretched to accommodate this added blood. The anatomic structure of the aorta is such that it can take care of just this sort of influx. The elastic laminae are thick and strong. No muscle is found. There is no need of muscle in this situation.

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* Read before the Milwaukee County Medical Society, Nov. 10, 1916.

Again, the normal aorta has considerable of what Meltzer calls "factor of safety." That is to say, after violent exercise the systolic pressure rises rapidly, and the diastolic rises only slightly, so that the pulse pressure, which previously at rest may have been 40, reaches from 65 to 70 mm. of mercury. The pulse rate is also increased, and the volume output is greater. The mass movement is also larger. A greater amount of blood is thrown into the aorta at systole, but the capacity for dilatation which resides in the aorta makes it easily able to take care of the added strain.

For some time I have been engaged in studying the various factors which make up and keep up a high pulse pressure, and I have been able, I believe, to bring together four factors which are correlated and which are found in all high pulse pressure cases. If any one of these factors is present, the other three are found.

1. In all high pulse pressure cases there is increase in the size of the cavity of the left ventricle. The ventricle actually contains more blood when it is full, and throws out, therefore, more blood at each systole. The actual volume output is greater per unit of time. Such hearts always show increase in thickness of the ventricular wall. I quite agree with Stone,[1] who says, "It is merely to be emphasized that when the pulse pressure persistently equals the diastolic pressure [high pressure pulse, in other words] with a resulting 50 per cent. *overload*, which means the expenditure of double the normal amount of kinetic energy on the part of the heart muscle, cardiac hypertrophy has occurred." They are found in aortic insufficiency, in chronic nephritis, in the diffuse fibrous type of arteriosclerosis, and in some cases of exophthalmic goiter. Such a condition occurs temporarily after exercise.

2. In all high pulse pressure cases there is actual permanent increase in diameter of the arch of the aorta. This is a compensating process to accommodate the increased charge from the left ventricle. Smith and Kilgore[2] have shown this to be true in cases of chronic nephritis with hypertension. Their research confirms my own observations. They found dilatation of the arch in (1) syphilis (that is, aortitis); (2) age over 50 (that is, probable factor of arteriosclerosis); (3) other serious cardiac enlargement, and (4) hypertension (with more or less hypertrophy, as in chronic nephritis).

In ten cases showing arches at the upper limit of normal (that is, 6 cm. in diameter) and hypertrophy of the heart, three were chronic mitral endocarditis; one was chronic aortic endocarditis; three were chronic mitral and aortic endocarditis, and there was one each of hyperthyroidism, pericarditis and adherent pericardium.

In fourteen cases of hypertension (highest systolic 270 mm., average systolic, 215 mm.), all showed cardiac hypertrophy. "All but three of these cases had great vessels whose transverse diameters measured over the normal limit of 6 cm., and in one of those measuring 6 cm. the Roentgen-ray diagnosis was 'slight dilatation' of the arch." Smith and Kilgore are at a loss to explain the three exceptions. They did not give diastolic pressures, so pulse pressures are not known. Possibly the three exceptions were cases of high diastolic pressure in which the pulse pressure possibly was not over 60 mm. Such cases might show "slight dilatation of the arch," but not marked dilatation, such as was found in the other, evidently high pulse pressure cases.

In the laboratory of the Milwaukee County Hospital we have confirmed these results. We have found that only the high pulse pressure cases show dilatation of the arch. Certain high tension cases which have had a very high diastolic pressure do not reveal any accurately measurable dilatation of the aortic arch. An empty aorta after death is quite different from a functionating aorta during life. Hence the dilatation which is found postmortem must have been considerable during life. And conversely, a dilatation which was present during life might not be looked on as such after death.

3. In all high pulse pressure cases one will find on careful auscultation over the manubrium, particularly its lower half, breath sounds which vary from bronchial to intensely tubular. At times the percussion note will be slightly impaired, as McCrae[3] has shown in dilatation of the arch of the aorta. This auscultatory sign is evidence of some more or less solid body in the anterior mediastinum which is lying on the trachea and permits the normal tubular breathing in the trachea to be audible over the upper part of the sternum. It is found in cases of dilated aortic arch. Fluoroscopic examination has confirmed the findings on auscultation.

4. In all high pulse pressure cases, in which the pulse pressure is over 70 mm. of mercury, there is increase in the size of all large distributing arteries, carotids, brachials, femorals, renals, celiac axis, etc., with fibrous changes in the media, loss of some of the elasticity, and, in the palpable superficial arteries, increase in size of the pulse wave.

Increased pulse pressure means increased volume output but does not always mean increased velocity. The proper distribution of blood to the various organs of the body is regulated by the vasomotor system acting on the small arteries which contain considerable unstriated muscle. In order that there may be enough blood at all times and under varying conditions of rest and function, there must be a proper supply coming through the distributing vessels, the large arteries, those containing much elastic tissue, and only a very small amount of unstriated muscle tissue or none whatever. Fibrous sclerosis of these vessels causes them to become enlarged and tortuous and to lose much of their elasticity, which is essential for the even distribution of blood. A greater blood volume is therefore necessary in order that the organs may receive their quota of blood. A force which is sufficient to send blood through elastic normal distributing tubes becomes totally insufficient to send the same amount of blood through tortuous and more or less inelastic tubes. As a compensatory process the pulse pressure increases. For this to increase, the left ventricular cavity dilates, the arch dilates, and as a greater force must be exerted to keep the increased mass in motion, the heart responds by hypertrophy of its left ventricle and becomes itself the subject of fibrous changes in the myocardium. The mass movement of blood is therefore greater in high pulse pressure cases than in cases of normal pulse pressure.

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[1] Stone, W. J.: The Differentiation of Cerebral and Cardiac Types of Hyperarterial Tension in Vascular Diseases, Arch. Int. Med., November, 1915, p. 775.

[2] Smith, W. H., and Kilgore, A. R.: Dilatation of the Arch of the Aorta in Chronic Nephritis with Hypertension, Am. Jour. Med. Sc., 1915, **149**, 503.

[3] McCrae, Thomas: Dilatation of the Arch of the Aorta, Am. Jour. Med. Sc., 1910, **140**, 469.

In cases of chronic interstitial nephritis — contracted granular kidney — it may well be that the sclerosis of the arteries is a secondary process caused, as Adami thinks, by the hypertension itself. In aortic insufficiency the situation is somewhat different. The high pulse pressure is due to a very low diastolic pressure, for in my experience with uncomplicated aortic insufficiency the systolic pressure is, as a rule, not much increased above the normal for the individual's age. Here peripheral resistance is so low that a capillary pulse is common. The volume output per unit of time is greatly increased, the arch of the aorta is dilated, and the pulse is large. The fact that a large part of the blood regurgitates during diastole back into the ventricle, and the fact that the diastolic pressure is low means that there is no increased resistance to overcome, and the systolic pressure is not raised.

The opinion expressed in previous publications that the diastolic pressure is the really important part of the blood pressure picture is again emphasized. Particular attention should be directed to the pulse pressure. That measures the actual head of pressure, and careful observations from time to time are of great prognostic value. Again, it is emphasized that high pressure is not a signal of impending dissolution. It must be viewed as a compensatory process, and more attention should be given to changes which appear in the pulse pressure. I feel that we are often recording our blood pressure readings simply as a routine, and that they mean nothing to us. There are still problems to be solved in this field. It is hoped that this small contribution will help to solve some of the questions which arise in the interpretation of a blood pressure picture.

SUMMARY

No blood pressure reading is complete unless both systolic and diastolic pressures are determined.

Pulse pressure is important because it gives the actual driving (kinetic [Stone]) force which keeps the blood in motion and has therefore a great value in prognosis.

High pulse pressure is invariably accompanied by four conditions, some of which can always be determined, and frequently all of which can be found. These are (1) increased size of cavity of left ventricle; (2) definite dilatation of arch of aorta; (3) bronchial or tubular breath sounds heard over the manubrium, and (4) increase in size of all distributing arteries.

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Miasm.—In former days, when there was a widespread belief that epidemics of disease were caused by emanations of foul-smelling gases, the offensive conditions in a highly polluted stream were considered a gross menace to the health of persons in the immediate vicinity. Nowadays it is recognized that foul odors and disgusting appearances, while certainly not conducive to health or happiness, exercise at most an ill defined, probably indirect, influence in the causation of disease; and while the necessity for abating such nuisance is universally recognized, it is for the sake of common decency rather than for prevention of specific diseases.—W. H. Frost, M.D., *Public Health Reports*, Sept. 15, 1916.

MODERN METHODS OF BLOOD TRANSFUSION *

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In the course of the development of the technic of indirect transfusion, a variety of methods have been developed in the last few years. A great number were short lived and did not acquire popularity. Those in use at present are:

1. Syringes. The Lindeman syringe method was lately considerably simplified by Unger,[1] who devised a double way stopcock. With the aid of this stopcock and an ether spray, as suggested by Elsberg,[2] large transfusions can be given with one syringe. In fact, one syringe and an ether spray are a sufficient armamentarium in emergency cases.[3]

2. Glass cylinders, coated with paraffin.[4] Large glass containers (from 250 to 500 c.c.) are used. They are coated with paraffin in order to prevent coagulation. A disadvantage of the method is that the veins of both donor and recipient have to be exposed by a small incision. The coating of the cylinders is not a simple technical procedure.

3. Citrate method.[5] The rationale of this method is that the blood is mixed with an anticoagulant, and the much feared possibility of coagulation during the transfer from donor to recipient thus made impossible.

The idea is by no means a new one. Several attempts have been made in the last century to find an atoxic anticoagulant for blood transfusion. Neudörfer[6] suggested the use of sodium bicarbonate in 1860, and Braxton Hicks[7] tested sodium phosphate with the same object in view in 1869. These experiments were failures, and no further attempts along these lines seem to have been made in the last fifty years.

And yet Neudörfer and Braxton Hicks had the correct idea. Their endeavor to make the blood incoagulable during the transfer from donor to recipient offered a correct working basis. If their work had been taken up by others, the development of the technic of blood transfusion would have traveled on a much more simple route than it has actually done.

When I began animal experiments with sodium citrate with the object of using this drug in human blood transfusion, I did not by any means apply a new drug which had never been used before as an anticoagulant. In fact, sodium citrate was known as the most efficient anticoagulant, and was used extensively in laboratory work. A 1 per cent. mixture of sodium citrate and blood was considered necessary for the prevention of coagulation. Furthermore, it was generally assumed that such a mixture would be toxic when used in the human being.

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* Read by invitation before the Chicago Medical Society, Nov. 15, 1916.

1. Unger, L. J.: A New Method of Syringe Transfusion, The Journal A. M. A., Feb. 13, 1915, p. 582.
2. Elsberg, C. A., reported by Unger, L. J.: Recent Simplifications of the Syringe Method of Transfusion, The Journal A. M. A., Sept. 18, 1915, p. 1029.
3. Lewisohn, Richard: Blood Transfusion with One 20 c.c. Syringe, Am. Jour. Surg., 1915, **29**, 361.
4. Kimpton, A. R., and Brown, J. H.: A New and Simple Method of Transfusion, The Journal A. M. A., July 12, 1913, p. 117. Percy: Simplified Method of Blood Transfusion, Surg., Gynec. and Obst., 1915, **21**, 360.
5. Lewisohn, Richard: A New and Greatly Simplified Method of Blood Transfusion, Med. Rec., New York, 1915, **87**, 141; Blood Transfusion by the Citrate Method, Surg., Gynec. and Obst., 1915, **21**, 37; Citrate Method of Blood Transfusion in Children, Am. Jour. Med. Sc., 1915, **150**, 886; Importance of the Proper Dosage of Sodium Citrate in Blood Transfusion, Ann. Surg., 1916, **64**, 618.
6. Neudörfer: Ueber Transfusionen bei Anaemischen, Oesterr. Ztschr. f. prakt. Heilk., 1860, **6**, 124.
7. Hicks, J. B.: Guy's Hosp. Rep., 1869, **14**, 7.

My experiments were carried out with the object of answering the three following questions:

1. What is the smallest dose of sodium citrate required to keep the blood from clotting?
2. Is sodium citrate atoxic in the amounts required for our purpose?
3. How does sodium citrate affect the coagulation time of the blood?

The results of these experiments were published in extenso in 1915. I shall therefore mention here only my conclusions:

1. Two-tenths per cent. instead of 1 per cent. is the percentage of sodium citrate and blood required for the safe prevention of coagulation. Such a mixture prevents coagulation of the blood outside the body for from two to three days.
2. Five gm. of sodium citrate can be introduced safely into an adult. Larger amounts are extremely toxic. We rarely transfuse more than 1,000 c.c. of blood, which would represent 2 gm. of sodium citrate. However, even a transfusion of 1,500 c.c. of blood would require only 3 gm. of sodium citrate, a perfectly safe dosage.
3. The introduction of citrated blood causes a temporary shortening of the coagulation time of the recipient's blood. The coagulation time returns to its previous level usually in less than twenty-four hours.

Before leaving this subject, I should like to point out how the whole applicability of sodium citrate in human blood transfusion is based on the development of the small dose (0.2 per cent.). This new fact was the most important result of the experiments mentioned above.

The technic of the citrate method can be divided into two separate actions, each of them well known to any practitioner. One is the venipuncture or, in exceptional cases, venesection of the donor's vein; the other is the intravenous infusion of the citrated blood into the recipient.

1. Obtaining the blood from the donor. A tourniquet is applied to the donor's arm, and one of the larger veins in the elbow region (usually the median cephalic vein) is punctured. A cannula of large diameter is used in order that the blood may flow out rapidly through the needle. The blood is collected in a graduated glass jar which contains at its bottom the 2 per cent. citrate solution. If we want to give 450 c.c. of blood, we add 50 c.c. of this solution, thus effecting a 2 per thousand mixture. Smaller and larger amounts of blood are treated proportionately. It is important to take good care that in mixing blood and citrate the proportion is never less than 2 per thousand. In order to prevent such an occurrence it might be advisable to add a few cubic centimeters of surplus citrate solution, which can be done with perfect safety.

2. Infusion of the blood into the recipient. The recipient is usually so anemic that we have to expose the vein by a small incision in about 80 per cent. of the cases. The cannula is inserted, and the latter is attached to a salvarsan apparatus which contains from 20 to 30 c.c. of physiologic sodium chlorid solution. The blood is then poured into this apparatus and allowed to run into the punctured vein by gravitation (exactly like an ordinary saline infusion).

The technic of this method is certainly most simple. It has the further advantage that no special apparatus, not even a syringe, is required for its use. A trocar, a piece of rubber tubing, a glass funnel and a few grams of sodium citrate represent the whole outfit. We often forget that methods should be applicable not only in large, well equipped hospitals, but also in any small village. I think any country practitioner ought to be acquainted with this simple method. Many a life could thus be saved, especially as this method offers the further advantage that the blood can be carried from one place to another. Brem[8] has carried citrated blood 70 miles before he injected it. Burmeister[9] has even gone a step farther and advised the storage of erythrocyte-citrate emulsion for emergency use. There is no doubt that citrated blood can be kept for hours and possibly up to two days, and then injected without harm to the patient. This procedure should, however, be applied only in exceptional cases, as possible hemolysis and other biologic changes in blood so kept do not make it quite as safe and efficient as blood which is transferred from donor to recipient with a short interval.

A Wassermann test must be made in every donor, particularly the professional ones. Furthermore, the blood of the donor and recipient must be tested in order to prevent hemolysis and agglutination. These tests can be done in very few hours and ought to be applied, except in cases of very grave emergency. The opinion has been expressed by different men that these tests are unnecessary. Rather large series of transfusions without tests have been reported, and the absence of any symptoms of hemolysis has been made use of as proof for this contention. This, however, is misleading. It is perfectly feasible to perform twenty transfusions without tests and without serious accident and to have the twenty-first patient die on account of serious incompatibility of the blood of donor and recipient. Such an accident can be avoided easily by proper laboratory tests. Thus to endanger the life of a patient unnecessarily is foolhardiness.

The following important facts ought to be kept in mind in connection with this question: 1. Donors cannot be used a second time for the same patient without another test as to hemolysis and agglutination. 2. Blood relatives (parents and children, brothers, etc.) have to be tested just as thoroughly as strangers, as their blood often is very incompatible in spite of their near blood relationship. Cherry and Langrock[10] have asserted that in new-born infants the mother's blood can always be used with perfect safety for a transfusion. Other workers, however, do not agree with this statement.

Hueter[11] wrote in 1871 in reference to transfusion:

> Too much stress is laid on the technic, as in all operations which are still in the stage of infancy. First a lot of new instruments are invented which are the pride of the inventors, then the technic becomes a minor detail and the indications the main object. Of all the instruments only the simplest are kept.

It has taken over forty years to reach this stage of utmost simplification of the technic of blood transfusion. The technic is now so much simplified that it can be mastered very easily by any physician. We shall have to learn a great deal, however, in reference to indications. Our work in the future along these lines will have to put the clinic of blood transfusion on a safe basis. Nobody who has ever seen the revival of a practically pulseless patient by a few hundred cubic centimeters of blood can doubt the marvelous efficiency of blood transfusion. The further development of this interesting field will require the combined efforts of practitioner and serologist. I am sure the results will justify our efforts.

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[8] Brem, W. V.: Blood Transfusion, The Journal A. M. A., July 15, 1916, p. 190.

[9] Burmeister, W. H.: Resuscitation by Means of Preserved Living Erythrocytes in Experimental Illuminating Gas Asphyxia, The Journal A. M. A., Jan. 15, 1916, p. 164.

[10] Cherry, T. H., and Langrock, E. G.: Relation of Hemolysis in the Transfusion of Babies with the Mothers as Donors, The Journal A. M. A., Feb. 26, 1916, p. 626.

[11] Hueter: Arterielle Bluttransfusion, Arch. f. klin. Chir., 1871, 12.

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GASTRIC SYMPTOMS DUE TO IRRITATION IN THE EXTERNAL EAR

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Foreign bodies, including cerumen, may remain indefinitely in the external ear without producing symptoms. If symptoms occur, they are usually local, such as fulness, deafness, tinnitus and pain. Occasionally they cause reflex symptoms, suggesting disease in an organ other than the ear.

Reflex symptoms may be accompanied by symptoms referable to the ear, in which case one's attention is naturally directed to this organ as the probable seat of trouble. If, however, there are no symptoms suggestive of ear disease, it is natural to give all our attention to the distant organ apparently affected.

In textbooks on medicine, no mention is made of the ear as a possible source of gastric disturbances. Books on otology mention, among reflex symptoms caused by foreign bodies in the ear, cases of epilepsy, hemianesthesia and cough, the latter sometimes accompanied by vomiting: but the description is not such as would indicate that the cough or vomiting might dominate the picture and simulate a pure pulmonary or gastric disease.

I have seen several cases of persistent cough, some causing serious concern as to the possibility of pulmonary tuberculosis, due entirely to foreign bodies in the ear. It is with those causing gastric symptoms, however, that this report is concerned. In Treves' "Surgical Applied Anatomy," there is an account of a case similar to the one I shall first describe; otherwise, I have found no reference to this condition in the literature reviewed.

Case 1.—S. L., girl, aged 12, was referred by her family physician on account of persistent vomiting. From 2 to 4 years of age, she suffered from some digestive disturbance. Since then her health had been good until the beginning of the present trouble. Two years before, supposedly because of worry over her father's illness, she began to vomit. Vomiting occurred immediately after eating. It was independent of the character of the diet, and consisted only of the food last taken. It was sometimes followed by pain in the epigastrium, and was much worse in summer than in winter. The child was undernourished, probably because of inability to retain sufficient food. Complete physical examination, including that of the digestive functions, failed to reveal anything abnormal. In one ear I found a mass which proved to be a glass bead, lightly covered with cerumen, and removal of this gave complete and permanent relief.

Case 2.—F. H., a waiter in a down town restaurant, had not been sick since an attack of typhoid fever nine years before. He admitted gonorrhea, but denied syphilis. He used very little alcohol and no coffee or tea, but drank much ice water and ate large quantities of fruit. He never suffered from digestive disturbances until two weeks before consulting me. At that time he began to suffer from nausea on arising and was unable to eat much breakfast. The attempt to eat caused some dizziness and a sensation of strangling. There was no pain, but he experienced a sensation of heaviness in the epigastrium. On each of the last four mornings he vomited half an hour after breakfast. The morning nausea would continue until 1 or 2 p. m., after which he could eat a fair lunch and a good evening dinner, having no discomfort during the rest of the day beyond what he described as a heaviness in his head. The history was atypical of any gastric disease, and suggested a reflex origin. Examination showed impacted cerumen in both ears, and immediate relief followed its removal. The patient subsequently told me of having had wax removed several times before, but on no occasion had there been any gastric disturbance.

Case 3.—E. K., a schoolteacher, aged 21, had some teeth filled several weeks before. The following day she complained of tasting the rubber dam used by the dentist and of being nauseated. On the fourth day she had slight epigastric cramps and vomited once. The pain and nausea were relieved after the vomiting, but in a few hours the nausea returned and continued for the five weeks intervening between this time and the date of her visit to my office. The nausea was not affected by eating. She would get hungry but lose her appetite immediately, especially at sight of the cold lunch she carried with her to school. She had never been constipated before or since the trouble began. Occasionally she had slight burning in the esophagus, which was probably worse after meals, but not regularly so. She had some belching, but no excessive flatus. Urination was more frequent than before the onset of the nausea, but was entirely painless. The history suggested a mild appendicitis, but abdominal examination showed little to confirm this. There was questionable tenderness over McBurney's point, so slight as to cause me to place a question mark in my record while examining her. After prescribing a sedative stomachic, it occurred to me to look at her ears. The left one contained a small amount of cerumen not impinging on the drum. The right ear contained a large plug, completely blocking the canal, and its removal gave immediate relief, which has continued, over a year having elapsed since. Possibly this patient had a mild appendicitis in addition to the impacted cerumen, but it is evident that her symptoms were caused in the main by irritation in the external ear.

Case 4.—A boy, aged 14, had been vomiting several months, during the greater part of which time he was under medical treatment. When I saw him, at his home in a suburb, he had a temperature of 102, was considerably emaciated, and complained of some vague abdominal pain. He was under the influence of morphin, which the previous attendant had apparently given freely, and the examination was very unsatisfactory. I was unable to make a definite diagnosis, but remember that tuberculosis was uppermost in my mind. I prescribed symptomatically and asked to be notified about the subsequent course. Nothing further was heard until several months later, when he came to my office. The high temperature, probably due to some intercurrent infection, had left him shortly after my visit; but the vomiting continued. A complete physical examination then was made, but nothing found to explain the vomiting until the ears were looked into. One of them was apparently filled with cerumen which, on being washed out, proved to be a peanut. Several days later he reported no improvement, and I heard nothing further from him. A few years later, however, one of his brothers came to consult me and reported that the boy had been in good health ever since, and that I was given credit for his recovery. All attempts to obtain fuller details failed, and the case, incomplete as it is, is included as another probable example illustrating the condition under discussion.

A colleague has kindly given me notes of the case of a girl of 18, with vomiting, especially in the morning, so that pregnancy was suspected. After two weeks of these symptoms, she was relieved by the removal from her ear of the broken end of an apple twig, the bud still attached but long dead. As she recalled afterward, this must have been three months in the ear before producing symptoms.

The anatomic explanation of these cases is as follows:

Where the pneumogastric nerve passes through the jugular foramen, there occurs an enlargement known as the ganglion of the root. To this is attached the accessory portion of the spinal accessory nerve. From the ganglion spring two branches, the meningeal and auricular. The latter, or nerve of Arnold, is joined by a filament from the glossopharyngeal. It then passes through the temporal bone, and emerges at the auricular fissure between the mastoid process and external auditory meatus, and divides into two branches. One communicates with the posterior auricular (branch of the facial), while the other branch supplies the skin at the back part of the auricle and the posterior inferior portion of the external meatus. Irritation of this branch of the vagus, or nerve of Arnold, is the explanation of vomiting having its origin in the external ear.

These cases are not frequent, but probably more so than is suspected, and such a cause should be thought of in cases with gastric symptoms which do not correspond with the usual types of digestive disease.

8122 Jenkins Arcade Building.

THE PRACTICAL USES OF RECENT WORK ON THE INTERNAL EAR

TO THE GENERAL PRACTITIONER, THE OTOLOGIST, OPHTHALMOLOGIST, SYPHILOLOGIST, THE NEUROLOGIST AND SURGEON

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Any work in physiology may be regarded as an "interesting study," but from the standpoint of most of us in the practice of medicine, research work of any kind becomes of greatest importance when it proves useful in clinical work. The cry is, "That is all very interesting, but of what *use* is it? How does it help sick people?" To answer this question is the spirit of this paper. A study of the relation of the ear to the central nervous system not only opens a new field for investigation in physiology, but also furnishes information of diagnostic value in the every-day examination of patients. Although it is essentially and entirely an *ear* study, and is useful in the analysis of ear conditions, yet recent investigations have shown it to be of value in medical and surgical diagnosis. These investigations include a study of patients of the Philadelphia Hospital, eighteen other hospitals in this and other cities, and in private practice, but especially in the department of neuro-otology at the University of Pennsylvania. This work has been made possible by the intimate cooperation of Drs. Mills, Randall, Weisenburg, Lewis Fisher and Seth A. Brumm.

It is now recognized that the internal ear, instead of being one organ, consists of two organs of different functions — the cochlea, which is the organ of hearing, and the static labyrinth, which is the organ of equilibration. It seems remarkable that whereas the cochlea has long been recognized as the organ of hearing, the static portion of the ear, consisting of the utricle, saccule and three semicircular canals, has been through all the years a *terra incognita*. It is only in the past few years that the function of the static labyrinth has been carefully studied, preeminently by the Vienna group of otologists, to whom we are indebted for the new methods of testing the internal ear. Robert Bárány has recently received the Nobel prize for this work, and he is to be regarded as the pioneer in the clinical application of the study of the ear and the central nervous system.

THE TESTS

The semicircular canals may be stimulated by revolving a person in a turning-chair, or by douching the ears with either cold or hot water, or by applying the galvanic current to the ear. According to our experience, the turning and douching are much more useful than the electrical test. The galvanic current stimulates equally all portions of the internal ear and, in fact, the eighth nerve itself. As we regard it of greatest importance to analyze the function of the canals separately, we shall consider in this paper only the tests by turning and douching. The essential feature in the physiology of these tests is that the endolymph within the particular canal or canals stimulated is set in motion on the one hand mechanically by the turning, and on the other hand thermically by the douching. When a person is turned to the right, the endolymph catches up to the movement of the body; and when the turning-chair is stopped, the endolymph continues to move to the right by its own momentum. The physiology of the caloric test may be illustrated by the "thermo-syphon" system of some of the popular automobiles. They have no water-pump to force a circulation through the radiator; the engine heats the water, decreasing its specific gravity, and causing it to move upward and forward into the radiator, where it is cooled, drops to the bottom of the radiator, and continues downward and backward into the engine, thus completing the circuit. Similarly chilling the outer portion of a semicircular canal increases the density of the endolymph at this point and produces a circulation downward.

Such ear stimulation produces certain definite phenomena in normal persons — a rhythmic jerking of the eyes known as nystagmus and a subjective sensation of turning which may be termed a systematized vertigo. The eyes are always drawn in the direction of the endolymph movement and are then quickly jerked back in the opposite direction by impulses from the cerebrum. The subjective sensation of vertigo is always in a direction opposite to the endolymph movement. According to our conviction there are only two reactions produced by ear stimulation — vertigo and nystagmus; it is *because* of this vertigo that the person falls in a definite direction, and also, when he attempts to find with his finger an object he has previously touched, he is unable to find it but past-points to the right or left, above or below, depending on the direction and plane of his sensation of vertigo.

It is evident that if stimulation of the ear causes a movement of the eyes, there must be a definite nerve pathway from the ear to the eye muscles. Also if ear stimulation produces dizziness, it is evident there must be a nerve pathway from the ear to the cerebral cortex. The special object of our work has been the attempt to determine the pathways through the brain from the ear. On the basis of over 350 pathologic cases, including a considerable number of operations and necropsies, we have come to certain conclusions as to the course of the fibers from the ear through the brain-stem, cerebellum and cerebrum. In brief, our conclusions are as follows:

The fibers from the horizontal semicircular canals pass through the eighth nerve to the brain-stem, and enter Deiters' nucleus in the medulla oblongata. At this nucleus the fibers divide, going on the one hand to the posterior longitudinal bundle, through which they are connected with the various eye muscle nuclei, to be distributed through the third, fourth and sixth nerves to the eye muscles themselves. It is this pathway that is responsible for the eye movement. The other pathway goes from Deiters' nucleus through the inferior cerebellar peduncle to the cerebellar nuclei of the same side, from which it proceeds through the right superior cerebellar peduncle to the decussation of the two superior cerebellar peduncles in the base of the cerebral crura; from this point there are two pathways to the cerebral cortex of both sides, but the main pathway goes to the cortex of the opposite side. The cortical centers that receive these fibers are postulated by Mills to be in the pósterior portion of the second temporal convolutions adjacent to the cortical areas for hearing. It is this pathway from the horizontal canal to the cerebral cortex, passing through the cerebellum, that is responsible for the production of vertigo on ear stimulation. The fibers from the vertical semicircular canals have a different pathway after entering the brain-stem, ascending in the pons to a point above the middle of the pons. At this point the fibers divide, on the one hand going to the posterior longitudinal bundle, to be distributed to the eye muscles; on the other hand the fibers enter the cerebellar nuclei through the *middle* cerebellar peduncle, from which point their pathway is the same as that of the fibers from the horizontal canal. In a nutshell, by the *vestibular apparatus* we mean the static portions of the internal ears, and the pathways from the ears through the brain-stem, cerebellum and cerebrum.

IMPORTANCE OF THESE TESTS IN DIAGNOSIS

1. *Value to the General Practitioner.*—The general practitioner is constantly confronted with cases of "vertigo." It is surely not overstating the fact to say that at best he can only guess as to its significance. In the light of these new tests, vertigo should no longer be regarded as a vague and general symptom. We should never speak of gastric vertigo, kidney vertigo, cardiovascular vertigo, idiopathic vertigo, or any other generalization which in its ultimate analysis means nothing. Vertigo is definitely a disturbance of the equilibratory apparatus. These tests give us the means of analyzing this apparatus. All conscious sensations are cerebral; headache from whatever cause is a disturbance in the brain. Similarly vertigo is due to an irritation, impairment or destruction of some portion or portions of the ear or its associated pathways. Therefore, just as we examine the urine in suspected cases of nephritis or diabetes, or as we have a Wassermann test made in suspected cases of syphilis, just so these ear tests enable us to analyze the apparatus responsible for dizziness. Instead of guessing, we then know the reason for the vertigo. We do not hesitate to say that it is very rare that a "dizzy" case remains obscure after these ear tests, and in most instances the diagnosis becomes clear and simple. After these tests are made we are able to say, for example, that the patient is dizzy because of a toxic impairment of his labyrinth, a labyrinthitis, an organic lesion in some part of the vestibular tract such as is produced, for example, by a brain tumor, internal hydrocephalus or multiple sclerosis; or, in the presence of normal reactions, we can state with assurance that the vertigo is purely functional.

2. *Value to the Otologist.*—It is surprising how much information can be obtained by these tests in the ordinary every-day study of an ear case. Briefly, from the ear standpoint alone, we have by means of the turning and douching tests produced nystagmus, vertigo, past-pointing and falling, the clean-cut quantitative objective evidence of the function of each part of the static portion of the labyrinth and eighth nerve. A patient complains of deafness; the question arises, Is it a middle ear or an internal ear condition? These hard and fast reactions give positive data of the function of the internal ear; then a positive opinion can be given with less reservation. Institutions for the deaf and dumb obviously should have a turning-chair: in these poor unfortunates the functional tests of hearing are so often unsatisfactory that we never feel after making the hearing tests that we are sure the labyrinth is completely destroyed. It is just here that the new tests are valuable; they either do or do not give reactions. The answer is "yes" or "no." In routine examination, it is of course not necessary to conduct all the tests; merely by turning the patient and obtaining twenty-six seconds of after-turning nystagmus, we at once can conclude that both static labyrinths are normal. Very often, however, the nystagmus will be subnormal, and immediately we have a hint as to the necessity for further study. We have no hesitancy in suggesting that if the otologist in his routine work will make such a simple test, he will be surprised to find that in many instances an entirely new light is thrown on the condition of his patient.

3. *Value to the Ophthalmologist.*—The attention of the eye specialist has not been called to the intimate relation between the ear and the eye. He should surely know that a nystagmus of any type and in any direction can be produced "to order" by ear stimulation. There is an absolute and definite relation between the canal stimulated and the type of nystagmus produced. If we wish to produce a vertical nystagmus upward, we place the patient's head over toward the right shoulder, turn him to the left, and there appears a vertical nystagmus upward. If we wish a rotary nystagmus to the left, we douche the right ear with head upright with cold water, or douche the left ear with hot water, and there is produced a rotary nystagmus to the left. Although space does not permit discussing the reasons for this marvelously accurate ear-to-eye mechanism, the foregoing gives some idea of the fixed relationship between the semicircular canals and the eye muscles. The "fistula" test serves as an illustration: If there is caries of bone in the outer wall of the labyrinth producing a fistula into the internal ear, or for that matter if the stapes is unduly mobile in the oval window, applying a Politzer bag into the ear and causing pressure or suction cause the eyes to dance violently. Recently a well known ophthalmologist, on seeing us do this test, expressed his astonishment: "I had no idea there is such a close relation between the ear and the eye."

The Practical Application of These Tests: (*a*) In the study of eye-muscle palsy. For example, loss of conjugate deviation in various directions should always be studied by means of the ear tests. There is a loss of voluntary control; the patient is unable, when asked, to look in a given direction. If the ear stimulus causes the eyes to move in this direction, it shows without question that there are normal pathways from the ear through the eye-muscle nuclei and through the nerves to the eye muscles themselves — therefore, the lesion is supranuclear.

(*b*) Spontaneous nystagmus may be ocular in origin from corneal scars, macular lesions, or eye strain, as in miners, in which case the cause is easily determined by proper ocular examination. But what of those cases in which the lesion lies not so near the surface? It is in such cases that the ear tests are essential. Recently there were two babies, both showing a wild oscillatory nystagmus. Naturally it was the ophthalmologist who was called on to determine its cause; he found nothing wrong in the eyes themselves to account for the nystagmus. The ear tests, however, showed a striking difference between the two cases. On one we reported, "The ear tests suggest an irritation of the vestibulo-ocular tract, but no organic impairment; the prognosis is good." The child had a perfect recovery. The report on the other patient was, "There is an organic block of the vestibulo-ocular tracts of both sides in the brain stem; the prognosis is bad." This patient died. The reason for this report was, that the first patient, on ear stimulation, immediately showed a change of the oscillatory nystagmus into a definite rhythmic pull. The ear stimulation, as it were, seized both eyes and caused them to move rhythmically in the proper direction; evidently, therefore, there was no organic block of the pathways. The other patient continued to have the oscillatory nystagmus and was entirely unaffected by ear stimulation, showing a definite organic block of the pathways from both ears to the eyes.

4. *Value to the Syphilologist.*—Syphilis is such a prevalent affection that any method of diagnosis deserves thorough investigation. The disease manifests itself in so many forms that although it is comparatively easy to diagnose in certain cases, yet it is extremely difficult in others. There is probably no other disease in which early diagnosis is so important; if detected early, certain well known remedies can often effect a prompt and permanent cure. Prognosis, in fact, depends largely on how quickly the treatment is instituted. Discovery of the Wassermann test was justly hailed as an extraordinary aid to the clinician, but unfortunately the Wassermann reaction is not absolute; it is common experience to find patients who are clinically undoubtedly syphilitic, and who also improve under antisyphilitic treatment, but whose reactions to the Wassermann test are repeatedly negative. Our investigations to date have led us to believe that:

(*a*) The new ear tests may prove useful in the early diagnosis of syphilis. Many cases referred to us show a beginning very slight but unmistakable impairment of eighth nerve function, only a few weeks after the primary infection; had it not been for the delicacy of the new tests we should probably have not been able to detect this impairment for months.

(*b*) Ear examinations unquestionably are valuable in detecting a beginning involvement of the central nervous system. It is recognized that the nervous system is attacked in 5 per cent. of those infected; we venture to suggest that probably this percentage is much higher and that many cases are not recognized because there is no obvious involvement, as in locomotor ataxia, facial paralysis or general paresis. The eighth nerve is particularly vulnerable to this disease, and analysis of the function of the eighth nerve and the intracranial pathways from the eighth nerve may in certain cases demonstrate a beginning involvement of the nervous system several years before it can be detected by any other method.

5. *Value to the Neurologist.*—Naturally all the subjects already mentioned are of interest to the neurologist; the determining of the cause of vertigo, the degree of function of the eighth nerve and labyrinth, the study of eye-muscle palsies, the analysis of spontaneous nystagmus, and the early diagnosis of syphilis of the central nervous system. In addition, the neurologist has in these tests a very definite help in:

(*a*) Differential diagnosis between labyrinth and intracranial lesions. The ear tests are indispensable for such differentiation. In many instances the symptoms of internal ear disturbances and of cerebellar lesions are identical. To illustrate: A patient was diagnosed neurologically as having a lesion of the right cerebellar hemisphere; ear tests gave additional data to the neurologist and demonstrated conclusively that it was a lesion of the right labyrinth.

(*b*) Intracranial localization. The accuracy of the ear tests has been surprising in locating lesions in the cerebellopontile angle, medulla oblongata, pons, cerebellar peduncles, cerebellum and various portions of the cerebrum, including the parietal lobe, temporal lobe and occipital lobe. Neurologists invariably want an eye examination in intracranial cases. We as otologists are not in a position to state the relative values, but the neurologists and ophthalmologists most acquainted with these ear tests assert that, of the two methods of approach, much more definite information can be had from the ear tests than from the eye examination.

6. *Value to the Surgeon.*—Perhaps no phase of surgery is so difficult in diagnosis as intracranial localization. It is a sad commentary on intracranial surgery that in a large majority of cases the surgeon must content himself merely with a palliative decompression. The ear tests have proved of real value in the locating of lesions; but in addition they may prove helpful to the surgeon in preventing unnecessary operations. This may be illustrated by the following two cases:

A woman appeared to have a tumor of the right cerebellar hemisphere. This diagnosis was confirmed by neurologic consultants, and the Roentgen-ray report stated that it was a cyst in the right cerebellar hemisphere. The surgeon was about to operate, but hesitated because the ear report said it was a lesion of the right labyrinth, and that the cerebellum appeared intact. The woman had a perfect recovery without operation, has given birth to a baby, and has remained in perfect health ever since—two years.

Another woman was operated on for carcinoma of the gallbladder. The findings were negative. Subsequent ear examination made it perfectly simple that all her symptoms—nausea, vomiting, diarrhea and consequent emaciation—had been due entirely to recurring attacks of labyrinthitis. She made an excellent recovery.

In the opinion of the surgeons best acquainted with this work, no brain should be opened without giving the patient the benefit of the ear tests.

CONCLUSION

It must be remembered that the work of the ear specialist along the lines of the relation of the ear to medical and surgical diagnosis is only in its infancy. This paper is intended not so much to call attention to what we have done as to hint at the future possibilities of this study and to indicate how the cooperation of the otologist with those in other branches of medical work can "help sick people."

1831 Chestnut Street.

ZINC CHLORID IN UTERINE HEMORRHAGE

PARTICULARLY WHEN CAUSED BY UTERINE MYOMAS AND METRO-ENDOMETRITIS OR FIBROSIS UTERI *

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Among the therapeutic agents which have been used successfully to combat uterine bleeding caused by myomas and chronic metro-endometritis, or, as this is frequently called, fibrosis uteri, the most prominent are roentgenotherapy and radium. In cases of profuse bleeding, however, a surgical intervention is frequently resorted to and the uterus extirpated.

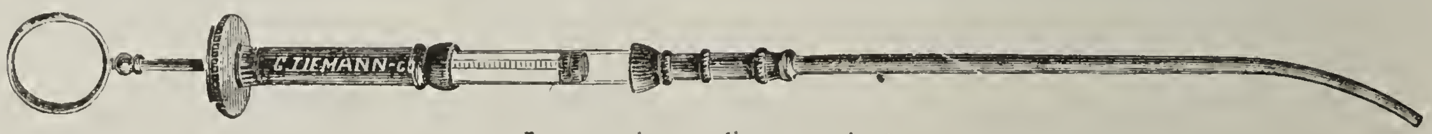
While I advocate surgical intervention in the greater number of fibromyomas, I do not approve of so radical a measure if the uterus is not the seat of neoplasm. Then, too, there are patients who will not submit to a surgical operation. And it is from such patients that I have acquired my experience.

At the New Orleans meeting of this society in 1907 I spoke of the good results obtained in instances of endometritis with menorrhagia from the intra-uterine use of phenol (carbolic acid), and in some instances, when the bleeding was very profuse and the phenol was ineffectual, from the intra-uterine application of zinc chlorid.

Since that time my experience has been greatly increased, and because I have found this form of therapy so very satisfactory, I take the liberty once more of calling attention to it, regardless of the fact that some of our younger brethren may feel inclined to denominate it as "tinkering therapy."

Dr. Marion Sims, who did so much to establish gynecology as a recognized specialty, and other leading gynecologists, as well, made use of zinc chlorid to control bleeding in instances of inoperable cancer of the cervix, and proved it a valuable remedy in properly selected cases. In those days, before I utilized the galvanocautery, brought into extensive use by Dr. John Byrne of Brooklyn, I, too, used zinc chlorid in a number of cases, but discarded it not only because of inability to limit its action, but also because sometimes a vesicovaginal, or even a rectovesicovaginal fistula resulted, in my experience, if the cancer had advanced too far.

It seemed too radical, in my opinion, to subject a patient who had very profuse bleeding, in the form either of menorrhagia or of metrorrhagia, the uterus not being the seat of a neoplasm, to an extirpation of the uterus. I, therefore, commenced to experiment with varying strengths of phenol applied within the uterus. In mild cases this sometimes gave a good result. Then I began to make my applications of longer duration by leaving a gauze strip — a tampon saturated with the medicament in that part of the gauze which was to remain in contact with the corporal endometrium. This is done by wrapping an intra-uterine applicator syringe, such as is made according to my directions by the Kny-Scheerer Company and by Tiemann & Co.[1] The medicament is drawn into the small barrel of the syringe, and this is wrapped with a narrow strip of gauze. The cannula of the syringe is made of silver, from 4 to 5 inches long, with only a terminal opening, so that the medicament comes into contact with the endometrium from the fundus downward. To allow of the gauze being readily slipped off, the cannula should be smeared with petrolatum before the wrapping. The strip should be from 1 to 2 inches wide, and the length should vary with the size of the uterine cavity, usually from 12 to 24 inches. When the gauze-wrapped cannula has been introduced into the uterine cavity, a small quantity of the medicament, 4 or 5 drops (if zinc chlorid), is expelled into the gauze. Then the cannula is withdrawn slightly and, being used as a uterine packer, more gauze is put into the uterine cavity and more of the medicament is ejected. This process is continued until the desired quantity has been ejected into the gauze and the cavity packed properly. When enough medicament has been put into the gauze, the cannula may be entirely withdrawn and the remaining part of the gauze packed into the uterine cavity with an ordinary smooth uterine applicator. It is essential that none of the medicament should come in contact with the cervical mucosa, especially if zinc chlorid is used, lest a stricture result. The remaining part of the nonmedicated gauze strip is then used to pack tightly the cervical canal. It is frequently necessary to dilate the cervical canal with a cervical dilator to assure a ready packing with the gauze.



Intra-uterine applicator syringe.

A string should be attached to the terminal part of the gauze strip to enable the patient to remove it herself at the time designated for its removal. A fairly large absorbent cotton tampon is placed in the vagina after insertion of the gauze. The time of removal of the intra-uterine tampon depends on whether zinc chlorid or phenol has been used. If phenol, either pure or diluted with glycerin, is the medicament, the gauze strip may be removed after the lapse of a few hours. But if zinc chlorid, the time to elapse must be long enough to give it an opportunity to exert its action on the interior of the uterus, which is about three days. In case of severe abdominal pain, which may occasionally occur, one-fourth grain of morphin is sufficient to give relief. It is very important, to insure proper action of the medicament, that the interior of the uterus is practically dry; that is, that no bleeding from it occurs when the application is made. When there is bloody oozing, the packing of the cavity with styptic gauze for a variable time is the best method to overcome it.

Unless permanent amenorrhea is desired, not more than from 5 to 10 drops of the strong solution (50 per cent.), or a somewhat larger quantity of a 10 to 20 per cent. solution should be used.

It has been found that one application of zinc chlorid, if properly made, once in four weeks, usually suffices. This is to be repeated, at such intervals, until the wished-for result has been brought about. From four to twelve applications generally suffice. With

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* Read before the Southern Surgical and Gynecological Society, White Sulphur Springs, W. Va., Dec. 11, 1916.

[1] The applicator syringe differs from the well known Braun uterine syringe in that the cannula is thinner, because of the gauze to be wrapped around it, it is made of silver, it has only one terminal opening, and it is somewhat larger.

twelve applications, or even a lesser number, it has been found possible to effect complete amenorrhea in very profuse bleeding from interstitial myomas. Some of these tumors, in my experience, were fully 6 inches in diameter. While they did not decrease in size, the symptoms disappeared and the patients improved in health. Since the bleeding stopped, this was logical.

Zinc chlorid is made use of when the uterine bleeding is very profuse from a chronic inflammatory condition of the endometrium, whether the myometrium is involved or not. If the bleeding is not too profuse or too prolonged, phenol suffices to bring about relief. Zinc chlorid is always used in instances of profuse bleeding when interstitial myomas of small size cause it. In large tumors of this character I have not used it, nor would I advise its use, because, in such cases, I feel that it is more to the interest of the patient, if one does not wish to use radium or roentgenotherapy, to remove the tumor. By the latter statement I do not wish to be understood as favoring roentgenotherapy in these conditions, since I myself have seen instances of cancer complicating the tumor.

It is understood, of course, that one should always be sure, before using such treatment, that the bleeding is not caused by a malignant change of the endometrium.

This is a form of treatment which may be used in his office by any intelligent physician who understands gynecologic diagnosis; even the sometimes necessary cervical dilatation, to introduce the gauze-wrapped cannula, may be done. Seldom have I found it necessary to do this, under gas-oxygen anesthesia, in a hospital.

39 East Sixty-First Street.

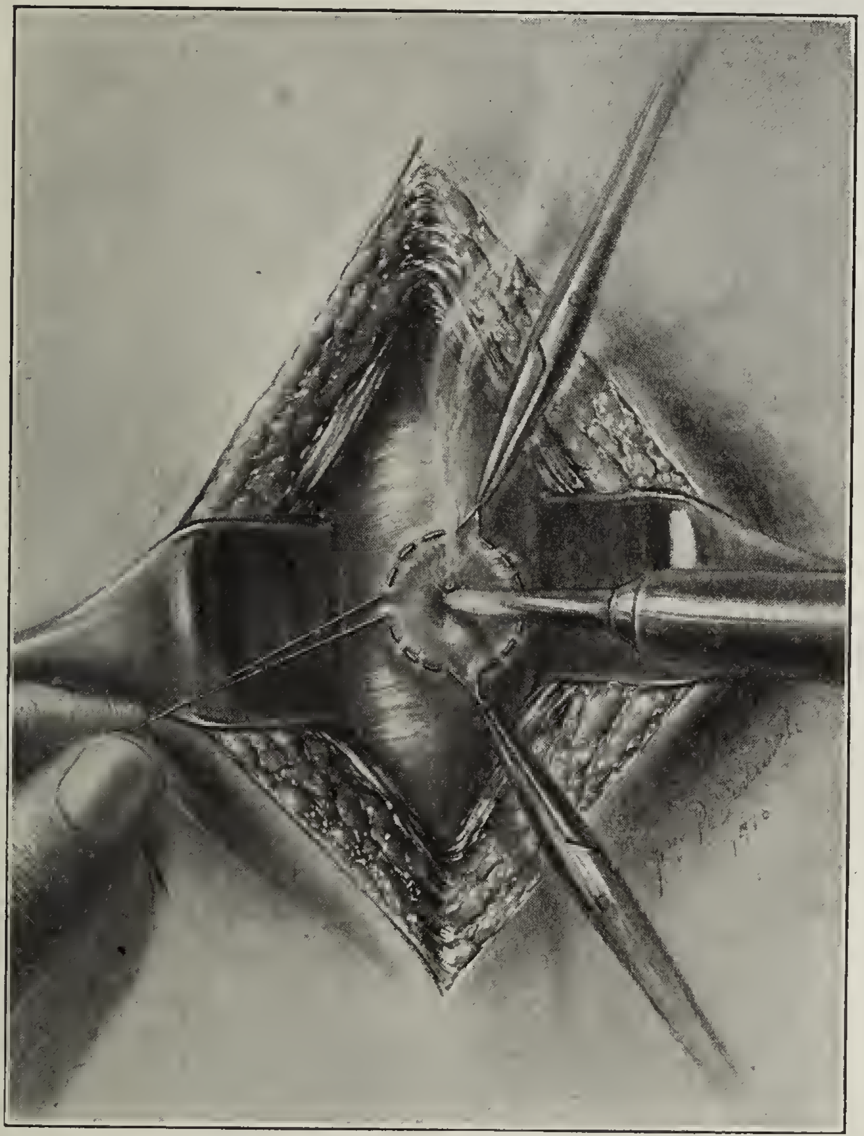

Fig. 1.—Enterostomy. Purse-string suture introduced, cautery making opening into bowel.

Some Facts About the Soya Bean.—The soya bean provides oil and food. In order to get as much as possible of the oil out of the meal the pressed pulp is sometimes further extracted by means of a solvent which will dissolve out the oil remaining after the beans have been pressed. Naphtha is good enough, but care must be taken to remove it entirely from the meal. Cattle do not take to the smell of naphtha, although they thrive on the new fodder when it has been thoroughly removed. Tri-chlor-ethylene is another good solvent for soya bean oil; it is not offensive in odor and it is not poisonous when given to cattle in comparatively large doses. Neither is it inflammable or explosive. Offhand it would appear that tri-chlor-ethylene is better and safer in every way than naphtha, but when it has been used as a solvent for the oil in the pressed meal or cake a considerable number of cattle have died from eating it. Since the cake is good feed for cattle and the tri-chlor-ethylene is not poisonous, something must happen, probably a chemical reaction between these two harmless bodies which produces a poison. It is not yet known what the reaction is.

ENTEROSTOMY; A PERFECTED TECHNIC [*]

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For the purpose of illustrating the technic herein offered, I may describe a case of intestinal obstruction following abdominal section. By the second, third or fourth day the bowels have not been moved, nor has flatus passed. There are increasing tympany, muscular rigidity and abdominal tenderness. Acute dilatation of the stomach develops, with excessive thirst and frequent vomiting of stomach and duodenal contents. The stomach tube gives only temporary relief. The patient is restless, anxious and evidently losing ground. Auscultation of the abdomen reveals intestinal metallic gurgling sounds due to paroxysmal waves of peristalsis occurring at frequent intervals. The peristalsis forces the liquid and gaseous contents of the bowel to the point of obstruction and produces much pain. Urinalysis reveals albumin, casts and indican in increasing quantities.

No wise surgeon gives purgatives under such circumstances. Enemas of every kind have been tried and failed. The patient's condition is getting desperate. Something must be done and that quickly. Often by this time not only the patient but the family as well have become demoralized. The thought of another operation only adds to the confusion. It is in cases of this kind that enterostomy offers the greatest relief.

If circumstances will permit, the patient should be gently removed to the operating room, where any measure can more conveniently be carried out. An enterostomy, however, can be done without moving the patient from the bed. With the judicious use of a local anesthetic and the persuasive words of the tactful surgeon, the entire operation may be carried out without producing either pain or fright.

Under the plea of "dressing the wound," a few stitches are removed and the edges of the incision gently separated. When the peritoneum is opened one should not search for the point of obstruction, unless it can easily be reached, but content oneself by dealing with the first distended coil of intestine which presents itself. The emphasis is on *distended,* since it is worse than useless to puncture the bowel below the obstruction. When the obstruction is purely mechanical and no sepsis is present, more freedom is allowable. Without disturbing the parts unduly a purse-string suture, preferably of chromic gut, is placed into the bowel wall. The needle should be introduced rather deeply. An area a good half inch in diameter is included (Fig. 1). By catching the suture at two equidistant points with forceps and the untied ends between the fingers, sufficient tension can be maintained to serve the double purpose of steadying the parts and reduce the soiling of the field to a minimum.

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[*] Read before the Southern Surgical and Gynecological Association, White Sulphur Springs, W. Va., Dec. 12, 1916.

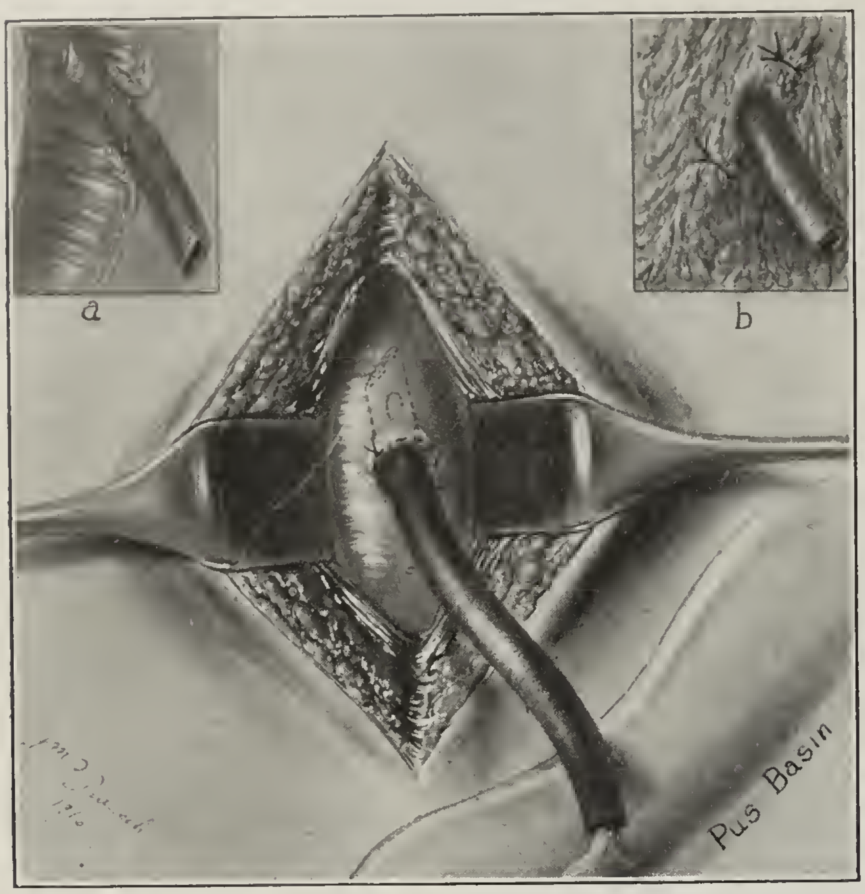

Fig. 2.—Enterostomy. Drainage tube in the intestine, purse-string suture tied. Inset *a* shows tube in bowel and two purse-string sutures applied. Inset *b* shows omentum which has been perforated and the tube drawn through it; two superficial catgut sutures hold the omentum snugly about the tube and intestinal fistula.

While the suture is being held as indicated in the illustration, the pencil point of a thermocautery is made to slowly burn a hole into the intestine. The cautery is preferable to the knife or scissors for several good reasons: 1. A burnt wound does not bleed, while a stab wound into the intestine occasionally severs a small vessel which requires ligating. 2. A perforation made by burning tends to contract rather than to get larger, which is an important consideration when dealing with an intestinal fistula. 3. The heat seals the various coats of the intestine together so that the edges do not separate or retract. 4. There is a notable absence of eversion of the mucosa which is seen in stab and pistol shot wounds of the intestine.

Before the perforation is made, the enterostomy tube should be prepared and near at hand, so that as the cautery point is withdrawn the tube may be immediately introduced and thus the escape of intestinal contents be avoided. The tube is preferably one of fairly soft rubber which will not collapse. It should be smooth and without enlargement of any kind. A tube twice the size of the opening can be easily introduced, since the bowel wall is sufficiently elastic. This disproportion between the size of the tube and the fistula causes the rim to hug the tube closely, which prevents leaking.

The forceps are now removed from the suture and the ends tied. With a little care the inversion of the edge of the perforation is easily effected (Fig. 2). If the condition of the intestinal wall will permit, a second purse-string suture adds to the security and increases the inversion, which favors the subsequent healing of the fistula by bringing a wider margin of serosa to serosa (Fig. 2, Insert *a*).

Whenever it is possible to do so, the omentum should be drawn about the tube and, if need be, stitched in place by one or two fine plain catgut sutures. A good plan is to puncture the omentum and pass the distal end of the tube through it (Fig. 2, Insert *b*). Utilization of the omentum with which to safeguard the intestinal opening both before and after the tube has been withdrawn cannot be too strongly emphasized.

Formerly I stitched the tubing to the intestine in order to secure it in place; but this is a mistake, since the suture from tube to intestine is liable to cut out of the intestine and increase the size of the opening. Besides, when the tube is subsequently removed, the anchor suture disturbs the inversion, greatly interfering with the healing. The tube is best secured by narrow strips of adhesive plaster to the skin (Fig. 3).

Unless the abdominal cavity is already shut off from the field of operation by adhesions, the open portion of the wound should be filled with fluffy gauze. The gauze will protect the peritoneum and promote the formation of adhesions.

When the perforation has been done with the cautery, the edges properly inverted, and the parts surrounded by omentum, the fistula usually heals of itself promptly. I have seen fistulas which did not leak a drop either before or following the removal of the tube. While there is no operation more serviceable than an enterostomy when indicated, there can be nothing more annoying than a fecal fistula which will not heal. The technic herein described reaps the benefits of the one and avoids in a large percentage of cases the evil effects of the other.

This method of doing enterostomy can be safely accepted as the standard. Also it may be said that, like the singing of the southern mocking bird, one of its chief beauties is the variations to which its technic is susceptible, and that, too, without departing from the principles involved in its standardization.

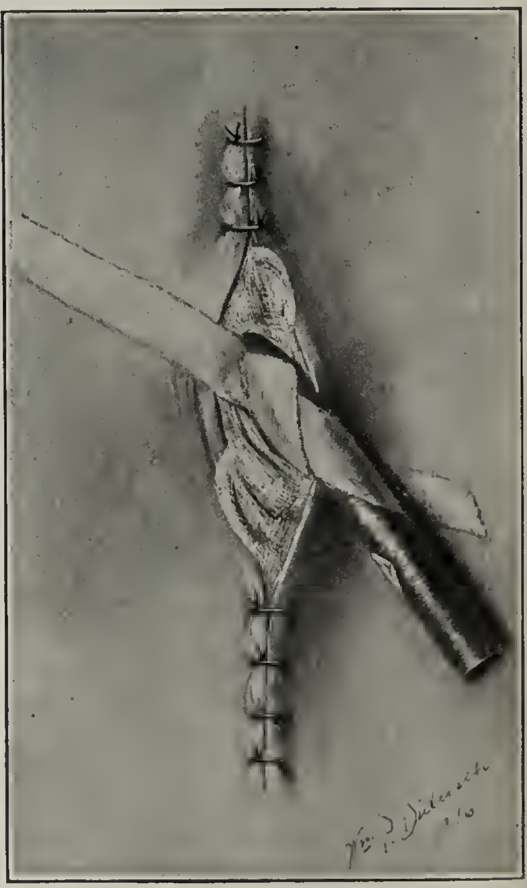

Fig. 3.—Enterostomy. Operation finished, rubber tube in situ and held in place by two narrow adhesive strips, the upper and lower end of the incision sutured. The portion of the wound about the tube is filled with fluffy gauze which prevents protrusion of the intestines and promotes adhesions.

For instance, the use of the appendix through which to insert a catheter for drainage is only a refined method of doing enterostomy. Under certain circumstances, it is not necessary to use a purse-string or, indeed, a suture of any kind. Occasionally, after the distended bowel is emptied, its walls are so flaccid as to allow of an inch or two of the drainage tube being covered by suturing the bowel over it as in a Witzel gastrostomy. This, however, is not often advisable, especially if the omentum cannot be utilized. Securing the fistulous area to the parietal peritoneum by a continuous suture after the manner of Kocher is not advisable unless a permanent fistula is desired. If it is thought expedient, the bowel may be anchored to the peritoneum with from two to four interrupted sutures. Should it not be practicable to open the abdomen through the former incision, it is easy enough to make an independent incision under local anesthesia. Other variations might be mentioned, but it is sufficient to say that a standardized technic once understood and approved can be easily adapted to meet the conditions found.

TRINITROTOLUENE POISONING

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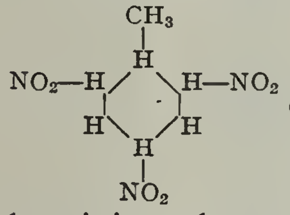
Trinitrotoluene, known in the munition industry as T. N. T., is the high explosive of the present European War. It has the graphic formula:



or $C_6H_2(NO_2)_3CH_3$

To explode trinitrotoluene it is necessary to bring it up to a certain heat and then produce concussion. Heat alone causes it to burn like gum camphor; concussion alone will not explode it. A shell filled with trinitrotoluene is usually exploded by placing in the nose of the shell a detonator containing another high explosive, such as fulminate of mercury.

In the manufacture of trinitrotoluene there is little danger of industrial poisoning, since the procedure takes place in closed retorts, etc., with consequently no exposure of the workmen to the fumes. In the filling of high explosive shells it is necessary to heat the flaked trinitrotoluene above its melting point, to about 94 C., and after letting it cool slightly to pour the molten resin-like substance into the steel shell and then allow it to solidify. It is during these procedures that the workmen are exposed to the heavy fumes emitted from the hot trinitrotoluene. (It has been shown that the vapor emitted from molten trinitrotoluene consists of a considerable amount of escaping trinitrotoluene. When the vapor strikes any surface having a lower temperature than 70 C., trinitrotoluene is deposited in the form of a fine crystalline sublimate. There is a definite scientific basis, therefore, for the supposition that poisoning can take place by inhalation of fumes emitted from molten trinitrotoluene.) It is afterward necessary to chip and scrape off the solidified explosive which has collected around the top of the shell. An accurate core must also be drilled into the solidified trinitrotoluene to make room for the detonator. During these processes, especially if proper protective machinery is not in use, the workmen are exposed to the yellow dust.

It is probable that trinitrotoluene poisoning has been known in Germany for some time. Reports of it, however, have not been made public. There has been little about it in the French or English literature until quite recently.

In 1915, in England, a committee was appointed under the chairmanship of Sir George Newman to make a report to the Ministry of Munitions on industrial diseases occurring in munition factories and workshops. In a part of their report, Memorandum VIII, the symptoms of trinitrotoluene poisoning are described, and measures for minimizing the risks are outlined.

In the early part of 1916, Spilsbury[1] demonstrated four livers presenting the following types of toxic hepatitis:

1. *Tetrachlorethane Poisoning.* — Tetrachlorethane is used to dissolve acetic cellulose in preparing a waterproof varnish for coating the wings of aeroplanes; it has been the cause of several fatal industrial poisonings in aeroplane factories, and the poisoning is commonly known as "dope" poisoning.

The liver showed irregular fibrosis and cellular destruction, with marked regeneration in one part and almost complete absence of fat.

2. *Dinitrobenzene Poisoning.* — The liver showed irregular fibrosis, little degeneration of cells, much bile duct proliferation and no fat. This was obviously an example of a chronic form of toxic hepatitis.

3. *Trinitrotoluene Poisoning.* — The liver showed marked reduction in size, irregular fibrosis and advanced fatty degeneration.

4. *Acute Yellow Atrophy.*—The liver was characterized particularly by absence of fat in the liver cells and marked fatty degeneration of the endothelial cells.

In August, 1916, Drs. Livingstone-Learmonth and Cunningham[2] described the symptoms and treatment of trinitrotoluene poisoning among women workers in some of the large munition plants in England. This is the first comprehensive description that I know of. The symptoms are mainly due to the inhalation and ingestion of trinitrotoluene dust. Exposure to the fumes alone might give the same effects, with the exception, however, that the irritating effects on the respiratory tract would be less. The symptoms observed were divided into irritative effects due to action of the poison on the skin and mucous membranes, and toxic symptoms due to degenerative hepatitis. The former include nasal irritation with occasional epistaxis, lacrimation and smarting of the eyes, a sensation of constriction in the throat, and dry cough with yellow, bitter sputum. Patients complained of a bitter taste in the mouth, of spasmodic gripping pains in the abdomen, of acid eructations and often of vomiting. Early in the intoxication there was obstinate constipation followed by diarrhea with tenesmus. The skin showed rashes of a cheiropompholix or eczematous type over the face and extremities, most prominent where sweating was greatest. The toxic symptoms included nausea, vomiting, anorexia, jaundice, mental depression, blurred vision, and transient peripheral neuritis. The poisoning often terminated in delirium, sometimes with coma or with convulsions.

More recently, the British Ministry of Munitions has published a concise summary of trinitrotoluene poisoning, covering the symptoms, prevalence and preventive measures.[3] The communication states that before August, 1914, there had been little practical experience of the toxic action of trinitrotoluene in England. During the past year there have been fifty cases of fatal toxic jaundice reported out of many thousands of workers engaged, proving that trinitrotoluene is dangerous to a small minority of workers coming in contact with it. Attention is called to a urinary test for detecting trinitrotoluene, which is of great value in the early diagnosis of cases. As regards the importance of predisposition, the communication says:

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[1] Spilsbury, B. H.: Demonstration of a Series of Livers Affected by Toxic Hepatitis, Lancet, London, 1916, **1**, 999.

[2] Livingstone-Learmonth, Agnes, and Cunningham, Barbara M.: The Effects of Trinitrotoluene on Women Workers, Lancet, London, 1916, **2**, 261.

> It would appear as though workers could be divided into two classes—the one (and much larger) insusceptible and remaining so, however much exposed; the other susceptible and liable to develop jaundice between the fifth and fifteenth week of their employment.

The duration of employment before the appearance of jaundice showed a remarkable uniformity. In 83 per cent. of the cases jaundice appeared between the fifth and sixteenth weeks of employment. In 105 reports on toxic jaundice not one patient had been employed for a period of less than four weeks. Only two fatal cases have been reported in which the worker had been employed more than four months. For the development of toxic jaundice in the susceptible, the exposure often needs to be only a slight one. A great number of cases occurred in persons below 18 years and over 50 years of age. Of the two cases of trinitrotoluene poisoning resulting in death, reported below, the first illustrates the common type of poisoning in which death results from hepatic failure due to an intense toxic hepatitis with extreme necrosis and autolysis of liver parenchyma associated with icterus. The second represents an unusual type of poisoning in which death results from an acute aplastic anemia without presenting evidence of toxic hepatitis or icterus.

The first case, I am informed by Alice Hamilton,[4] was the first fatal case of trinitrotoluene poisoning observed in this country, although Dr. Schultze[4] of New York, a few weeks before, had performed a necropsy on a man at the same munition plant in which he found lesions closely resembling those in this case.

The second case represents an unusual type of trinitrotoluene poisoning, having been observed only twice in the English cases, once with an associated toxic hepatitis with jaundice and once without these characteristic lesions.[3]

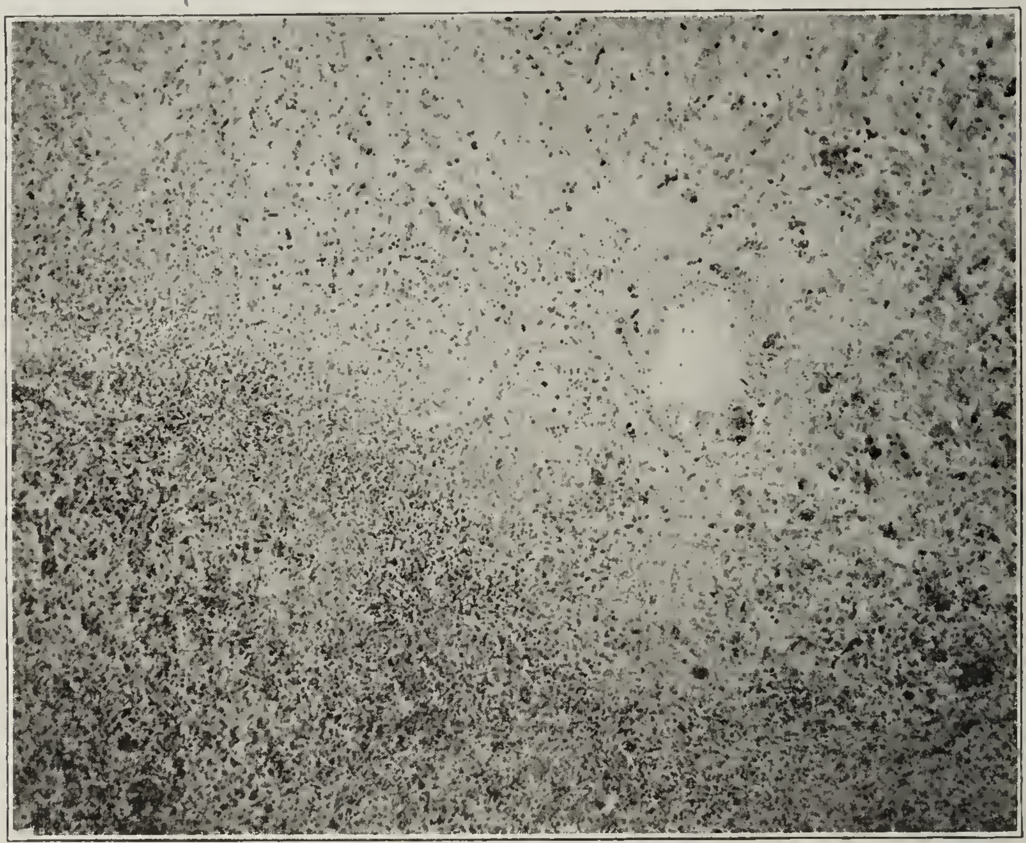

Fig. 1 (Case 1).—Section of liver showing extensive cloudy swelling, necrosis and autolysis of the greater part of the liver parenchyma; the periportal lymphocytic infiltration; hemorrhage in the parenchyma, and bile duct proliferation.

REPORT OF CASES

Case 1.[5]—*History.*—A white man, aged 24, who had always enjoyed good health, in April, 1916, started work in a munition plant devoted to the filling of shells with trinitrotoluene. He was employed in the mixing and stirring rooms, and his work consisted in dumping flaked trinitrotoluene into steam kettles, stirring it as it melted, and filling shells with the molten substance. There was no trinitrotoluene dust in the room. When he had been at this work for seven weeks, he complained to the factory physician of nausea and vomiting, slight abdominal pains and general weakness. The physical examination revealed a well nourished man with jaundice and tenderness in the epigastrium. He discontinued work, but grew gradually worse, and two weeks later was removed to a hospital, markedly jaundiced, vomiting persistently, prostrated and slightly delirious. There was no fever. He died in coma five days after admission.

The striking features of the case were the obstinate constipation, abdominal cramps, tenderness in the liver region, nausea and vomiting, prostration, progressively deepening jaundice, a low muttering delirium, anuria, and terminal coma. Similar symptoms are common in delayed chloroform poisoning, phosphorus poisoning, acute yellow atrophy, Weil's disease, and certain forms of fatal malaria.

In all these diseases the symptoms suggest hepatic failure due to extensive destruction of liver cells.

Necropsy.—This was performed three days after death. As the body had been embalmed, it would be of little value to give the entire protocol. The anatomic diagnosis was: toxic hepatitis with extensive destruction of the liver parenchyma; toxic degenerative tubercular nephritis; icterus; cloudy swelling of heart muscle; increased blood destruction in the spleen, and secondary anemia showing considerable polychromatophilia. A striking feature was the intense jaundice. The skin of the entire body was a deep chrome yellow, and all the viscera were bile tinged. The anatomic changes of chief interest were those in the liver.

When the abdomen was opened, the free edge of the liver appeared two fingers' breadths above the free costal margin. The organ was small and contracted. The serosa was smooth, glistening and free. On section the cut surface as a whole was grayish except for blotchy red areas where the embalming was imperfect. The region of the efferent veins was generally light red, soft, and somewhat collapsed. The periphery of the liver lobule was greenish gray, hard and firm.

Microscopically there was cloudy swelling of the liver cells with extreme fatty degeneration, followed by necrosis and autolysis of the liver cells leading to extensive destruction of the liver parenchyma. This destruction was so extensive that the liver cells in their normal cordlike arrangement were no longer seen, except occasionally in areas around and near a portal space. In the middle and inner parts of the liver lobule around the efferent veins the liver cells were no longer recognizable. Around the periphery of the lobule there was extensive lymphocytic infiltration, chiefly of small lymphocytes with occasional wandering cells, but few polymorphonuclears. The bile ducts at the periphery of the liver lobules showed extensive regeneration and proliferation. Throughout the liver tissue there were areas showing fine, greenish, granular pigment; in places this pigment was so abundant as to form cordlike masses, the so-called bile thrombi. There were numerous scattered areas showing hemorrhage, the tissue being filled with erythrocytes. Sections stained for fat showed marked fatty degeneration of the liver cells, the few left often being filled with small, fine, irregular fat globules. The necrosis seen in the liver was so extensive and diffuse that it was quite impossible to ascribe to it any zonal distribution, but there was some evidence that it was more severe in the region of the efferent veins, the best preserved liver cells usually being in the region of the peripheral space.

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[3] Trinitrotoluene poisoning, Officially Communicated by the Ministry of Munitions, Lancet, London, 1916, **2**, 1026.

[4] Personal communication to the author.

[5] Presented before the New York Pathological Society, October, 1916.

The picture was that of a toxic hepatitis characterized by extensive cloudy swelling, fatty degeneration and necrosis of the liver cells, most marked in the region of the efferent veins but not distinctly zonal in character; lymphocytic perilobular infiltration; bile duct hyperplasia; jaundice, and areas of extensive hemorrhage. The damage was beyond any known possibility of liver cell regeneration.

Case 2.—*History.*—A white man, aged 50, who had always been in fair health, for several months had been employed in a munition plant devoted to the filling of high explosive 75 millimeter shells with trinitrotoluene. During the last two months he was working in that part of the plant in which cores were drilled out of the solidified trinitrotoluene to make room for the detonators. His work consisted mainly in sweeping the floors, which, in spite of a system of compressed air exhausts connected with the drills for the prevention of inhalation of an ingestion poisoning, became covered with trinitrotoluene dust.

When he had been at this work for a few weeks he complained to the factory doctor of nosebleed. He later complained of epigastric pain, weakness in the lower extremities and violent headache. On a few occasions he had coughed up and vomited blood. He stopped work on his own accord because of extreme weakness.

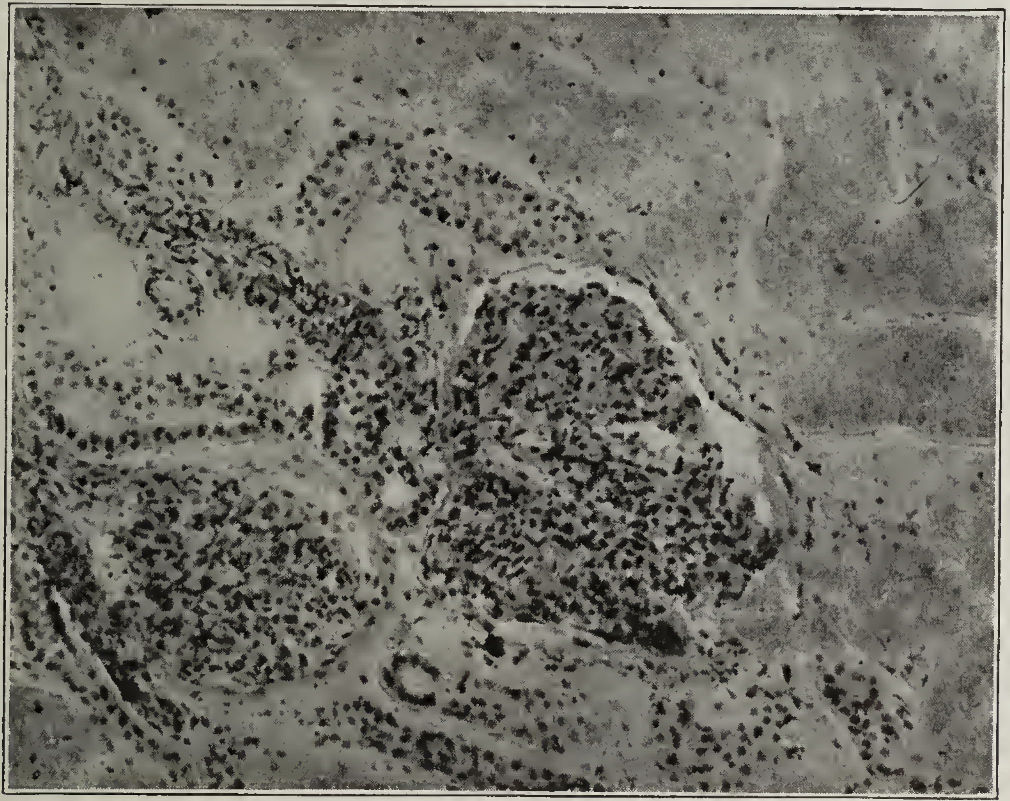

Fig. 2 (Case 1).—Section of kidney showing extreme cloudy swelling and fatty degeneration of the kidney tubules, and toxic degenerative tubular nephritis.

He was then attended by his family physician, who found him complaining of frontal headache, loss of appetite, weakness of lower limbs and bleeding from gums. The temperature was 102 F., and the pulse 90, weak and regular. The next day he was no better, having considerable bleeding from the gums, headache and epigastric pain. The following day his temperature was 99 F., the pulse weak and at times irregular; toward night he became delirious. The delirium, which was of a low muttering type, became worse, coma developed, and he died four days after the onset of delirium.

While he was sick, the hemoglobin was 30 per cent. and his red blood cells below a million; the exact type of blood picture, however, I was not able to obtain. The urine showed a trace of albumin, with hyaline and granular casts; the exact details were not obtained. This was all the laboratory work done on the patient while he was alive.

The striking features of the case were a profound anemia associated with hemorrhages from the mucous and serous membranes, terminating in delirium, coma with fever, and death.

Necropsy.—The necropsy, performed shortly after death on the fresh, unembalmed body, revealed the chemical or physical origin of the fatal illness as acute aplastic anemia, with aplastic bone marrow.

The secondary or terminal lesions included: (1) hemorrhages from the mucous membranes, namely, the nose, gums, and small and large intestine; (2) hemorrhages from the serous membranes, namely, the parietal and visceral pericardium, endocardium, and piarachnoid; (3) low grade parenchymatous degeneration in the heart muscle, liver and kidneys, and (4) increased iron pigment in the spleen and the liver.

The diagnosis of acute aplastic anemia was based on: extreme pallor of the skin without icterus; preservation of body weight and nutrition; deep lemon-yellow color of subcutaneous fat, well marked in the extrapleural fat; cloudy swelling in heart muscle, liver and kidneys of moderate degree; hemorrhage from the mucous membranes, as evidenced in blood clots around the gums and in the nostrils, with extensive bleeding in the small intestine, which, almost throughout its entire extent, was filled with a recent hemorrhage; hemorrhage in and from the serous membranes, as evidenced in multiple, extensive hemorrhages in the parietal and the visceral pericardium, in the endocardium and auricular walls, and scattered over the piarachnoid; increased iron pigment in the spleen and the liver, as shown in special stained sections of these organs; a replacement of the red bone marrow by fat tissue, there being no gross and little microscopic evidence of erythropoietic tissue in the bone marrow examined; and postmortem blood smears showing a profound anemia characterized by a great reduction in both red and white blood cells associated with little evidence of bone marrow regeneration, as shown by the absence of nucleated red cells, polychromatophilia, granular basophilia, etc.

The leukemias and leukanemias, both typical and atypical types, can be excluded. Pernicious anemia is excluded.

There was no evidence either in the gross or microscopic examination of the liver of a toxic hepatitis, other than the diffuse, low grade cloudy swelling of the liver parenchyma.

The etiology of the acute hemolytic aplastic anemia in this case is in my opinion "trinitrotoluene poisoning"; this is based mainly on the report of two similar cases in English literature,[3] both of which were described as very atypical types of trinitrotoluene poisoning. We have also the support of the clinical data, and the exposure to trinitrotoluene in a man 50 years of age, the latter fact supported by the observation of Drs. Livingstone-Learmonth and Cunningham that workers under 20 and over 50 years of age are particularly susceptible to the poisoning and should not be permitted to work in trinitrotoluene.

Time and Value.—Hippocrates truly said that art is long. The time occupied in doing an operation is no measure of the value of the service rendered. When Whistler in his action against Ruskin was sneeringly asked by counsel how long it had taken him to paint a picture which to the untrained eye doubtless seemed a hasty sketch in colors, his answer was "Twenty-five years."—*Brit. Med. Jour.*, Jan. 27, 1917.

PROSTATIC ABSCESS AND ITS SURGICAL TREATMENT

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Two cases of prostatic abscess, recently under my care, served as the stimulus to inquire more carefully into the etiology and therapy of this rather uncommon condition.

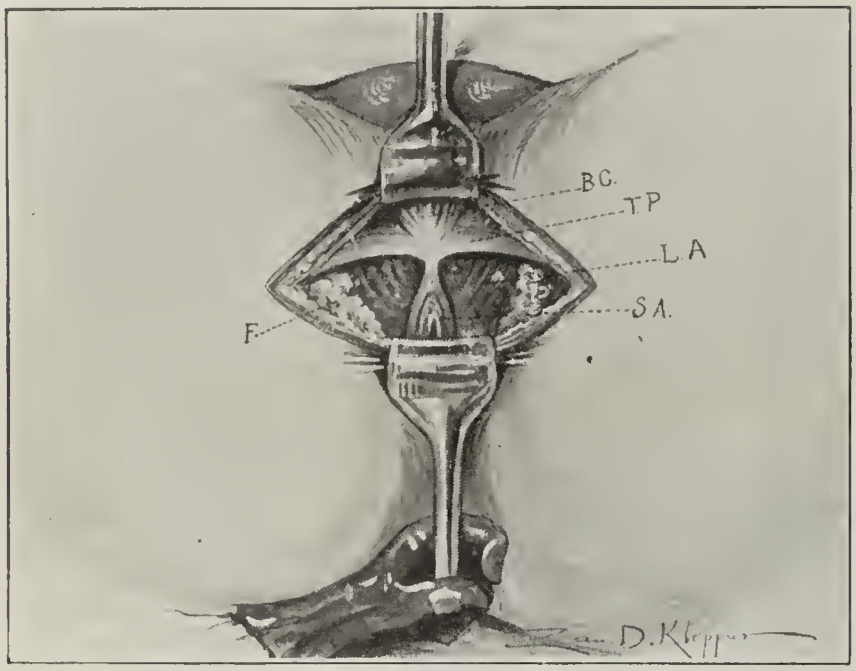

Fig. 1.—Normal anatomy and relations of perineum: *B. C.*, bulbocavernosus muscle; *T. P.*, transversus perinei muscles and fascia; *L. A.*, levator ani; *S. A.*, sphincter ani (superficial fibers); *F*, fat.

In spite of the frequency with which the prostate is affected in gonorrhea (Maelsch found prostatic involvement in 94 per cent. of all cases of posterior urethritis under his care), it is surprisingly seldom that actual prostatic abscess ensues. For example, Franz Marth reports from the files at the Bamberg Hospital but three cases, one following a recent gonorrheal infection, a second occurring in a patient with a tight stricture, and a third case in a normal individual in whom there was no apparent etiology. Söhngen reports but three cases from the extensive clinical material at Erlangen, none of which were associated with venereal infection. The reports of other authors are likewise meager as to the number of cases observed.

The etiology of prostatic abscess is interesting, as in certain cases the mode of entrance of the infecting organisms cannot be determined, and in others the primary focus of infection may lie remote from the genito-urinary tract. The most frequent factor, however, is venereal infection, usually with the gonococcus, which, during the course of a posterior urethritis, finds its way into the prostate and there may produce marked pathologic disturbances leading even to destruction of the major portion of the gland. In other cases abscess is due to invasion of other micro-organisms, usually the staphylococcus alone, but at times in symbiosis with other bacteria. Prostatic abscess may be dependent on a remote pus infection, for example furunculosis, or carbuncle, which may have been long healed before the outbreak of prostatic symptoms. The mechanism here probably is: An infected thrombus becomes loosened and the infecting micro-organisms thus carried along in the blood stream find their way into the prostate. It is in accord with our theory of the localization of infection to assume that the prostate offered a site of "lowered local resistance." This fact is given emphasis by the statements that motorcycle riding, falls or other traumas are important factors in the causation of prostatic abscess. Caspar found among 386 cases of prostatic lesions but six cases of prostatic abscess, or 1.5 per cent., while among this number there were 186 cases of the usual types of prostatitis. While in the majority of cases there is a definite history of gonorrheal infection, others occur in which the etiology cannot be determined, and still another group in which the prostatic lesion is consequent on a focus of infection elsewhere in the body.

The distinct disadvantage of permitting abscess of the prostate to evacuate itself spontaneously, aside from complications, is the frequent recurrence of the abscess at intervals for an indefinite period.

The older methods of drainage from the rectum I believe may be passed over as an unsurgical procedure. The method which should occupy our attention is the perineal drainage as recommended by Dittel, Thompson and Zuckerkandl. Their technic, while unquestionably sound surgically in conception and almost invariably curative, has the disadvantage of cutting through the central tendon of the perineum, which often leads to the patient's inability to have erection and ejaculation. The technic of the method mentioned calls for the cutting apart of the recto-urethralis muscle, and the division of the central tendon, the aponeurosis of the fibers of the sphincter ani and the transversus perinei superficialis. A modification of this method seems to me to offer advantages in that the central tendon is preserved, and that neither the origin nor the insertion of the various muscles is interfered with. The procedure is:

1. Skin incision concave between the two tubera ischii, the concavity directed toward the rectum at the middle of the depressio retrobulbaris, usually about 3 cm. in front of the anus.

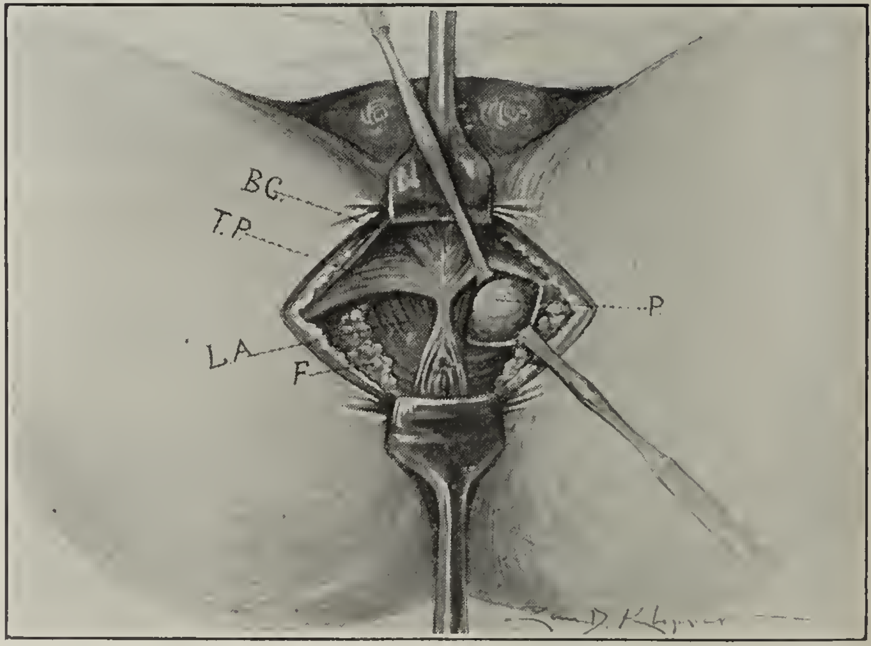

Fig. 2.—Operative procedure, the retraction of the fascia and transverse perineal muscle, the splitting of fibers of the levator ani exposing the prostatic fascia: *B. C.*, bulbocavernosus muscle; *T. P.*, transversus perinei muscles and fascia; *L. A.*, levator ani; *F.*, fat; *P.*, prostatic fascia and capsule.

2. Division of the often rather thick subcutaneous tissue and fat, exposing the superficial muscles and the central tendon of the perineum.

3. Entrance to the prostatic capsule, gained by dissection to one side or the other of the median line, as indicated by findings of rectal palpation. The fascia

and transversus perinei muscles, superficial and deep, are elevated and held by small retractors; and then by the splitting of the fibers of the levator ani in their long axis, the rectovesical layer of the pelvic fascia comes into view. This and the prostatic capsule then may be readily incised and drainage established. It is well to explore thoroughly with the finger and break down, if necessary, any fibrous septa so that the entire part involved may be thrown into a single cavity and thoroughly drained. For drainage a large caliber, soft rubber tube is best for the first twenty-four to thirty-six hours. After its removal, packing with sterile or iodoform gauze strips are most satisfactory. The drainage will last usually from three to four days, when the packing may be gradually withdrawn.

Guiteras and others recommend drainage by incising the prostate through the urethra with a guarded bistoury after perineal section. This technic seems to have the disadvantage in the first instance of not being under the vision of the operator, and secondly of producing a urethral fistula which, even under the most favorable circumstances, heals very slowly, and frequently leads to stricture.

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ECHINOCOCCIC BONE DISEASE

REPORT OF A CASE *

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The invasion of the osseous system by the taenia echinococcus is a rare event. Many surgical textbooks make either no reference or a cursory one to this disorder. After a careful survey of literature, reports of eighty-eight cases have been found.

The relationship of the liver to the alimentary tract makes obvious the relative frequency of involvement of that viscus; but for involvement of bones it would seem that the parasite must gain access to the vena cava, heart and general arterial circulation, although lymphatic distribution has been mentioned by some observers. Trauma appears to play an important predisposing rôle. Long bones most frequently are affected, and their epiphyseal portions are usually the primary focus of disease. A coexisting visceral and osseous involvement is exceedingly rare, and a satisfactory explanation of this fact has not been forthcoming.

The symptoms include a slowly progressive, painless increase in size of the bone, with spontaneous fracture in a number of cases. Only in the later stages is pain complained of. Several cases were not diagnosed until fracture had taken place. Roentgen examination shows rarefaction. Operative procedures reveal usually an inflammatory periosteal thickening with atrophy of the bone and enlargement of the medullary cavity. The echinococcic or hydatid condition is a polycystic one, and the medullary cavity is found to be closely packed with cysts of varying size. In the bone itself the process is a regressive one, and, with the atrophic changes, sequestrums of various sizes may be found.

A suppurative osteomyelitis has complicated the condition in a few instances. The cysts have smooth, yellowish interiors with occasional flat, warty projections. The fluid rarely contains scolices or hooklets, but there are certain characteristics, as described by Malenjuk, which are considered as important points in the diagnosis of the disease: (1) low specific gravity; (2) absence of albumin; (3) absence of mucin and paralbumin; (4) presence of succinic acid, and (5) absence of epithelial cells. Spontaneous fracture of a long bone after trivial injury, without tendency to unite, is a symptom that should be considered suggestive of the disease. The fluid seems to contain a toxic substance, for its resorption may cause urticaria, joint-pains, fever and syncope as the symptoms of a general intoxication. Moursson and Schlagdenhauffen have demonstrated in the fluid of a goat experimentally infected a "ptomain" which had the characteristics of protein split products. Boinet isolated a toxin which in small doses was fatal for mice, guinea-pigs and rabbits.

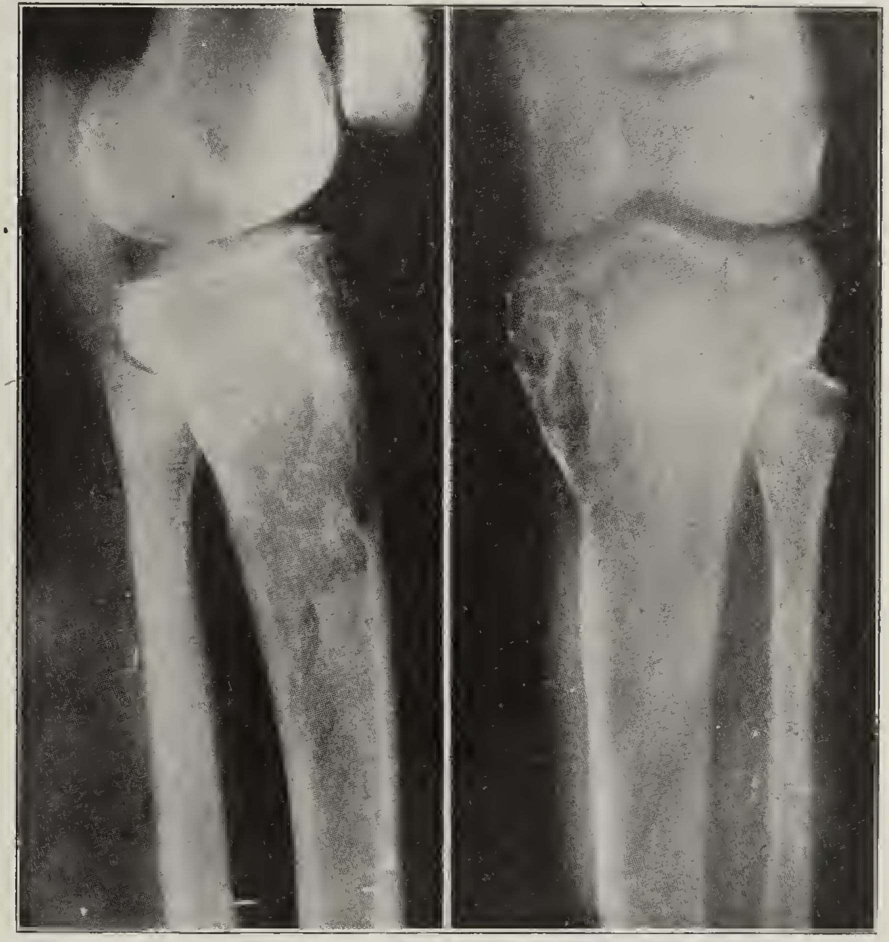

Fig. 1.—Echinococcic bone disease: condition on entrance of patient.

In the table of references the age and sex in fifty-three cases are noted. Of these, two were in the first decade, six in the second, sixteen in the third, thirteen in the fourth, seven in the fifth, seven in the sixth and two in the seventh. The youngest was 1 year old, and the oldest, 80 years. There were thirty-two males and twenty-one females. The frequency of involvement of the various bones was: pelvis (one or more bones), thirty-two cases, or 36 per cent.; femur, sixteen cases; sacrum, thirteen cases; humerus, ten cases, and tibia, nine cases. The clavicle, radius, ulna and fibula would appear to be the only large bones unaffected.

Of 1,950 echinococcus cases in literature, Alexinsky found only thirty-seven (1.9 per cent.) with bone involvement, and Gangolphe, fifty-two of 3,000 cases (1.7 per cent.).

REPORT OF CASE

History.—T. P., man, aged 31, Greek, pipe-helper, was admitted, July 31, 1915. The family and previous personal history were negligible. The present condition would seem to have begun three years before, when the patient noticed severe aching pains in the upper third of the left tibia. These were paroxysmal in character and worse at night. At times the leg became much swollen in the region of the pain. There was no history of trauma. There seemed to have been no suspicious contact with dogs.

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* Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of a table of references. The complete article appears in the authors' reprints. A copy of the latter will be sent by the authors on receipt of a stamped addressed envelope.

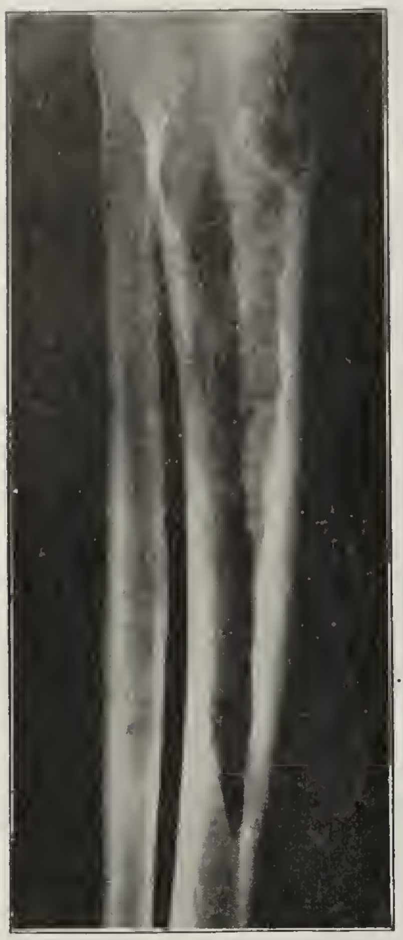

Fig. 2.—Condition after first operation.

Examination.—The patient was very poorly nourished. Except for weakness and irregularity of heart action there appeared nothing abnormal in head, trunk and arms. The left leg showed slight increase in size of the upper third and some tenderness on deep palpation. Scars over the lower third of the thigh and leg would indicate old injuries. A roentgenogram revealed a cystic condition of the tibia through its upper third. Urinalysis revealed: specific gravity, 1.034; acid; albumin and glucose negative. Blood pressure was 120 mm. systolic, and 85 mm. diastolic. Tuberculin reactions and two serum Wassermanns were negative. The blood, on admission, was: leukocytes, 6,400; May 4, 1916, erythrocytes, 4,440,000; leukocytes, 12,220; neutrophils, 70 per cent.; small lymphocytes, 20 per cent.; large lymphocytes, 10 per cent.

Treatment and Course.—The localized pains and edema continued, and on the fourteenth day after admission the tibia was opened and curetted. Atrophy of the bone and enlargement of the medullary cavity were noted. Many cysts of various sizes were found throughout about two thirds of the length of the bone. The interior surfaces of these generally were smooth, but occasional warty projections were evident. No scolices or hooklets were found in the fluid, which was slightly yellow. Albumin and epithelial cells were absent. Succinic acid could not be demonstrated. A well defined lamination of the cyst walls was observed. The bone cavity was cauterized with alcohol, packed, and drainage established. Beginning two days after the operation, the temperature rose and maintained an average of 99 F. for one week. After a time the patient complained again of pain, and, November 16, the sinus was opened, curetted and packed. No cysts were found. This gave some relief, but moderate pain persisted. About four months afterward he complained of increased pain and on a swabbing out of the wound a collapsed cyst appeared. A curet withdrew another intact one. April 6, 1916, a more radical operation was done with enlargement upward of the skin incision to the articular surface of the bone, and a large amount of cancellous tissue was chiseled out. There were found a number of small cysts separated apparently by normal bone. The cavity was swabbed out with pure phenol (carbolic acid) followed by alcohol and then packed. The wound healed slowly by granulations, without infection. Gauze dressings alternately with camphor, phenol and 10 per cent. black oil (balsam of Peru in castor oil) were employed. After the third operation the leg was exposed daily to the sun's rays for a period of about two hours (when the weather permitted). The wound completely healed, and the patient was discharged, Aug. 10, 1916, walking with the aid of a cane. The total time spent in the hospital was 377 days.

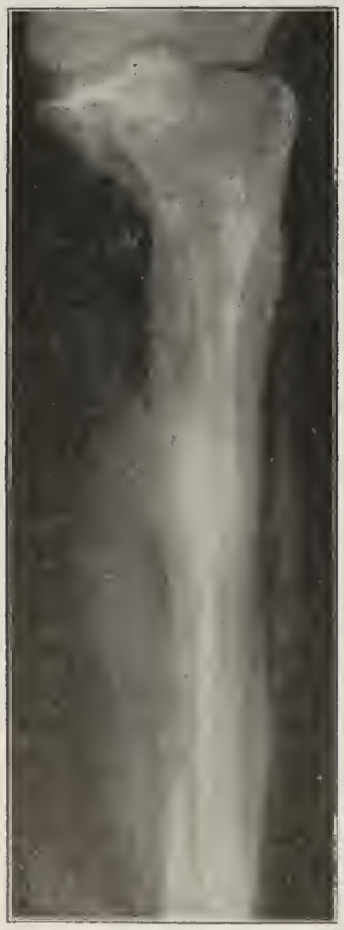

Fig. 3.—Condition on discharge of patient.

November 22, the leg was healed, but the patient had been unable to work. He felt well.

One month later he felt quite able to work but had not returned.

Southern Pacific General Hospital.

BOLUS OF NINETY-FIVE HAIRPINS REMOVED FROM THE STOMACH

James T. Nix, B.S., M.D., New Orleans

The case here reported is unusual in many respects, and although the articles swallowed were simply hairpins, their intimate impaction with the chronicity of development characterize the tumor as a bezoar.

Hairpins and remnants of hairpins removed from the stomach.

Miss O. A., white, aged 35, born in Spain, gave a negative family history as regards dementia, though all of the immediate relatives are distant, retiring, and elusive to strangers. The previous history was unimportant. The onset of the present complaint dated back about three or four years, since which time the patient had gradually, though progressively, failed in health and strength. She suffered constantly from vague, though sometimes acute, lancinating, abdominal pain, digestive disturbance or other intestinal disorder. The mother had frequently consulted physicians regarding her daughter's condition, but, because of her annoying secretiveness, persistent irritability and expressed aversion to doctors, a satisfactory examination was impossible, and diagnosis a guess. During the past two months a septic temperature had always been present; the extreme toxemia with its depleting, concomitant syndrome confined the patient entirely to bed. Solid food was vomited immediately. Bland unirritating liquids could be retained if given in small quantities. The daily temperature oscillated from 99 to 102, the pulse from 120 to 125, and respirations from 20 to 25. The patient's mental condition was far below par. The patient was extremely emaciated, weighing probably 75 pounds. She was profoundly anemic, and the lower limbs were edematous. The heart, lungs, liver and kidneys were normal. The musculature of the entire body was flabby and devoid of tone. The abdomen was slightly distended with fluid, and a hard tumor was palpable just below the umbilicus. As the patient lay in bed, the thighs were constantly flexed on the abdomen. Urinalysis was negative.

Blood examination revealed a slight leukocytosis with decrease of red cells proportional to the degree of emaciation and anemia. The gravity of the case did not justify further delay for diagnostic purposes, so an exploratory operation was deemed expedient with the provisional diagnosis of tuberculous peritonitis. A bezoar was unsuspected. Because of the lowered mentality and extreme obstinacy of the patient, careful palpation of the abdomen was impossible, and even the local preparatory measures for operation, shaving and cleansing, had to be carried out in the operating room while the subject was anesthetized. The abdomen was slightly distended with fluid and very painful. For these reasons the tumor was not recognized prior to operation.

A median incision was made below the umbilicus. On general survey the most noticeable and only apparent abnormality was the extreme ptosis of the stomach below the umbilicus, evidence of a low grade of peritonitis, and the presence of a small amount of clear fluid in the general cavity. Manual exploration disclosed a normal pelvis, appendix and gallbladder. The stomach was filled with a hard, tumor-like mass having many sharp points which pierced and were embedded in the indurated gastric wall. Gastrotomy revealed these to be numerous hairpins, which had been sharpened and pointed by the churning movement of the stomach together with the corrosive action of the free acids. Ninety-five pins or remnants were removed, some pointing high into the esophagus, others low into the duodenum.

The patient did not improve after the operation, but died of exhaustion on the seventh day.

The important lessons to be learned from this case are:

1. Corroborative testimony that bezoars, other than trichobezoars, occur most frequently among the insane.
2. The demand for roentgenoscopy in all obscure abdominal conditions.
3. The unusual feature that nothing other than hairpins were found in the stomach.
4. The remarkable digestive powers of the gastric juice, every hairpin being somewhat eroded and many almost entirely destroyed.
5. Nature's prolonged fight against such odds, extending probably over a period of three or four years, as only one of the entire group retained the identity of a hairpin, showing that the mass had been in the stomach for a considerable time and that none had been swallowed since the patient was under such close observation. The thickened indurated gastric mucosa, in places as much as from ½ to 1 inch, gave additional testimony to the chronicity of development.

Bezoars should always be considered as one of the possibilities in the differential diagnosis of obscure abdominal tumors. We should keep ever on our guard, use the Roentgen ray frequently, and remove the abnormality as early as possible.

1407 Carrollton Avenue.

The Hospital and Medical Training.—Much emphasis is placed nowadays on the clinical training of the medical student, and it is obvious that such training cannot be given by a medical school which does not command the facilities of a suitable hospital. Hospitals that disinterestedly lend themselves to the purposes of medical education are pursuing a wise social policy, and are serving many patients besides those in their wards.—S. S. Goldwater, M.D., *Modern Hospital,* November, 1916.

THE VISUAL REQUIREMENTS OF MILITARY AVIATORS

CHARLES P. SMALL, M.D.
CHICAGO

The advent of the aeroplane in modern military equipment has made it necessary to modify to some extent the method of physical examination of applicants. Because of the unusual and, until within a few years, the absolutely unknown conditions which the aviator must encounter, there must be a special standard of physical fitness, quite different in some respects from that required of men in other branches of military service. In times of peace the physical standard in all branches of the service should be maintained at the highest possible point. In time of war, when the need for all available fighting forces is urgent, the physical requirement of recruits might have to be considerably lowered. To lower the standard required of aviators, however, even in time of war, would be to incur the danger of most serious risks.

Military writers on the different European battle fronts tell us that if an infantry attack is to succeed there must first be a perfect artillery preparation. There can be no such preparation unless all the targets are accurately located and the exact firing data necessary to hit them previously determined. This is done by taking large numbers of photographs of the enemy's position. The various batteries are then assigned their targets and commence their ranging fire. Trained observers in aeroplanes fly above the targets and signal back to the batteries whether they are over or short, etc.; other aeroplanes observe the progress of the attack, and from time to time report to the general in command. Such work as this necessitates a thorough and long continued reconnaissance, which can be made only by highly trained observers in aeroplanes many times a day for many days. To succeed in this work enemy aeroplanes must be destroyed or driven away by the use of a superior number of fighting aircraft. As one of our modern army men has said, "The preparation and carrying out of a modern attack are absolutely dependent on a proper aviation service. We have in the United States no fast armed machines capable of bringing down such battle machines as every European nation now possesses. We have no officers properly trained in photographic reconnaissance, in the observation of artillery fire, and in the keeping of proper communication between assaulting artillery and infantry, and between it and the general command." These facts are referred to only to emphasize the importance of having for this work men in our service endowed in the highest degree with physical fitness.

In a recent article in one of our military publications on the examination of aviators, the writer devotes over two pages to the examination of the labyrinths. It is of the utmost importance for the aviator to possess normal functions presiding over the maintenance of bodily equilibrium under a definite set of conditions. I believe, however, that it is of equal importance to know the ocular conditions present: not only the visual acuity but also the entire ocular apparatus, a phase of the examination to which the writer devoted only a single paragraph. Assuming that the applicant has successfully passed the other requirements of his physical examination, what should be his visual requirements?

Huss (Marine-Oberstabarzt), in his recommendations for the eye examinations of flyers,[1] includes the history, objective examination, refraction, acuteness of vision, visual fields taken roughly by the hand, and the pupillary reaction.

Unless the subheading "objective examination" is more comprehensive than would generally be included under this term, it seems to me that there are a number of important omissions in this list for the routine examination.

Visual acuity of $^{20}/_{20}$ in each eye is, of course, of prime necessity. This is a much higher standard than is required of recruits in most of the continental armies. In the British army, the standard for general service requires, without correction, vision of $^{6}/_{24}$ in the better eye and $^{6}/_{60}$ in the worse eye, which must be the left. In Germany, combatants are required to have corrected vision of at least $^{6}/_{12}$ in one eye, while in the other the corrected vision may be minimal, and in the Landsturm the second eye may even be blind. In the armies of Germany, Austria, France and Italy, more than 6 diopters of myopia are allowed. Because of the constant demand on the eyes for absolutely clear vision, from the time the aviator begins his ascent until he has made a safe landing, a visual acuity of less than $^{20}/_{20}$ vision in each eye might be a serious handicap. Even with normal vision in each eye, the aviator must have normal binocular vision, as otherwise his estimation of distances and of the relative locations of places and objects would be valueless, and his own safety as well as that of his machine would be in serious jeopardy when he attempted to make a landing. There should be normal muscle balance as well as good abductive and adductive power. While in the air the aviator's eyes are in constant motion and would quickly tire under the excessive strain on weak ocular muscles.

The presence of nystagmus should disqualify an applicant. Of the considerable numbers of miners who have applied for army service in England, Huss[2] says it is the opinion of the examining surgeons that it is a serious mistake for men who have the slightest tendency to nystagmus to be subjected to the arduous strain of military service. Attacks of giddiness may come on at any time. It can be readily understood how much more liable to such attacks the aviator would be. To attempt to measure rightly the field of vision by the confrontation method might mean the overlooking of a sector of considerable size in some part of the periphery, to say nothing of the presence of scotomas. Moreover, in any suspicious case a perimetric chart of the fields would be of great value in a subsequent examination. A cycloplegic should be used in all cases, not only for determining the absolute refraction, but also in order to see the peripheral parts of the fundus and to detect any evidences of a previously existing iritis or uveitis. The visual requirements of the aviator are somewhat similar to those of the chauffeur, and it is interesting in this connection to note that an English observer has shown concrete instances of men with serious defects of vision driving vehicles on the crowded public thoroughfares. Men with 12 diopters of myopia, with disseminated choroiditis, with nystagmus, and even with occlusio and seclusio pupillae from chronic iridocyclitis have been detected. This at once suggests the need of a law requiring a rigid eye examination for chauffeurs.

One of the most important features of the eye examination seems to have been altogether ignored, namely, the examination of the color sense. We have learned that in former years, before color blindness was known to be such a common affection, ocean disasters and railway collisions resulted in a number of instances solely because of the inability of the pilot or engineer to distinguish between the red and green signal lights. In these days no color blind man can ever hope for a position as railroad engineer or as a naval officer. The military aviator's duties require in no less degree normal color sense. At a height of a few hundred feet from the ground it would be impossible for a red-green color blind observer to distinguish red uniforms of soldiers from the surrounding green foliage, even in the most favorable atmospheric conditions. His difficulties would be multiplied in cloudy or hazy weather. It is known that among all classes of males, regardless of birth or education, about 4 per cent. have defective color sense. Of over 300 men who recently applied for examination for aviators in the officers' signal section of the Medical Reserve Corps, only eighty-six were found eligible for the examination, and of these eighty-six, only thirty-nine passed a successful physical examination. Of these thirty-nine selected men, one was rejected on account of color blindness. This would indicate a ratio of over 2 per cent. of color blindness in otherwise physically perfect men. The desire for adventure with its attendant element of danger is undoubtedly a strong inducement for young men to enter this branch of the service. Their bitter disappointment in failing to qualify is sufficient proof that tests for malingering are not necessary. The one man referred to declared that he could distinguish all colors perfectly, and it was only after proving to him by three different tests, all of which showed the same results, that he finally admitted that he did have some difficulty in seeing red lights when driving an automobile.

In our limited experience, but little has been reported on the effects of dazzling. In European countries, however, this factor has been of sufficient frequency to receive some attention. Some form of tinted lenses mounted in padded goggle frames should be worn as a protection against dazzling, as well as to shield the eyes from wind and dust. One flyer told me that, at a height of several hundred feet above a sand bank, fine particles of sand struck his face with the intensity of needle pricks.

Emergencies may arise at any minute calling for instant action. A faulty action of the engine, for instance, or the sudden appearance of antiaircraft guns necessitates a quick change of course. In order to estimate the length of time it requires to respond after receiving a visual impression, applicants for aviation service in France are required to undergo a psychophysical examination. By means of the d'Arsonval chronometer it has been determined that a good candidate for aviation requires about $^{19}/_{100}$ second for visual reactions.

There should be a reexamination of the eyes at least once a year. Until the beginner has had a few weeks of actual experience, he cannot know the effect on his eyes. The sensitiveness of the retina, endurance of the eye muscles, etc., can be determined only after practical trial.

SUMMARY

The successful applicant for army aviation service should have:

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[1] Translated in U. S. Naval Med. Bull., Jan. 14, 1917.

[2] Huss: Brit. Med. Jour., March 4, 1916.

1. Uncorrected vision of $^{20}/_{20}$ in each eye.
2. Binocular vision.
3. Absence of nystagmus.
4. Normal muscle balance and competent ocular muscles.
5. Normal pupillary reaction and no pupil irregularities when dilated.
6. Normal media and fundi.
7. Normal visual fields, by perimetric examination.
8. Normal color sense.

7 West Madison Street.

HORSE ASTHMA

TREATMENT OF A CASE WITH NORMAL HORSE SERUM

C. R. Zener, M.D., White Salmon, Wash.

Mrs. L. B., aged 28, widow, came under my care in July, 1916. The family history was negative. She had been subject to severe attacks of horse asthma since childhood, whenever she was near horses for a few minutes. She could neither ride nor drive for this reason. Two years ago she had the anterior portion of both lower turbinates removed, on account of nasal obstruction, with no effect on the asthma, and only slight relief of nasal obstruction. The personal history otherwise was negative. The patient was not neurotic.

July 4, I rode horseback with the patient and witnessed an attack. Thirty minutes after beginning the ride she began to sneeze, and at the end of an hour she was almost prostrated, with constant sneezing, severe lacrimation, intensely congested sclera, considerable edema of glottis, and complete nasal occlusion.

August 1, I gave the patient 25 c.c. of normal horse serum intravenously. By the time half the dose was introduced, she began to sneeze, and within a few minutes she was undergoing a severe attack of horse asthma, similar to the one I witnessed in July, only with symptoms more pronounced, if possible, especially the glottic edema. Under applications of epinephrin solution, 1 : 1,000, the edema subsided.

About two weeks later on exposure to horses she developed an attack of asthma, milder than usual. At the end of three weeks I gave 12 c.c. intravenously without any reaction. This was followed at intervals of about two weeks with doses of 25, 40 and 60 c.c. hypodermically, without any reaction.

Now, six months later, she reports that she has not had an attack since the second dose of serum, that she rides and drives at pleasure, has gained in weight and is delighted with the result.

THE PNEUMOCOCCUS FOUND IN A CASE OF STILLBIRTH

Edward L. Cornell, C.B., M.D., Chicago
Member of the Staff of the Chicago Lying-In Hospital and Dispensary and Post-Graduate Hospital

Recently Dr. Joseph B. De Lee[1] reported three cases of infection as a cause of stillbirth. To this list I wish to add the following case (Case 90153, Michael Reese Hospital): The patient, aged 26, married four years, came under my care, May 4, 1916. She had had a stillbirth with the first child at full term. At this delivery it was stated that the child had a nasal discharge. No cultures were made. The infant weighed 7½ pounds. Two years later she had a miscarriage which required a curettement. The perineum was repaired at that time. The date of her last period was Oct. 9, 1915. Life was felt about the fourth month. In May the patient complained of feeling weak and of severe cramps in the abdomen. Under appropriate bowel medication she improved. She has had frequent nosebleeds for years. The appendix had been removed three years before; the tonsils had been removed six years before (apparently clipped or incompletely removed). The patient's habits were regular, and she did not use alcoholics.

Examination revealed a nervous woman, whose general appearance was good. The blood pressure was 130-70. The measurements were external, 23-26-28-19 cm.; internal diagonal, 12 cm. Urinalysis was negative. June 21, 1916, the blood pressure was 120-70. The patient felt well, and the urine was negative.

July 19, 1916, the patient was still in good condition. The child, though not a large one, was kicking well. The head was still floating. The heart tones were good, the rate being 132.

Aug. 3, 1916, at 8 p. m., the patient was admitted to the hospital, having been in light labor since 2 p. m. On rectal examination the cervix was dilated two fingers and thin. The head was not engaged. The fetal heart rate was 140. At 10 : 30 p. m. there was a dilatation of three and a half fingers. The fetal heart rate was 136. The head was fixed in the pelvis in right occipito-anterior presentation. At 1 : 30 a. m. the same findings were present. The pains were then becoming stronger. The heart rate was: 12 p. m., 140; 1 a. m., 132; 2 a. m., 132; 3 a. m., 132; 4 a. m., 124; 4 : 20 a. m., 124; 4 : 42 a. m., 116; 4 : 50 a. m., 112.

The bag of waters was ruptured artificially at 4 : 50. Before artificial delivery could be accomplished, the infant died. The liquor amnii was filled with meconium. At 6 : 20 a. m., 3 minims of pituitary extract were given to stimulate the pains, and a female was born at 7 a. m. It was in a state of asphyxia pallida. The weight was 6 pounds, 5 ounces. Necropsy on the infant revealed nothing pathologic, except that all the serous cavities contained more fluid than is usual.

Cultures were made from the dura, pericardium, nose, heart's blood and pleural and abdominal cavities. The pericardium gave a pneumococcus and a gram-positive bacillus. The pleural cavity gave a pneumococcus and a staphylococcus. The Wassermann reaction was negative.

A Wassermann test on the mother was also negative. A culture from the tonsil crypts and from the vaginal discharge showed the pneumococcus and the staphylococcus in each. In spite of this, the episiotomy wound healed by first intention.

It is my purpose to attempt to deliver a live baby later by having the mother's nose and throat put in good condition and to keep on the lookout for a focal infection by having the blood and vaginal secretions examined for pneumococci and staphylococci.

The bacteriology was done in the hospital laboratory.

122 South Michigan Avenue.

A CASE OF MULTIPLE PREGNANCY, RUPTURED TUBAL AND UTERINE

E. A. Sullivan, M.D., Amboy, Ill.

Mrs. J. S., aged 42, tertigravida, May 6, 1916, at 4 p. m., while doing housework, was seized with an agonizing pain, referred to the diaphragm. When I saw the patient she was pale and had a pinched facial expression. The pulse was dicrotic; the rate was 160. The temperature was subnormal. At this time I administered ½ grain of morphin hypodermically to relieve the pain. On examination I found the uterus somewhat enlarged, the cervix elongated, the external os patulous. There was a serous bloody discharge. At this examination nothing abnormal was found in the culdesac or abdomen; but two hours later a tumefaction in the culdesac suggested ruptured tubal pregnancy. The patient was moved to the Amboy Hospital, and Dr. Karl F. Snyder of Freeport was called to operate.

The pelvis and culdesac were filled with clotted blood and a fetus; these were removed and the bleeding tube ligated and sewed; drainage was put in and the abdominal wound sewed up. During the operation pressure on the uterine walls outlined a fetus in the uterus, leading to a diagnosis of multiple pregnancy. The patient was removed from the operating room and put in the Fowler position. Physiologic sodium chlorid solution was given with epinephrin solution hypodermically to combat shock. The patient made an uninterrupted recovery and, December 24, was delivered of an 11 pound boy.

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[1] De Lee, J. B.: A Bacteriologic Study of the Causes of Some Stillbirths, The Journal A. M. A., July 29, 1916, p. 344.

AURICULAR FLUTTER DETECTED BY THE FLUOROSCOPE *

George W. Holmes, M.D., and Paul D. White, M.D., Boston

The fluoroscope has often been used in the examination of arrhythmic hearts. The discovery, however, of an unsuspected auricular flutter during a routine chest examination of a patient with suspected gastro-intestinal lesion is of such interest that it deserves special mention.

History.—G. B., man, aged 62, employed for over forty years as painter and paperhanger, referred to the Massachusetts General Hospital for diagnosis, complaining of indigestion, had always been well until four months before visiting the hospital. At that time attacks of pain in the region of the umbilicus began. They were most frequent early in the morning, waking the patient at about 2 o'clock and compelling him to rise and pace the floor. Gradually the pain had become more persistent, until it was present much of the time. Hot applications gave some relief. There had been no nausea or vomiting. No relationship could be discovered between the kind or time of meals and the pain. Yet the patient had been afraid to eat much and had lost 30 pounds in weight in the four months. He was slightly constipated. There had been no weakness of the hands or feet, and no dyspnea, edema or precordial pain.

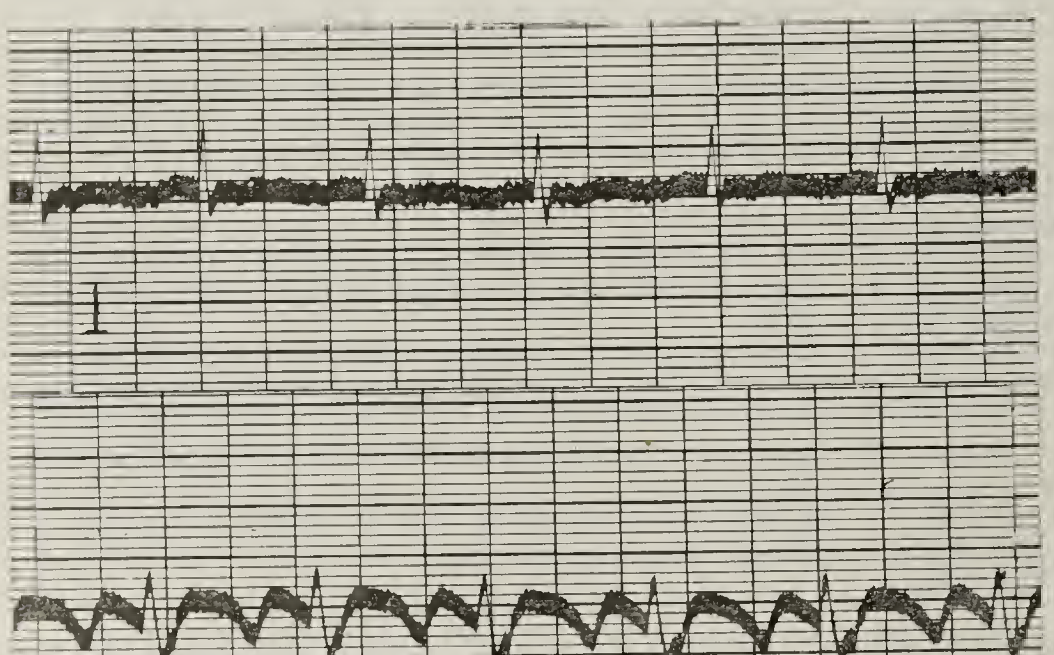

Fig. 1.—Leads I, II and III of electrocardiogram showing auricular flutter; abscissa, 0.2 second; ordinate, 10^{-4} volt.

Examination.—The patient, June 30 and July 7, 1916, was pale and underweight. All the teeth were false. The tongue was coated. The pupils reacted normally. The lungs were normal. There was slight enlargement of the heart to percussion; the apex impulse was in the fifth space. The action was regular and rapid (115 a minute). The sounds were faint and clear. There was absence of abdominal tenderness, spasm and masses. The liver and the spleen were not felt. There was a marked venous prominence at the costal borders. There was a double inguinal hernia. Rectal examination was negative. The reflexes were normal. The temperature was normal. A blood smear was normal; there was no stippling. Hemoglobin was 90 per cent. The urine was cloudy; specific gravity, 1.022; there was no albumin or sugar; the sediment showed nothing remarkable. Fluoroscopic examination by means of a bismuth meal showed no abnormality in the gastro-intestinal tract.

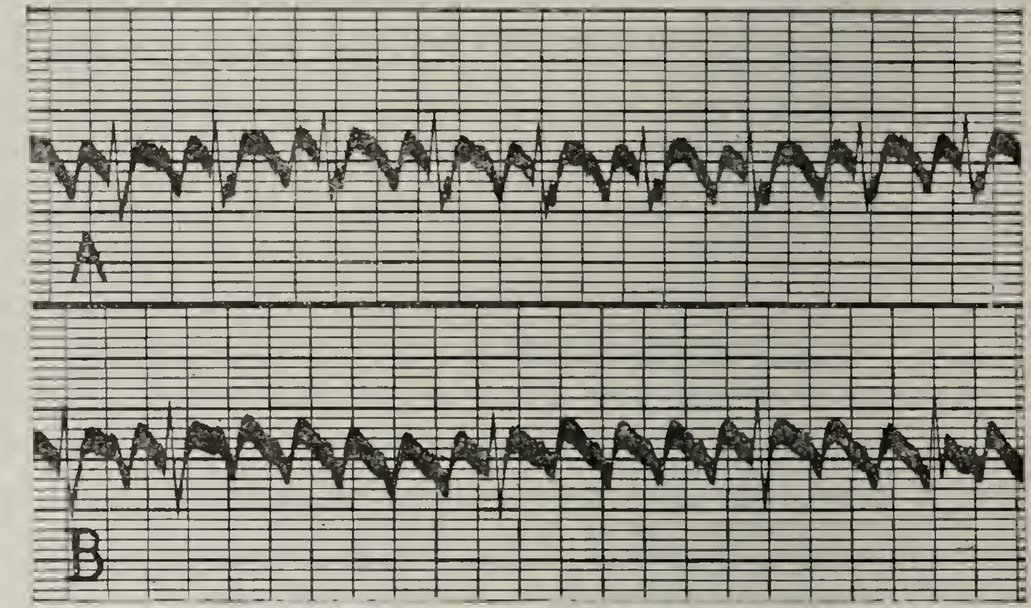

Fig. 2.—Lead II of electrocardiogram showing auricular flutter: *A*, before vagal pressure, *B*, during right vagal pressure; abscissa, 0.2 second; ordinate, 10^{-4} volt.

Fluoroscopic Examination of Heart.—The right and left borders were clearly outlined, the left border pulsating regularly at the rate of 115 a minute and the right border regularly at apparently twice the rate. A diagnosis of auricular flutter was made and confirmed a few minutes later by the electrocardiograph.

Electrocardiograms.—There was auricular flutter with 2 : 1 A-V block. The auricular rate was 230, ventricular rate, 115 (Fig. 1). Right vagal pressure increased instantly the grade of block, bringing out clearly the separate auricular deflections (Fig. 2.).

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* From the Massachusetts General Hospital.

Unusual Foreign Bodies in the Rectum.—It is not unusual to find foreign bodies in the rectum which have been inserted by the patients themselves, who are usually sexual perverts. I recently had three cases in which the object inserted was an ordinary jelly glass. Another case proves that glass electrodes inserted into the rectum for the treatment of hemorrhoids and prostatic troubles are not without some danger. In this case, a physician was using an ordinary high-frequency glass electrode for the treatment of the prostate. The tube suddenly exploded while inserted 3 or 4 inches into the patient's rectum. It was broken into many pieces, and I removed it with considerable difficulty. The bowel, however, was not lacerated, and the patient suffered no injury.—William H. Kiger, M.D., Los Angeles.

Special Article

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1916

FIFTH ANNUAL REPORT

THE JOURNAL presents herewith its fifth annual survey[1] of typhoid fever mortality in those cities of the United States having over 100,000 population. The cities included in the summary number sixty, and are the same as those reported last year.[2]

Group 1, which contains the nine largest cities in the country, comprises a population of 13,743,746, or about 14 per cent. of the total population of the country. All but three of these cities established a new low record for typhoid fever in 1916. The three cities with somewhat higher rates in 1916 than in 1915, Philadelphia, St. Louis and Detroit, showed improvement, nevertheless, over the average from 1911 to 1915.

Boston achieves the best position and, indeed, reaches a remarkably good figure (3.5), the lowest point yet touched by any member of Group 1. Boston, however, is closely pressed by New York for first place. The health officials in these two cities are to be congratulated on the success of the unremitting campaign they have waged in the past ten years against typhoid fever. The painstaking efforts in New York to discover carriers and place them under control have evidently borne good fruit. The New York Department of Health comments in one of its recent weekly bulletins on the absence of public interest in the success which has attended the efforts of the department in the reduction of typhoid fever. Little notice has been taken of the fact that within ten years the typhoid rate has been reduced to less than one-third its former dimension. This difference in rates represents a saving of over 600 lives, and is certainly an achievement on which any administrative health authority might pride itself. The record deserves the widest possible publicity. Boston and New York have set a high standard for the rest of the country.

TABLE 1.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 1 (OVER 500,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average	Average
	1916	1915	1911-1915	1906-1910
Boston	3.5	5.5	8.0	16.0
New York	3.8	6.0	8.0	13.5
Chicago	5.2	5.4	8.2	15.8
Cleveland	5.3	7.8	10.0	15.7
Philadelphia	7.8	6.6	11.2	41.7
Pittsburgh	8.6	10.3*	15.9*	65.0
St. Louis	9.4	7.0	12.1	14.7
Detroit	15.0	12.8	18.1	21.1
Baltimore	18.0	21.9	23.7	35.1

* An error in the figures reported to us last year has been corrected in this tabulation.

Chicago reports a rate (5.2) substantially the same as that of 1915 (5.4). This is slightly higher than if a localized water-borne outbreak had not occurred in January, 1916. According to the estimate of the health department, 105 cases and eight deaths should be attributed to the accidental contamination of the water at that period. The outbreak was due to the entrance of sewage into the pumping well of the Sixty-Eighth Street pumping station following the flooding of the sewers by a heavy rain and thaw, January 20 and 21. Without entering into the merits of the controversy between the Chicago Health Department and the Sanitary District of Chicago regarding responsibility for this unfortunate occurrence, it may be observed that a pumping station so constructed as to make it possible for sewage to back up and flow into the suction well is not above criticism. The total rate in Chicago, however, is little affected by the inclusion of the deaths attributed to this source. As has been the case in the past few years, the 1916 rate is exceedingly low.

With respect to the typhoid situation in Chicago, students of vital statistics will be interested in referring to the *Bulletin* of the Chicago Department of Health for Oct. 21, 1916, in which a special plea is made for "utmost care in the filling out of certificates and in assigning both the immediate and remote causes of death," typhoid deaths being especially emphasized in the accompanying statement. The probable motive and effect of such an appeal are matters for conjecture. It is interesting to note that in 1915, forty-three typhoid deaths were recorded in Chicago in the last quarter of the year, while in 1916 only eighteen deaths were officially assigned to this cause.

Cleveland, in spite of a rather marked increase of typhoid in August, records a very low annual rate. Full operation of the filtration plant, construction of which has been somewhat delayed, should improve the water conditions in Cleveland. Meanwhile a careful watch is being kept over the supply and chlorination sedulously practiced.

Pittsburgh seems to have joined permanently the list of cities with a very low rate. To those who have been familiar with the high typhoid rates which prevailed in this city for many years, it is as surprising as it is gratifying to note that the rate in 1916 was hardly more than one-eighth the average for 1906-1910. Philadelphia is running a neck and neck race with Pittsburgh for low place, just as for several decades it vied with the latter city for the unenviable distinction of the highest typhoid rate among the large cities.

Baltimore makes a new low record, and is evidently profiting from the installation of a filtered water supply in September, 1915, and from the efforts which are being made to correct the milk situation.

Detroit alone among the cities of this group shows relatively little improvement. It may even find itself at the bottom of the list as time goes on. There is evidence, however, that the responsible authorities of Detroit are awake to the situation, and that this city will not long be allowed to suffer from a typhoid rate three to four times as high as that in Boston, New York and Chicago. The way in which Baltimore has closed up the gap between itself and Detroit should prove an incentive.

The tabulation of the cities of Group 2 (from 300,000 to 500,000 population) shows more with increased than decreased typhoid rates. Buffalo and Washington stand not far from last year's figures, which in both cases were relatively low. In neither city is the 1916 rate as high as the 1914 rate or as the average for the preceding five-year period. New Orleans, on the other hand, exceeds its relatively high rate for 1915, which was itself slightly in excess of the preceding five-year average. Newark shows a considerable increase over the 1915 figure, but its rank is still excellent.

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[1] The preceding articles were published May 31, 1913, p. 1702; May 9, 1914, p. 1473; April 17, 1915, p. 1322, and April 22, 1916, p. 1305.

[2] The number of typhoid deaths has been sent us by the local officer of health, and the rates have been calculated on the basis of population estimates made according to the method of the U. S. Census Bureau. It may perhaps be noted that the figures kindly furnished us by the municipal officials include the deaths of nonresidents as well as residents occurring within the city limits. In some instances this undoubtedly gives an exaggerated impression of the amount of typhoid fever in a community, but at present statisticians are agreed that "the attempt to eliminate the deaths of nonresidents would often result in an understatement of the true mortality" (Bureau of the Census, Mortality Statistics, 1912, p. 13).

Los Angeles reports an exceedingly low typhoid mortality for 1916, almost making it the banner city of the group. Seattle, however, retains its primacy by a small margin. As pointed out last year, a part at least of the improvement in the Los Angeles rate may be attributed to the betterment in the water supply. Cincinnati and San Francisco also report marked reductions, and Minneapolis a very satisfactory one.

The most unfortunate city in this group during the past year has been Milwaukee, which has increased its rate from 4.5 to 14.9, and drops from third to ninth place. This great change for the worse was undoubtedly due to a general infection early in the year carried through the city water supply. The chlorination of the supply throughout 1915 was apparently highly effective, as noted in our last report, and no official explanation has been given for the apparent failure of the chlorination treatment in the month of January, 1916. Some suspicion was aroused locally by statements that sodium thiosulphate (hyposulphite) had been used, January 19, to neutralize the taste of the chlorin in the water; it seems conceivable that some mistake was made in this application, and that this led to the inhibition of chlorin action before all the intestinal germs in the water had been destroyed. It is stated that the use of the sodium thiosulphate was followed by a sudden bacterial increase in the tap water. This explanation of the origin of the water-borne infection, however, does not seem to have received official acceptance. Similar instances have been reported in The Journal from time to time in which any interruption or interference with the process of chlorination of a bad water has given rise to severe typhoid outbreaks. Whatever the immediate cause, the water-borne epidemic in February was a serious one, resulting in upward of 300 cases and many deaths. The Milwaukee authorities are at a grave disadvantage in having to deal with a highly polluted water. Special vigilance is evidently demanded in water control in that city.

TABLE 2.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 2 (FROM 300,000 TO 500,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average 1911-1915	Average 1906-1910
	1916	1915		
Seattle	3.0	2.5	5.7	25.2
Los Angeles	3.1	5.5	10.7	19.0
Cincinnati	3.4	7.8	7.8	30.1
San Francisco	3.4	9.4	13.6	27.3
Newark, N. J.	5.3	2.5	6.8	14.6
Minneapolis	5.8	7.1	10.6	32.1
Buffalo	10.9	9.9	15.4	22.8
Washington, D. C.	12.6	11.7	17.2	36.7
Milwaukee, Wis.	14.9	4.5	13.6	27.0
New Orleans	23.4	21.5	20.9	35.6

Group 3 (cities with from 200,000 to 300,000 population) continues for the most part its excellent record of 1915. The rates reached in 1916 are on the whole not far from those of the preceding year with the exception of St. Paul, Providence and Louisville, which report a marked improvement. Portland, Ore., still holds its place at the top of the list, and records a rate under 5. St. Paul also places itself for the first time on the honor list. Kansas City and Jersey City report typhoid increases. Rochester, Denver and Columbus record rates closely approximating the 1915 figures.

Indianapolis alone in this group has experienced a particularly bad typhoid year. Following the excessive amount of typhoid fever in December, 1915, there appears to have been a continuation of the excess in January, 1916. In August, 1916, another typhoid outbreak of considerable dimensions occurred, numbering, it is said, about 700 cases and over thirty deaths. There is no doubt that the situation in Indianapolis deserves more careful study than it has yet received. In spite of the excellent reputation which the Indianapolis water supply has had in the past, the appearance of several explosive epidemics of typhoid, and especially the outburst of epidemic diarrhea, call loudly for an explanation. Evidently something unusual occurred in the summer of 1916, as in the fall of 1915. What this was and how to prevent its recurrence is a subject of pressing concern for the citizens of Indianapolis. A searching investigation of the whole typhoid situation in that city seems to be called for.

TABLE 3.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 3 (FROM 200,000 TO 300,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average 1911-1915	Average 1906-1910
	1916	1915		
Portland, Ore.	4.6	5.2	10.8	23.2
St. Paul	4.9	7.4	9.2	18.3
Providence, R. I.	5.1	8.4	10.2	14.3
Rochester, N. Y.	5.1	6.0	9.6	12.8
Jersey City, N. J.	6.8	5.6	7.2	12.6
Denver	7.2	6.6	12.0	37.5
Louisville, Ky.	9.7	12.0	19.7	52.7
Kansas City, Mo.	10.6	7.2	16.2	35.6
Columbus, Ohio	13.4	13.3	15.8	40.0
Indianapolis	26.6	12.3	20.5	30.4

In contrast to Indianapolis, Louisville has made a remarkably good record, dropping for the first time to a rate under 10, which is not only much the lowest point so far reached in Louisville, but the lowest yet reported from any southern city.

Some of the cities of Group 4 (from 125,000 to 200,000 population) have experienced rather unusual fluctuations in their typhoid rates. Birmingham, Richmond and Memphis are the worst sufferers. The high rate in the former city appears to be due in large part to a severe typhoid outbreak in June and July. This was thoroughly investigated by Dr. Lumsden of the United States Public Health Service and definitely attributed to ice cream made at one of the larger ice cream factories in Birmingham. It is thought that the infection of the ice cream originated in the use of infected milk or cream from some dairy or dairy farm outside Birmingham. While the ice cream supply was considered the predominating factor in producing the excessive number of typhoid cases in the early summer, the investigators believe that local factors other than ice cream were also operative. As a result of the outbreak and the consequent searching sanitary survey, it was recommended that all polluted wells and springs within the city be closed and that official supervision

TABLE 4.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 4 (FROM 125,000 TO 200,000 POPULATION)

	Deaths from Typhoid per 100,000 Population		Average 1911-1915	Average 1906-1910
	1916	1915		
Paterson, N. J.	1.4	5.1	9.1	19.3
Spokane, Wash.	2.0	10.7	17.1	50.3
Worcester, Mass.	3.7	5.6	5.0	11.8
Oakland, Calif.	4.0	6.7	8.7	21.5
Omaha	5.1	3.7	14.9	40.7
Scranton, Pa.	5.4	10.4	9.3	31.5
New Haven, Conn.	8.0	18.3	18.2	30.8
Fall River, Mass.	10.9	11.8	13.4	13.5
Syracuse, N. Y.	12.2	5.9	12.3	15.6
Atlanta, Ga.	17.9	11.1	31.4	58.4
Toledo, Ohio	22.9	23.9	31.4	37.5
Richmond, Va.	24.1	12.7	15.7	34.0
Memphis, Tenn.	36.3	24.6	42.5	35.3
Birmingham, Ala.	42.6	33.7	....	....

of the public water supply be rendered more rigorous. Control of the milk supply was also especially recommended, and provisions for the proper disposal of excretal refuse were deemed essential. It is of excellent augury for the success of the campaign against typhoid in Birmingham that immediately following the large number of cases in June and July (558), the August cases should have dropped to eighty-one, a figure lower than for the same month in 1914 and in 1915. Birmingham seems to have been aroused by this epidemic to an understanding of its deplorable sanitary condition, and great improvement may be looked for in the immediate future.

The city of Memphis suffered from a serious explosive typhoid outbreak at almost the same time as Birmingham. Two hundred and fifty cases were reported in July, the number of new cases falling off to ninety-two in August. An infected dairy was considered the source of the outbreak. It is estimated that under the stress of the epidemic over 30,000 persons were vaccinated. Other southern cities unquestionably tolerate the same conditions which were primarily responsible for the Birmingham and Memphis outbreaks and should take warning from the disasters in those cities last summer. The causes of the excessive typhoid in our southern cities are now pretty well understood, and while the difficulties in the way of improvement are notably greater than in northern cities, they are by no means insuperable. We may look to Birmingham, Memphis, Atlanta and Nashville for a rapid and definite advance in their sanitary conditions.

Paterson holds the best place in Group 4, and records a rate with one exception (Cambridge, Mass.) the lowest in the country. Spokane, Worcester and Oakland also make an excellent showing. The cities of Scranton and New Haven report a marked reduction. The New Haven situation, long in need of betterment, seems to promise definite improvement.

Richmond, like Birmingham, had a serious summer epidemic, its rate for the year being almost doubled. Some uncertainty appears to surround the cause of the July-August epidemic. The public water supply seems to have been suspected at the time, but official inculpation of the water does not seem to have been made. One statement appears to place responsibility on the method of water chlorination, and attributes the outbreak to the irregular operation of the chlorination plant. If this is true, the Richmond outbreak, like the one in Milwaukee, calls attention again to the danger of depending on chlorin treatment without at the same time obtaining assurance as to the proper working of the apparatus. The temptation to regard as permanently safe a method which has been in successful operation for some time is great; but, as shown in the last few years, reliance on water chlorination under all circumstances may not be justified. Whatever the cause, the excellent typhoid record of Richmond in the past few years has been seriously injured.

No light has been shed on the Toledo problem in 1916. It is still a mystery why this prosperous northern city should suffer year after year so seriously from typhoid fever. There is no reason why investigation of the Toledo situation should not be immediate and thorough. Its position among American cities is not enviable.

The cities of Group 5 (from 100,000 to 125,000 population) make a particularly good showing, eleven of the number showing a decrease as compared with the rates for 1915. Cambridge heads the list with the lowest typhoid rate ever reported by a large city in this country and with a remarkable record for three consecutive years. We know of no other city of its size anywhere in the world which has so low a death rate from typhoid. Tacoma, New Bedford and Springfield also report very low rates, and Trenton maintains the good position it reached last year. Hartford and Albany join the ranks of the cities with a death rate less than 10, and exhibit a marked improvement over the average rates for the past ten years. Bridgeport has a somewhat increased typhoid mortality, but in view of the great increase in population in that city due to the influx of workers to munition factories, the problems of health control have become more difficult. Under the circumstances the typhoid rate for 1916 in Bridgeport must be regarded as creditable.

TABLE 5.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 5 (FROM 100,000 TO 125,000 POPULATION)

	Deaths from Typhoid per 100,000 Population 1916	1915	Average 1911-1915	Average 1906-1910
Cambridge, Mass.	0.9	1.8	4.0	9.8
Tacoma, Wash.	3.5	5.5	10.4	....
New Bedford, Mass.	4.2	18.2	15.0	16.1
Springfield, Mass.	4.7	10.6	17.6	....
Trenton, N. J.	6.3	6.4	22.3	....
Hartford, Conn.	6.3	18.3	15.9	19.0
Albany, N. Y.	7.7	12.6	18.6	17.4
Bridgeport, Conn.	9.0	5.1	5.0	10.3
Salt Lake City	10.2	7.0	13.2	....
Camden, N. J.	11.3	6.7	4.5	....
Lowell, Mass.	11.4	16.0	10.2	13.9
Dayton, Ohio	14.7	13.6	14.8	22.5
Grand Rapids, Mich.	15.6	24.6	25.5	29.7
San Antonio, Texas	16.9	19.2	29.5	....
Reading, Pa.	18.7	16.2	31.9	42.0
Nashville, Tenn.	27.3	35.1	40.2	61.2
Dallas, Texas	27.5	20.3	....	....

Salt Lake City and Camden show considerable increases over the preceding year, and Dayton a slight increase. The Lowell rate, on the other hand, is somewhat less, but is still above the average for the preceding five years. Grand Rapids reports some typhoid

TABLE 6.—DEATH RATES FROM TYPHOID IN 1916

First Rank (Under 5.0)		Second Rank (5.0-10.0)		Third Rank (10.0-20.0)		Fourth Rank (Over 20.0)	
Cambridge, Mass.	0.9	Omaha	5.1	Salt Lake City	10.2	Toledo, Ohio	22.9
Paterson, N. J.	1.4	Providence, R. I.	5.1	Kansas City, Mo.	10.6	New Orleans	23.4
Spokane, Wash.	2.0	Rochester, N. Y.	5.1	Buffalo	10.9	Richmond, Va.	24.1
Seattle	3.0	Chicago	5.2	Fall River, Mass.	10.9	Indianapolis	26.6
Los Angeles	3.1	Newark, N. J.	5.3	Camden, N. J.	11.3	Nashville, Tenn.	27.3
Cincinnati	3.4	Cleveland	5.3	Lowell, Mass.	11.4	Dallas, Texas	27.5
San Francisco	3.4	Scranton, Pa.	5.4	Syracuse, N. Y.	12.2	Memphis, Tenn.	36.3
Boston	3.5	Minneapolis	5.8	Washington, D. C.	12.6	Birmingham, Ala.	42.6
Tacoma, Wash.	3.5	Trenton, N. J.	6.3	Columbus, Ohio	13.4		
Worcester, Mass.	3.7	Hartford, Conn.	6.3	Dayton, Ohio	14.7		
New York	3.8	Jersey City, N. J.	6.8	Milwaukee, Wis.	14.9		
Oakland, Calif.	4.0	Denver	7.2	Detroit	15.0		
New Bedford, Mass.	4.2	Albany, N. Y.	7.7	Grand Rapids, Mich.	15.6		
Portland, Ore.	4.6	Philadelphia	7.8	San Antonio, Texas	16.9		
Springfield, Mass.	4.7	New Haven, Conn.	8.0	Atlanta, Ga.	17.9		
St. Paul	4.9	Pittsburgh	8.6	Baltimore	18.0		
		Bridgeport, Conn.	9.0	Reading, Pa.	18.7		
		St. Louis	9.4				
		Louisville, Ky.	9.7				

diminution, but it is evident that the typhoid conditions in that city are not as satisfactory as in many other places.

Nashville, during the past year, has carried on a vigorous campaign against typhoid. It is said that over 20,000 persons have been vaccinated under the auspices of the health department, and many more by private physicians. There has also been a sustained endeavor to extend sewerage facilities in Nashville and to eliminate the dry closets. While much remains to be done, there is no doubt that the situation in this city is steadily improving under the energetic efforts of the physicians and health officials. Nashville reached a new low rate in 1916, and no longer has the highest typhoid rate in the country. Compared with the average rate for 1906-1910, its improvement has been remarkable.

TABLE 7.—AVERAGE DEATHS FROM TYPHOID PER HUNDRED THOUSAND IN EACH GROUP DURING 1916

Group	Number of Cities	Total Population	Number of Deaths	Average Deaths per 100,000
1, over 500,000	9	13,743,746	854	6.2
2, 300,000-500,000 ..	10	4,053,281	344	8.5
3, 200,000-300,000 ..	10	2,635,983	248	9.4
4, 125,000-200,000 ..	14	2,250,991	330	14.7
5, 100,000-125,000 ..	17	1,983,918	235	11.8
Total	60	24,667,919	2,011	8.1

Dallas shows an apparent increase for 1916 as compared with the preceding year. The typhoid history in this city for the previous decade is unavailable. Dallas now has a well trained director of public health, and betterment of the typhoid situation may soon be looked for.

TABLE 8.—TOTAL AVERAGE TYPHOID DEATH RATE (1910-1916)

	Total Population (57 Cities)* Estimated by U. S. Census Bureau Methods	Typhoid Deaths	Typhoid Death Rate per 100,000
1910	20,996,035	4,114	19.59
1911	21,545,014	3,391	15.74
1912	22,093,993	2,775	12.56
1913	22,642,972	2,892	12.77
1914	23,191,951	2,408	10.38
1915	23,740,930	2,068	8.71
1916	24,205,359	1,842	7.61

* Three cities are omitted from this summary because data for the full period are not available.

In 1916, thirty-three cities had a lower typhoid rate than in 1915 and twenty-six a higher; thirty-five cities had a typhoid rate under 10, as compared with 32 in 1915. Sixteen cities had a death rate under 5 in 1916, while only five cities were under that limit in 1915, four in 1914 and one in 1913. In 1916 four cities reached the very low rate of 3.0 or less.

A Famous Roman.—Scribonius Largus, a Roman physician who lived during the reigns of Tiberius and Claudius (14-54 A. D.), owes his celebrity to the fact that he wrote and published (in 47 A. D.) a book containing a collection of the best medical formulae and popular recipes known at that time. He appears to have had a large private practice and to have spent a considerable portion of his professional life in the service of the army. He accompanied the Emperor Claudius, for example, in his campaign against Britain (43 A. D.), and the book which he wrote, and which has just been mentioned, was dedicated by him to that emperor. According to Neuburger, Scribonius is to be credited with having been the first to describe correctly the proper manner of obtaining the drug known as opium, and also the first to recommend, in the treatment of severe headaches, the employment of electric shocks as communicated by the fish called the "electric ray."—Albert H. Buck, The Growth of Medicine.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 781*)

Chronic Nephritis

Some of the causes of this disease are:

Unresolved acute nephritis.
Repeated attacks of acute nephritis.
Repeated irritations of the kidneys, such as result from repeated anesthesias, athletic strain, and frequent severe chilling of the body.
Overindulgence in meat and canned foods, repeated ptomain poisoning, and prolonged use of foods preserved with sodium benzoate or boric acid.
Intestinal indigestion.
Overindulgence in alcohol, especially beer. (Although alcohol has not been proved to be a direct cause of nephritis, it acts as a predisposing cause by disturbing the gastro-intestinal digestion and the liver.)
Prolonged hypertension.
Cardiac insufficiency.
Pregnancy.
Abdominal tumors.
Loose kidney.
Syphilis.
Kidney infection, especially of the pelvis of the kidney.
Gout.
Arteriosclerosis.
Chronic lead poisoning.
Long continued use of mercury, arsenic, some synthetic drugs, and some coal-tar drugs.
Repeated exposure to severe cold.

SIGNS OF INCIPIENT CHRONIC NEPHRITIS

Besides the more scientific tests of kidney function, many clinical signs and symptoms indicate the beginning of or the later stages of chronic nephritis. Acute nephritis invariably, and chronic diffuse nephritis generally, present so many urinary evidences that the diagnosis is unmistakable. The so-called chronic interstitial and arteriosclerotic nephritis begins and develops so insidiously, at times without urinary signs, that associated symptoms and conditions are of importance in making a diagnosis. Predisposing causes are: chronic congestion of the kidneys due to insufficiency of the circulation or to some abdominal cause; continued intestinal indigestions, as evidenced by indican in the urine; hypertension with all of its associated symptoms, as attacks of polyuria, arising at night once or more to urinate, cardiac hypertrophy, attacks of palpitation, slight dyspneic attacks, momentary dizziness, and eye disturbances; gouty symptoms; a history of overfeeding, especially of proteins; an alcoholic history; excessive smoking; severe athletic work or other physical tension in earlier life; previous attacks of nephritis; repeated pregnancies, especially if kidney congestion has occurred during this condition; and history of serious infection or disturbance of the urinary tract. A previous history of any of these conditions demands that the urine be examined at regular intervals for albumin and casts, and that the twenty-four hour urine excretion be determined. As chronic nephritis often develops slowly, proper advice and care will, in many instances, long postpone insufficiency of the kidneys.

The importance of the diminution of the chlorid excretion is understood, as is also the importance of preventing intestinal indigestion and of prescribing food which does not cause indican or an increase of sulphate to appear in the urine. If there is an increase of ammonia in the urine it may indicate liver disturbance.

The diet being arranged for the individual, repeated chilling of the body prevented, severe exercise proscribed, alcohol prohibited, tobacco prohibited or allowed in moderate quantities, the skin kept moist and healthy and able to function normally, and constipation prevented, incipient nephritis may for a long time remain in this stage.

On the other hand, as repeatedly stated, traces of albumin and hyalin and granular casts do not necessarily denote that chronic nephritis is developing. They denote some congestion of the kidneys, however, the cause of which should be sought, as these repeated congestions or irritations lead to future chronic inflammation. Even when an albuminuria, with or without casts, persists for some time in a condition not severe enough to be termed a nephritis, the congestion may entirely disappear, the injured epithelium entirely recover and the kidneys become normal, remaining so perhaps for years or for the rest of the patient's life. It seems probable that slight congestion of the glomerular epithelium may permit an albumin leak, while considerable degeneration of the epithelium of the tubes may occur without accompanying albuminuria.

Some portion of the kidney may be the source of considerable albumin and numerous casts and yet may entirely recover without interfering with the total kidney excretion or without showing symptoms of a real nephritis. The extent of the infection and the probable prognosis can be ascertained by tests of function, several twenty-four hour urine examinations, the condition of the circulation, the blood pressure and other associated symptoms, especially head symptoms, and also by an examination of the blood for nonprotein nitrogen retention.

PROGNOSIS IN CHRONIC NEPHRITIS

The height of the blood pressure is not a definite guide as to the severity of nephritis, but is an important indication, as a low blood pressure is rarely found when the kidneys are insufficient; though it may occur when the kidney inflammation is secondary to cardiac insufficiency. Although the contrary has been repeatedly asserted, cases have occurred in which the systolic blood pressure has been over 200 mm. and there has been no kidney insufficiency nor has one developed in months, or perhaps years. Overstimulation of the suprarenals by some hormone or by some disturbed excretion from the kidneys in nephritis may cause high blood pressure.. Hypertension may be due to a certain extent to retained water and solid constituents in the blood in nephritis, this overdistention causing increased vascular pressure and perhaps compensatory hypertrophy of the heart. These retained substances in the blood may also irritate the walls of the blood vessels to contraction.

Although repeated examinations of the urine will almost invariably show, sooner or later, albumin or casts, or both, uremia may occur when they are entirely absent. Generally, however, the greater the number of casts and the greater the amount of albumin, the more severe the chronic nephritis. Large amounts of albumin may occur in orthostatic or lordotic albuminuria without a real nephritis.

A more positive indication of the condition of the kidneys than the amount of albumin and casts is the amount of nonprotein nitrogen in the blood. One hundred c.c. of blood should normally not contain much more than 30 mg. of nonprotein nitrogen. In uremia there is always retained nonprotein nitrogen, and in sudden coma in patients not previously observed when the urine apparently is negative, or when there is some suppression, examination of the blood for retained nitrogen will determine whether nephritis is a cause, or an associated cause, of the coma. However, the type of nephritis cannot be diagnosed by the amount of retained nonprotein nitrogen.

As elsewhere stated, the phenolsulphonephthalein output—50 per cent. of which should be normally excreted in two hours — may be normally excreted even in the presence of a moderately advanced nephritis. On the other hand, if the phenolsulphonephthalein is very slowly excreted, the kidneys are markedly impaired, either temporarily or permanently. In congestion caused by circulatory failure this impaired function may gradually be restored as the circulation improves. A diminished sodium chlorid excretion can be ascertained by testing, but may be inferred to accompany edema. If the kidneys are seriously impaired, nitrogen retention, as shown by the examination of the twenty-four hour urine on a known diet, or by the urea feeding test, is of serious import, although the type of nephritis cannot be determined by this test.

Evidences of kidney insufficiency other than the signs described are mental irritability, headaches, dizziness, periods of depression, increased muscle tension, an unexplainable fatigue, and weariness without much exertion, momentary deafness or blindness, or more serious affections of the eyes, and momentary attacks of aphasia. The mental powers may be seriously impaired, the patient finding it difficult to concentrate; memory and judgment may be impaired. These symptoms are characteristic of general arterial or cardiovascular-renal disease. More serious mental depression, approaching melancholia, may signify chronic nephritis.

Acidosis apparently is a frequent cause of dyspnea in nephritis; that it is the only cause is probably not true. Peabody,[93] who studied the relation of acidosis to dyspnea in kidney disease, concludes that a mild acidosis in chronic nephritis is compensated by the increased urinary output of acid. In uremia, acidosis is present, and in terminal uremia it occurs in a marked degree. He did not find that acidosis bore any relation to the nonprotein nitrogen retention or to the phenolsulphonephthalein output. Occasionally acidosis may be present without dyspnea.

Exophthalmos may occur in chronic nephritis, owing perhaps to some toxin acting on the sympathetic nervous system.

Chronic nephritis may be so insidious that the patient may apparently be well for years during the slow development of the disease, until retinitis, cardiac failure, apoplexy or uremia suddenly supervenes. Others, with or without albumin in the urine, may succumb to a sudden fatal attack of angina pectoris. Some patients suffering with chronic nephritis may develop the following symptoms: anemia, loss of weight (unless there is marked edema), low blood pressure, lack of strength, followed by severe headaches, resulting in death from acute uremia; others may have practically no head symptoms, and succumb to dropsy and heart failure.

(To be continued)

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[93] Peabody, F. W.: Studies on Acidosis and Dyspnea in Renal and Cardiac Disease, Arch. Int. Med., August, 1914, p. 236.

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THE LYMPHATICS AND INFECTIONS OF THE URINARY TRACT

The importance of the lymphatic system in relation to various processes of a physiologic as well as a pathologic character has never been fully appreciated. Compared with the innumerable investigations of the blood-vascular channels, the studies of the lymphatics shrink into relative insignificance. Presumably this is due to the greater difficulties which the accurate examination of lymphatic function presents, and perhaps also in part to the more immediate and obvious relations of the blood circulatory system to the activities of living organs and tissues. No one can charge the deficit in our knowledge of the lymphatics to the novelty of the subject, for more than a century has elapsed since the lymph system in its entirety was described by Mascagni.

An instance of the little appreciated significance of the lymphatics is disclosed in the study of ascending infection of the kidney. As a rule, this has been believed to occur either through the lumen of the lower urinary tract and the ureters or by the less probable way of the blood vessels of the ureters. That a migration of micro-organisms upward from these channels and the renal pelvis might occur when the ureter is obstructed so that the urine stagnates cannot be denied. But it is far less probable that a transportation of infectious agencies to the upper urinary tract would take place against any secretory current such as ordinarily is present within the ureter without obstruction.

The existence of lymphatics in close approximation to the urinary structures has long been known.[1] An extensive network of lymphatic vessels and channels exists in the mucosa and submucosa, in the external coats of the bladder and the ureters, and in the entire structure of the kidney. This network in the ureter anastomoses freely with the lymphatics of the bladder at one end, and with the lymph apparatus of the kidney at the other end. At its lower end the system communicates also with the lymphatics of the pelvic structures, in both the male and the female.

These facts at once suggest that infections of the bladder or lower ureter may reach the renal pelvis or the kidney by way of the mural lymphatics as well as by the paths already referred to. An appreciation of the importance of this was clearly recognized by Sweet and Stewart[2] of Philadelphia in their attempts to devise an operation for the successful anastomosis of the ureters with the bowel. Among the recognized difficulties of this procedure of uretero-intestinal implantation that is occasionally rendered desirable by disease of certain regions of the urinary tract are general peritonitis, cicatricial contraction of the opening into the bowel, and ascending infection of the kidneys. The last is of the greatest importance. The Philadelphia surgeons soon suspected that the pathway along which the objectionable infection ascends is in the lymphatic system of the ureter and kidneys, rather than in the blood vessels or the lumen of the ureter. Indeed, they came to the conclusion in 1914, as the result of their experimental studies, that "the anastomosis of the ureters with the bowel would not seem to hold out much promise," for every attempt was blocked by the ease and rapidity with which infection following operative procedure enters the lymphatic system of the ureter.

More recently Eisendrath and Schultz,[3] working in the Nelson Morris Memorial Institute for Medical Research of the Michael Reese Hospital, Chicago, have attempted to ascertain experimentally whether or not the upper urinary tract becomes involved by way of the lymphatics in those cases in which the bladder is the seat of infection. Both clinical and experimental evidence indicated that almost complete obstruction to the free passage of urine is necessary for the ascent of infection by way of the lumen of the urinary tract. Eisendrath and Schultz showed that infection set up by the introduction of bacteria into the bladder without injury or obstruction may pass upward by means of the interstitial lymphatics of the ureter. The degree of involvement depends, as always, on the virulence of the micro-organism and on the susceptibility of the subject. When the kidney tissue is involved in ascending infection brought about experimentally, as described, the path of travel is from the subepithelial tissue of the pelvis to the kidney by way of the intertubular and perivascular lymphatics. From the kidney the perirenal tissues may become involved through the capsular lymphatics which anastomose with those of the cortex.

These observations may explain the genesis of many of the cases of pyelitis and pyelonephritis which complicate a cystitis. Furthermore, the Chicago investigators even believe that the free anastomosis between the lymphatics of the broad ligament and those of the ureter makes it possible for infection to travel directly from the uterus and adnexa to the ureter, and from there to the renal pelvis and kidney. Pyelitis and pyelonephritis, not secondary to cystitis, may therefore also be the result of lymphatic transport of infection from the pelvic organs in the male and female, and from the lower intestinal tract. This, Eisendrath and Schultz tentatively contend, would explain many of the cases of pyelitis of pregnancy and of the puerperium in which there are no traces of cystitis either bacteriologically or in cystoscopic examination. As a practical precaution they emphasize the necessity of a minimum of trauma and a maximum of asepsis in manipulations on the lower urinary tract, especially of the bladder and ureters, since organisms can enter the submucous lymphatics even though the epithelial lining of the bladder and ureter is intact, being carried upward by the lymphatics to the kidney. The new emphasis on the lymphogenous route of infection opens up many speculations that have not received consideration in relation to the urinary tract.

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[1] Sakata (Ueber den Lymphapparat des Harnleiters, Arch. f. Anat., 1903, p. 1) cites the older literature. Kumita: Lymphgefässe der Nieren- und Nebennierenkapsel, ibid., 1909, p. 49; Ueber die Lymphbahnen des Nierenparenchyms, ibid., 1909, p. 94. Bauereisen, A.: Ueber die Lymphgefässe des menschlichen Ureters, Ztschr. f. gynäk. Urol., 1911, **2**, 235.

[2] Sweet, J. E., and Stewart, L. F.: The Ascending Infection of the Kidneys, Surg., Gynec. and Obst., 1914, **18**, 460.

[3] Eisendrath, D. N., and Schultz, O. T.: The Path of Involvement in Ascending Infection of the Urinary Tract, Jour. Med. Research, 1917, **35**, 295. Lymphogenous Ascending Infection of the Urinary Tract, The Journal A. M. A., Feb. 17, 1917, p. 540.

CURRENT VIEWS REGARDING THE TONSILS AND THEIR SURGICAL REMOVAL

Nowadays when any organ of the body attains a previously unsuspected importance so that considerable professional attention is concentrated on it, the circumstances is soon reflected in the interest and expectations of the layman. This is seen, for example, in the popular attitude toward the tonsils and adenoids. Few untutored persons have any conception as to the purpose, not to say the location and anatomic relations, of these lymphoid tissues. The physician may counsel the removal of one of the structures with a clear understanding that he is urging what is, in a sense, an experimental operation which may remove a possible cause of disease in other organs. The layman, encouraged by the apparent innocuousness of the operative procedure, soon begins to look on tonsillectomy as a sort of panacea for the most diverse ills; and somehow this state of mind occasionally seems to weigh in the balance with the professional man himself. That the uses of these lymphoid structures are so little understood is no reason for counting every prominent tonsil or adenoid in persons of school age as a defect. Indeed, there seems to be a wholesome reaction against the operations on tonsils in youth merely because they are prominent and noticeable. At the Johns Hopkins Hospital, for example, the practice is to regard the tonsils and adenoids in children as physiologically important parts of the mechanism which protects the lower air passages from dust and organisms.[1] If there are no mouth-breathing, no evidence of damage to the ears, no chronic enlargement of the glands of the neck, no cystic condition of the adenoids known as Thornwald's disease, and none of the so-called "reflex neuroses," the removal of adenoids regardless of their size or appearance is not recommended.

On the other hand, recent years have witnessed a growing interest in management of diseased tonsils and a widespread appreciation that the germ of tonsillitis may hit in many spots far removed from the local seat of obvious disorder. Tonsillar and nasopharyngeal infections have of late frequently become related, for example, to infectious and rheumatoid arthritis, myositis and acute rheumatic fever, to chorea, to hyperplasia of the cervical glands, and even to nephritis. If these relationships and other indications of the involvement of the tonsils as portals of entry for harmful micro-organisms could be convincingly established, the indications for the removal of the tonsils both as a prophylactic and as a therapeutic measure would become clearer and more rational. It is of unusual value, therefore, to have available a carefully digested study of the relation of tonsillar and nasopharyngeal infections to general systemic disorders, based on 1,000 cases in which operation was performed at the Johns Hopkins Hospital during the past five years.[1] An added importance is lent by the fact that these operations were not done in a haphazard way in hurried dispensary service without experienced anesthetists or assistants; they were performed under the rigorous routine of a surgical ward, and the cases were followed up in order to learn the subsequent history with respect to disorders supposed to be secondary to a chronic focus of infection in the upper air passages.

As a result of the experience now collated, Dr. Crowe and his associates have reached certain tentative conclusions which may be helpful in the contemplation of tonsillectomy. They assert that the operation should never be undertaken during the acute stage of tonsillar inflammation, as a cerebral abscess may result. Diabetes is as much a contraindication for tonsillectomy as it may be for any operation necessitating general anesthesia. Tonsillectomy is rarely of benefit in the chronic deforming types of arthritis, in many cases probably doing more harm than good. The Baltimore surgeons are further convinced that nothing is to be gained from a tonsillectomy during the acute stage of chorea, acute rheumatic fever or endocarditis. Their experience shows that even after the nose and throat have been put in normal condition by operative measures these diseases may recur. In any event the tonsils are not the only portals of entry for the etiologic organism, and their removal in an interval free from symptoms can be justified only on the plea of preventing further cardiac lesions which may result from subsequent acute tonsillitis. The frequency of heart and joint defects in chorea may justify such a prophylactic measure.

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[1] Crowe, S. J.; Watkins, S. S., and Rothholz, Alma S.: Relation of Tonsillar and Nasopharyngeal Infections to General Systemic Disorders, Bull. Johns Hopkins Hosp., 1917, 28, 1.

In infectious arthritis in which the periarticular changes predominate, and perhaps also in myalgia, the promise of helpfulness from tonsillectomy is greater. In the early stages of glomerulonephritis it may also be worthy of some consideration. The tonsils are the most common site of the chronic infections which give rise to a hyperplasia of the deep cervical lymph glands near the angle of the jaw. The enlargement of the glands will rarely subside after treatment of carious teeth and alveolar abscesses alone. It seems advisable, therefore, under such conditions to consider the removal of the tonsils in cases of persistent palpable glands at the angle of the jaw, particularly if the patient has some general systemic disorder. The majority of the enlargements are apparently due to a chronic pyogenic infection which will subside after tonsillectomy. The others are due, as a rule, to persistent tubercle bacilli.

Obviously the advisability of a tonsillectomy in any individual case depends on the malady and the general condition of the patient. As the Baltimore investigators express it, tonsillectomy alone will not cure tuberculous cervical adenitis, arthritis or glomerular nephritis. It is necessary in such cases to apply general hygienic measures as well, so as to increase the patient's resistance. If the tonsils are the primary focus of infection, their removal in suitable instances may materially alter the prognosis by preventing a constant reinfection. Skilful surgery is indispensable. A partial occlusion of the crypts, resulting from an incomplete tonsillectomy, as sometimes happens, may actually aggravate the symptoms of infection by producing a mechanically made focus of trouble. Despite the many uncertainties and unsolved problems which still exist, however, Crowe and his collaborators state that their records "tend to support the evidence of Billings and others in regard to the importance of focal infections in many of the general disorders seen by the internist, the pediatrician, and the general surgeon."

THE RELATION OF ATMOSPHERIC HUMIDITY TO HEALTH

The importance of atmospheric conditions in determining the heat regulation of the human body has been emphasized by the researches of the last ten years. Scientifically conducted experiments have shown that a large part, if not all, of the discomfort and ill effects brought about by so-called bad ventilation is due to interference with the normal activity of the heat-regulating mechanism. Atmospheric temperature is an important factor in causing physiologic disturbance, but atmospheric humidity also has a large share.

Perhaps the most readily explainable set of changes is that produced by high humidity combined with high temperature. The presence of an excess of moisture in the air naturally lessens evaporation and so leads to a greater rush of blood to the skin in the endeavor to maintain the normal heat equilibrium of the body. Other effects follow. The mucous membrane of the respiratory tract is affected, causing marked swelling and redness of the nasal mucosa. A decrease in the ability as well as the inclination for physical labor has been shown by the exact experiments of Lee and Scott. The dilation of the cutaneous blood vessels undoubtedly causes anemia of the brain, but a definite connection with the accuracy and amount of mental work has yet to be demonstrated. The influence of high room humidity on the health of laundry workers and others engaged in various industrial occupations has long been a matter of observation, and is now given especial consideration in all attempts to establish modern ventilation standards. High humidity combined with high temperature is measurably detrimental.

Cold air with a high moisture content has a depressing effect on the human organism, but the factors concerned are not well understood. Some writers have maintained the existence of a direct connection between house dampness and tuberculosis. Other diseases, such as rheumatism, are commonly supposed to be fostered by a cold damp climate. Cellar dwelling is proverbially unwholesome. In individual instances vitality seems to be lowered and predisposition to infection increased by exposure to humid cold. There is no doubt that the human mechanism works at a disadvantage when placed in cold, moisture-laden air, even though the precise nature of the derangement is not known.

Cold dry air is generally considered healthful and stimulating. Metabolic processes are active, and if the body is properly protected against excessive heat loss, sensations of well-being are dominant. There is little exact physiologic evidence bearing on this condition. Miller and Noble[1] have shown that respiratory infection of rabbits with *Bacillus bovisepticus* (snuffles) is favored by chilling the animals after they have been accustomed to heat.

Dryness combined with high temperature is commonly deemed injurious. This is the combination found in desert climates and in many artificially heated dwellings in northern climates in winter. The dry, hot atmosphere induces restlessness and "nervous" feelings, as well as drying and irritation of the skin and mucous membranes. Susceptibility to colds is said to be increased in indoor dwellers in a hot, dry atmosphere, although a similar effect does not seem to be associated with the aridity of desert climates. Unfortunately there is little known about the optimum relation of temperature and humidity. Climatic studies are difficult to evaluate in this connection since other factors, sunlight, wind and dust, may obscure or neutralize the influence of relative humidity per se.

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[1] Miller, J. A., and Noble, W. C.: The Effects of Exposure to Cold Upon Experimental Infection of the Respiratory Tract, Jour. Exper. Med., 1916, **24**, 223.

It is obvious, too, that proper compensation must be made for the evaporation of water from the body in a hot, dry atmosphere and the water intake suitably regulated. There is some uncertainty as to how far the effect of the much berated "life in steam-heated apartments" is due to dryness and how far to other factors, such as the relative winter inertia and lack of exercise, the high room temperature—apart from dryness—that is maintained, and especially the sudden changes from high to low temperature and the reverse—often amounting to from 50 to 60 degrees—that are incurred in passing back and forth between dwelling, office and the wintry streets. In point of fact, we do not know what constitutes the ideal combination of humidity and temperature for maintaining working efficiency. There is no doubt that the introduction of some moisture—say a relative humidity of from 40 to 50 degrees—into the air of the ordinary offices and living rooms in winter gives the atmosphere a balmy quality and conduces to comfort. Comfort alone, however, is not an absolute criterion. It is the opinion of some that the definitely injurious effects of a dry indoor atmosphere in winter have been exaggerated, and that the maintenance of a lower temperature, greater bodily activity and other measures of personal hygiene are of greater importance than the use of "humidifiers." Until the relations of humidity to health and to working efficiency have been determined more exactly than at present, attempts to increase the amount of moisture in the air of dwelling rooms must be more or less tentative and experimental. It is to be hoped that the physiologists will soon be able to provide us with further information about this important matter.

SUGAR TOLERANCE IN PITUITARY DISORDERS

In their experimental studies on the functions of the pituitary gland, Cushing and his collaborators, among others, have presented data to indicate a relation of the hypophysis to sugar tolerance in the organism. Summarized, these indicate that conditions of overactivity or functional hyperplasia of the posterior lobe (pars nervosa et intermedia) foster glycogenolysis and occasion a lowered sugar tolerance if not an actual glycosuria, whereas in conditions of lowered activity or hypoplasia the carbohydrate tolerance becomes distinctly higher than the normal. It has been maintained that the posterior lobe secretion is chiefly concerned in these deviations from the normal in the tolerance for carbohydrates. The experiments seemed to show that when the assimilation for carbohydrates is greatly increased as the outcome of such dyspituitarism, it can be promptly lowered by the coincident intravenous or subcutaneous injection of posterior lobe extract. This extract, furthermore, has a pronounced effect in lowering the sugar tolerance of the normal animal, in which it may even cause glycosuria when given in sufficient dosage.[1]

Such observations might reasonably be expected to have considerable therapeutic significance on the clinical side. Cushing has maintained that on the basis of existent carbohydrate tolerance it should be possible to determine whether a particular case of obvious hypophysial disease is associated with an overactivity or underactivity of the posterior lobe, and thus whether or not it is advisable to administer glandular extract. His clinical series make it apparent that in the early stages of acromegaly the sugar tolerance is apt to be low but that later in the disease there is an acquired overtolerance, and furthermore, that a high assimilation limit may be expected from the outset when the gland is compressed or obstructed by a superimposed tumor which brings about alterations comparable to those of a primary posterior lobe hypoplasia. Hence it may be assumed that in the early stages of acromegaly glandular therapy is contraindicated, whereas later in the disease its use would seem to be highly advisable.

In the experiments on animals, certain associated symptoms are apt to accompany the increased tolerance for carbohydrates. One of these is a tendency toward the acquirement of a generalized adiposity, which suggests the conversion of the stored sugars into fat. Thus, during the tests to establish the carbohydrate tolerance, whether in experimental or clinical cases of posterior lobe deficiency, there often occurs a notable accretion in body weight.

The underlying facts with respect to sugar tolerance in most of these cases, both experimental and clinical, were obtained by the oral administration of sugar for the tests. This procedure has been criticized in the past on the broad principle, pointed out by Blumenthal,[2] that the utilization of sugar by the tissues is expressible only in terms which apply to velocities, for example, as unit weight of sugar, per unit weight of tissue, per unit weight of time. The rate at which sugar is brought to the tissues must therefore be controlled if it is desired to measure its rate of utilization. This necessitates precise knowledge of the rate at which it enters the blood; but when a sugar is given by any method entailing absorption as a preliminary to its entrance into the blood, the latter rate is subject to uncontrollable variations. The most nearly exact method of determining sugar tolerance must therefore consist in direct intravenous injection.

The customary clinical practice consists in administering by mouth 100 gm. or more of glucose dissolved in water or lemonade, and to speak of a low tolerance if glycosuria results from this dose. If 200 gm. can be thus ingested without provoking an output of sugar in the urine, the glucose tolerance is said to be high. Woodyatt, Sansum and Wilder[3] of the Sprague Memorial Institute, Chicago, have contended that there can be no doubt of the correctness of the principle stated by Blumenthal or of the insuperable difficulties which lie in the way of accurate management of the power of the tissues to utilize sugar when methods are used in which it is impossible to control the rate of entry of sugar into the blood. If the sugar is given by mouth, the rate of absorption will depend on variable factors entirely beyond control, and when the subcutaneous or intraperitoneal routes are chosen, the same difficulty is encountered. A tolerance limit obtained by such methods is at best only the resultant of absorption and utilization; and yet, since the appearance of Blumenthal's article, writers other than those quoted above have failed to appreciate the soundness of his views, and continue in their adherence to absorption methods.

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[1] Goetsch, E.; Cushing, H., and Jacobson, C.: Carbohydrate Tolerance and the Posterior Lobe of the Hypophysis Cerebri, Bull. Johns Hopkins Hosp., 1911, **22**, 165.

[2] Blumenthal: Beitr. z. chem. Phys. u. Path., 1905, **6**, 329.

By the use of an ingenious injection device applicable to man,[3] it has become easy to find the rate of injection which just equals the rate of utilization or the tolerance limit. Normal resting adult men and women of average size, weight and nutrition begin to excrete abnormal quantities of glucose in the urine when the injection rate into the vein is above 0.8 gm. and below 0.9 gm. per kilogram of body weight per hour. By means of their injection technic the Chicago investigators have studied the carbohydrate tolerance, in the sense just defined, in cases of hypophysial disease, including acromegaly, gigantism and dyspituitarism, showing the Frölich syndrome. As an outcome, the glucose tolerance of all these cases was found to lie close to the normal limits. Three showed a bare trace of sugar in the urine after the injection of 0.8 gm. per kilogram per hour, and all gave a definite glycosuria after receiving 0.9 gm. per kilogram per hour. These results are in disagreement with those obtained when the oral administration is used, and suggest, as in the case of myxedema, that the increased tolerance of such patients for sugar given by mouth may be due rather to a retarded absorption from the bowel than to any anomaly of the intermediate metabolism, as certain writers have assumed.

The number of cases examined by the newer method is far too small to permit a final adverse critique of the teachings of Cushing and others. It seems important, therefore, that the factor of tolerance, so important for a correct interpretation of the underlying physiologic disturbance and an application of therapeutic measures, should soon be more conclusively settled by renewed investigation in the directions obviously indicated. There is no serious hindrance to the application of the injection technic in human cases.

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[3] Woodyatt, R. T.; Sansum, W. D., and Wilder, R. M.: Prolonged and Accurately Timed Intravenous Injections of Sugar, The Journal A. M. A., Dec. 11, 1915, p. 2067. Wilder, R. M., and Sansum, W. D.: d-Glucose Tolerance in Health and Disease, Arch. Int. Med., February, 1917, p. 311.

A DEBATED FEATURE OF WOUND HEALING

In the technic of cultures of living tissues it has become customary to embed the isolated cells in a medium of blood plasma, as the satisfactory growth of the surviving protoplasmic structures seems to be dependent on some mechanical support, such as is afforded by the fibrin network of a blood clot. Not long ago, Baitsell[1] observed that in such living cultures of tissues there occurs, in many instances, a transformation of the plasma clot in which the living tissue is embedded. This transformation results in a consolidation or fusion of the elements of the fibrin net and a consequent formation from it of a fibrous tissue which is identical in its form and structure and in many of its staining reactions with a regular collagenous connective tissue.

Such a reaction, whereby cells can transform a fibrin clot by direct intercellular action into a permanent fibrous connective tissue, presented an unusual and decidedly novel view of the development of such tissue. It represented the direct transformation of the fibrin clot into a new fibrous tissue without any intracellular action. It suggested that the connective tissue cell is not primarily the active agent, but that some sort of chemical processes outside the cell body, perhaps some reaction like that in blood coagulation, was responsible for the production of connective tissue fibers.

Baitsell[2] has attempted to substantiate his views further by a study of the formation of fibrous tissue in wound healing. Here a fibrin clot is regularly formed as a part of the repair process; and Baitsell has suggested that subsequently the same change goes on as has been described by him in the isolated tissue cultures. He states that the newly formed fibrous tissue which fills the wound space is apparently identical in appearance, structure, function and staining reactions with regularly formed permanent connective tissue. This conclusion is in sharp contrast with the generally prevailing views[3] that the fibrin, in wounds healing by first intention, forms a temporary tissue which holds the wound surfaces in place and stops up the wound, thus preventing infection. Later the fibrin disappears, not by liquefaction, but through an actual consumption by the new tissue cells, which show a positive chemotropism to the fibrin mass and are thus attracted into the fibrin clot in large numbers. The permanent tissues which go to fill the wound space are then formed by these cells through an intracellular action.

Baitsell's interpretation of the change in the fibrin clot as a transformation of fibrin into true fibrous tissue was based on the physical character of the unstained fibers and their reaction to connective tissue stains. Chemical tests were also applied. Lambert,[4] who has reinvestigated the question, has announced his conclusion that the only support for Baitsell's transformation idea consists of results obtained with a modified stain which does not differentiate fibrin and fibrous tissue. Chemical tests and reactions with all three of the differential connective tissue stains in general use show that no such transformation takes place. For the present, therefore, we may remain justified in the belief that the fibrin which early fills wounds forms only a temporary scaffolding which is removed later — not, however, by the postulated direct conversion into permanent collagen fibrils, such as are found in the healed scar. The genesis of these is to be sought in the work of connective tissue cells.

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[1] Baitsell, G. A.: The Origin and Structure of a Fibrous Tissue Which Appears in Living Cultures of Adult Frog Tissues, Jour. Exper. Med., 1915, **21**, 455.

[2] Baitsell, G. A.: The Origin and Structure of a Fibrous Tissue Formed in Wound Healing, Jour. Exper. Med., 1916, **23**, 739.

[3] Marchand, F.: Der Process der Wundheilung, Stuttgart, 1901, pp. 52-55.

Current Comment

PROGRESSIVE LEGISLATION IN ILLINOIS

The passage of Governor Lowden's consolidation bill[5] must be regarded as a most important state legislative achievement. This measure, known popularly as the consolidation bill and legally as the Civil Administrative Code of the State of Illinois, completely reorganizes the state administrative machinery. It abolishes or consolidates about 130 boards, commissions, bureaus and special committees which have been created by legislative enactments during the last fifty years. Like most of our states, Illinois followed no definite program or policy in the development of the administrative branch of her government, and as a result there was a hopeless tangle of boards and commissions, with conflicting and overlapping functions and duties, without any clearly defined responsibility for different functions, and with little, if any, coordination. The bill reorganizing the state executive offices passed the senate unanimously and was adopted by the house with only three dissenting votes, in spite of the fact that it put an end to many offices and sinecures dear to the hearts of politicians. While the entire law is of the greatest importance to the state, physicians are naturally most interested in its public health and medical licensure features. A department of health with a director of public health at the head takes the place of the old board of health. This department not only takes over the powers and duties of the state board of health under previous laws, but also has conferred on it broader functions than the state board possessed. A department on registration and education takes over the examining and licensing of all professions, occupations and trades coming under state control. The principle on which the examining and licensing of physicians is based is essentially that the state regulation of the practice of medicine is an educational and not a sectarian function, and that it therefore is a function of the educational authorities. The responsibility for examining and licensing physicians, as well as all others who desire to treat the sick, by any method, for compensation, as a means of livelihood, is taken off the shoulders of the medical profession and transferred to the people, operating through the educational machinery of the state. This is a most important step in the development of medical legislation, which it is hoped will not only do away with the necessity of specific sectarian legislation, special boards and conflicting standards, but also make unnecessary a large amount of the medicopolitical activity of the past. The provisions for the appointment of educational examiners under the direction of the department of education, for the preparation of questions on practice peculiar to any school, does away with the necessity of special examining boards, and will doubtless lead to recognition of the principle that all persons desiring the same rights and privileges must conform to the same educational standard. Governor Lowden has not only given the state of Illinois an opportunity for developing a modern health machinery; he has also relieved the physicians of the state of the self-imposed and thankless task, each year, of maintaining the standards of medical education. This duty now devolves on the people and on the educational authorities of the state. Governor Lowden and the state of Illinois are to be equally congratulated, the governor on the success of his efforts and the state on the securing of such progressive and constructive legislation.

THE AMMONIA OF THE GASTRIC JUICE

The statement that the gastric juice may contain ammonium salts is by no means of recent origin. It can be found in the classic monograph on the digestive secretions published by Bidder and Schmidt[1] in 1852. Subsequent observers have as a rule admitted the occurrence of ammonia in the secretion of the stomach, though most of them have not found it present invariably or under uniform conditions. The theories as to its origin are manifold; they include suggestions of the production of the ammonia by enzymatic deamination reactions taking place in the gastric mucosa, and likewise of the origin of this nitrogenous compound in the reactions leading to the elaboration of the acid gastric juice. As ammonia is a usual component of the urine, it may be looked on, therefore, as a form of excretory nitrogenous matter; and since it has become unquestioned that the gastro-intestinal tract may serve, like the kidneys, as a channel for the excretion of certain types of compounds, it is not far-fetched to inquire whether or not the ammonia of the gastric juice may accordingly represent an attempt at an excretion of ammonia by way of the alimentary canal. The dependable facts in regard to the subject have been elaborated by the recent studies of Huber[2] at the Hull Physiological Laboratory of the University of Chicago. According to these, ammonia is normally found in small amounts in the gastric juice of man and dog. The amount of ammonia in the pure gastric juice of man varies markedly in different individuals. It is increased by high protein diet, and by the addition of ammonium salts to the food. The fundal mucosa contains the most ammonia, the pyloric mucosa is next in order, while the mucosa of the cardiac end of the stomach contains the least ammonia. The duodenal mucosa contains less ammonia than the fundal mucosa. In certain pathologic conditions (especially gastric ulcer and cancer) the amount of ammonia in the gastric juice is definitely increased, but this increase may not be greater than that found persistently in certain normal individuals. These observations seem to indicate that the origin of the ammonia of the gastric juice is a complex one. This may be the case. When the concentration of ammonia in the blood is high it is evidently secreted to some extent through the stomach wall. However, the report of the isolation of a fairly constant bacterial flora from the pure gastric juice of man inevitably suggests the conclusion that enzymatic or bacterial action on the stomach mucosa or on the gastric juice may be responsible for some of the ammonia found in the gastric juice in some cases, even though the constancy of the ammonia content of the fresh juice of normal man and dog speaks against this as the sole or principal origin.

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[4] Lambert, R. A.: On the Question of the Transformation of Fibrin into Fibrous Tissue in Tissue Culture Preparations, Proc. Soc. Exper. Biol. and Med., 1916, **14**, 5.

[5] The Illinois Consolidation Bill Becomes a Law, Social Medicine, Medical Economics and Miscellany, The Journal A. M. A., this issue, p. 869.

[1] Bidder and Schmidt: Die Verdauungssäfte und der Stoffwechsel, Mittau and Leipzig, 1852.

[2] Huber, H. L.: Contributions to the Physiology of the Stomach, XL, the Ammonia of the Gastric Juice, Am. Jour. Physiol., 1917, **42**, 404.

GAMBLING ON HUMAN FEAR

"At the Sign of the Dollar" is the title of an instructive and readable article on the psychology of advertising appearing in *Harper's Magazine* for March. It is written by L. F. Deland who, as he says, has devoted twenty years of his life trying to solve advertising problems. Obviously the author knows a good deal about advertising and knows it from the "inside." Of course he believes in advertising; in fact, he admits that he glories in it. In view of this it is interesting to see Mr. Deland's attitude toward the black sheep of the advertising world:

> "The patent-medicine man doesn't merely sell medicine; he gambles on the hopes and fears of mankind. Take this away and leave him only his medicine, and his profits would dwindle into insignificance."

This says in another way what The Journal has said before: There may be an economic, if not a moral, excuse for hypnotizing the public, through skilful advertising, into believing it wants more pianos, more hats, or more automobiles than it can really afford or has any legitimate use for. There is no excuse, either in economics or morality, for advertising which makes well men think they are sick and sick men think they are *very* sick, simply for the purpose of increasing the sales of drugs. This is not merely an economic fallacy, it is inhumanity.

Workman's Compensation Board.—According to Harry A. Mackay, chairman of the Pennsylvania Workman's Compensation Board, nearly four fifths of the men injured in the state industrial establishments during the last year have been cured within a period of two weeks after the accident. During the year ending Jan. 15, 1917, 2,587 men were killed in the course of their employment. Of the 255,722 persons injured, nearly 200,000 men have been so successfully treated by free medication that their injuries have not become compensatable.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

DISTRICT OF COLUMBIA

Medical Education to Cost More.—To meet the increased cost of supplies and to permit an enlargement of educational facilities, tuition in the medical school of George Washington University has been increased from $150 to $175 a year, and in the dental school from $125 to $150, to take effect next fall.

Forgery to Obtain Narcotics.—A young married woman in Washington pleaded guilty, March 10, to an indictment for forgery in signing the name of a physician to prescriptions for a narcotic drug. The case was referred to the probation officer for investigation. It is alleged that for more than a year she kept her husband in ignorance of her drug addiction.

Revocation of License Sustained.—The Court of Appeals of the District has sustained the board of medical supervisors in its revocation of the license of Dr. Thomas J. Kemp to practice medicine in the District. The revocation was based on Dr. Kemp's conviction, March 24, 1913, of violating the postal laws by sending through the mails a letter concerning a proposed criminal operation.

ILLINOIS

Communicable Diseases.—Typhoid is reported to be epidemic in North Chicago, where twenty cases have been reported.

Dispensary Opened.—St. Mary's Hospital, East St. Louis, has opened a dispensary for the care of diseases of the eye, ear, nose and throat.

New Hospital for Rock Island.—A hospital to cost about $100,000 is to be built by St. Anthony's Hospital, Rock Island, on the grounds adjoining the present infirmary. The new building will accommodate 150 patients, will be of fireproof construction, of brick with stone trimmings, and will be in conformity with the old building.

Health Welfare Meeting.—A meeting of the Illinois Public Health and Welfare Association will be held in Springfield, April 12 and 13. The topics for discussion will include: infantile paralysis; state control of epidemics; registration and vital statistics; sanitary surveys; sanitary and welfare service; rural sanitation and hygiene; popularizing public health through the newspapers; city waste collection and disposal; water works and water purification; tuberculosis control; charities and health; laboratories as an adjunct in the control of communicable diseases; legal aspects of public health administration, and housing problems.

Chicago

Tuberculosis Instruction.—Arrangements have been completed between Northwestern University Medical School and the Chicago Fresh Air Hospital for a four weeks' course on tuberculosis for the senior class in the medical school. Dr. Ethan A. Gray, medical superintendent of the hospital, has been appointed assistant professor in the university.

Changes in Lecture Course.—The Chicago Tuberculosis Institute announces the following lectures for March:

March 22: "How the Visiting Nurse can Aid in the Discovery of Tuberculosis," and "Home Instruction by the Nurse," Miss Edna N. Foley.

March 29: "Studies in Tuberculosis Control," Dr. Clarence L. Wheaton. "Phthisophobia, an Earnest Plea for the Tuberculous Patient," Dr. John Ritter.

Surgical Operations in the Field.—The "close-up" views of surgical operations and hospital work in the field hospitals in and around Saloniki were given by Surg.-Col. Alexander Primrose, professor of surgery at the University of Toronto, at the eighth annual banquet of the University of Toronto Alumni Association of Chicago, March 2. Dr. Hugh A. Cuthbertson was elected secretary-treasurer of the association.

Personal.—Dr. John H. Long, dean of the school of pharmacy and professor of chemistry of Northwestern University, has been elected president of the Chicago Institute of Medicine.——Dr. Herman Berry celebrated his one hundredth birthday anniversary, March 10.——Dr. J. Gordon Wilson has returned after several months in military hospitals in England and France.——Dr. Frank Billings has been named as head of the advisory committee of the Military Training Camps Association.——Drs. Harry M. Richter and Jacob R. Buchbinder have received Red Cross medals of the third class from the German government in recognition of their services at the Base Hospital, Naumberg.

IOWA

New Hospital Building.—The Atlantic Hospital moved from the old building into its new quarters, March 3, and the patients were transferred, March 5.

Psychopathic Hospital Bill.—A bill has been introduced in the house by Representative Klinker appropriating $150,000 for the establishment of a state psychopathic hospital, at Iowa City.

Typhus in Des Moines.—The Mexican laborer who was found in a bunk car in Des Moines, suffering from typhus fever, died, February 23. The bunk cars have been thoroughly fumigated.

State Medical Library Not Approved.—The Senate Appropriations Committee of the Thirty-Seventh Assembly voted that it report the indefinite postponement of the bill providing for a medical department for the state library.

MISSOURI

Personal.—Dr. John M. Bell, St. Joseph, captain in the Canadian Army Medical Corps, who has been for eighteen months overseas, has returned to St. Joseph on leave of absence.

Hospital Crowded.—On account of the crowded condition of the institution, which now has 1,800 patients, the hospital board of State Hospital Number 2, St. Joseph, has asked the state for a new building.

Health League Organized.—The Health Club of Kansas City, at a meeting held February 19, voted to change the name of the organization to the Health League of Greater Kansas City. A new constitution and by-laws were adopted and new officers were elected.

New Hospital Opened.—The new building of the St. Joseph Hospital, Kansas City, has been opened to receive patients. The formal dedication will occur March 24. The new building cost $750,000, is seven stories in height, of reenforced concrete, brick and terra cotta, and will accommodate 250 patients.

Honor Dr. Hall.—The dinner given in honor of Dr. C. Lester Hall, to commemorate the fiftieth anniversary of his entrance into practice, was given at the Hotel Baltimore, Kansas City, March 10, and was attended by nearly 200. A gold watch was presented to Dr. Hall, and addresses were made by Drs. Charles A. L. Reed, Cincinnati; Van Buren Knott, Sioux City, Iowa; J. Franklin Welch, Salisbury, Mo.; Boswell P. Anderson, Colorado Springs, Colo., and John H. Sevier, Brownsville, Tenn.

St. Louis

Reserve Corps Smoker.—The St. Louis Society of the Medical Reserve Corps, United States Army, gave a smoker at the St. Louis Club, February 22, at which addresses were made by Col. Thomas U. Raymond, M. C., U. S. Army, and Major Henry F. Pipes, M. C., U. S. Army.

Personal.—Dr. Samuel B. Scholz, Jr., has been elected medical director of the Missouri State Life Insurance Company. ——Dr. G. William Poehl, recently appointed staff physician of the American Red Cross, for service in Vienna, has returned from Washington, his plans having been changed by international complications.

Public Health Association.—The various organizations interested in public health work are organizing the St. Louis Public Health Association, with the primary object of educating the people along the line of prevention of disease. The work was commenced by the St. Louis Tuberculosis Society, which has already mapped out a program and propaganda for the next ten years.

NEW YORK

Hearing on Health Insurance.—The Mills bill providing for compulsory health insurance in this state was the subject of a hearing before the Senate Judiciary Committee, March 7. The prevailing opinion is that the bill will be killed in committee.

Women Physicians to Meet.—The eleventh meeting of the Women's Medical Society of New York State will be held at the Hotel Utica, Utica, April 23. Scientific programs have been arranged for the morning and afternoon sessions, and the annual banquet will be held in the evening.

Health Officers Conference.—Health officers of all third-class cities of western New York will meet at Albany to discuss questions affecting the management of sanitary matters, budgets, communicable diseases, milk inspection and other subjects. The conference will be under the charge of Dr. Fred M. Meader, head of the division of communicable diseases.

New York City

Clinician Selected for New Prison.—Dr. Bernard Glueck, Washington, D. C., psychiatrist, who has been making a study of convicts in Sing Sing Prison, has been selected to conduct a clinic at the New Westchester County Penitentiary, East View.

Thayer in New York.—Dr. William S. Thayer of Johns Hopkins Hospital, Baltimore, delivered an address before the New York Academy of Medicine, March 15, on "The Significance of Some Common Deviations from the Ordinary in Cardiac Function."

Violator of Practice Law Sent to Workhouse.—Louis H. Warner, who has been conducting a "Serological Institute for Medical Research" in this city, is said to have been found guilty in the Court of Special Sessions of practicing medicine without a license. He has been sent to the workhouse for two months.

American Posture League.—A meeting of the American Posture League was held, March 10, at which the constructive work given to the public schools and industrial hygiene developed by the league were presented in a series of illustrated lectures. Miss Jessie H. Bancroft, president and founder of the league, presided.

High Death Rate from Pneumonia.—Since the middle of January there have been 622 more deaths from pneumonia in New York City than during the same period of last year. The number of deaths reported from influenza is relatively low, less than during the corresponding period of last year. The death rate of the city as a whole shows a decline for the first two months of 1917 as compared with that for the corresponding period of 1916, the rates being 16.83 as against 15.87.

Base Hospitals and Physicians Prepared.—Six base hospital units have been organized in New York City. These units are: Bellevue Hospital, Dr. George David Stewart, chief surgeon; Presbyterian Hospital, Dr. George E. Brewer, chief surgeon; Mount Sinai Hospital, Dr. Nathan E. Brill, chief surgeon; Post-Graduate Hospital, Dr. Samuel Lloyd, chief surgeon; German Hospital, Dr. Frederick Kammerer, chief surgeon, and the New York Hospital, Dr. Charles L. Gibson, chief surgeon.——At a meeting of the National Defense Committee, held at the Hotel Vanderbilt, March 9, at which Dr. Frank F. Simpson, Pittsburgh, presided, an auxiliary committee was appointed, with Dr. Charles H. Peck as chairman and Dr. Frederick E. Sondern as secretary.

OHIO

Senior Student Dies.—Henry F. Walters, a senior student at the Ohio State University, Columbus, and who had passed his examinations for internship at the Protestant Hospital, died in that institution, February 23, from Ludvig's angina.

Personal.—Dr. O. van der Stricht, professor of histology and embryology in the University of Ghent, Belgium, has been reappointed research fellow in cytology in the School of Medicine of Western Reserve University, Cleveland.——Dr. John J. R. McCloud, Massillon, professor of physiology in Western Reserve University, has been in Montreal on leave of absence, acting as professor of physiology in McGill University.——Dr. Howard T. Karsner, professor of pathology, has been elected secretary of the School of Medicine of Western Reserve University, Cleveland.——Dr. Russell J. Collins, demonstrator of pharmacology in Western Reserve University, Cleveland, has resigned because of ill health.——Dr. Stanley P. Reimann has been appointed Hanna Research Fellow in Pathology in Western Reserve University, Cleveland.——Dr. Samuel E. Ziegler, Cleveland, was operated on for hernia at the Grand Hospital, Columbus, February 27.——Dr. Thomas O. Whitacre, Bowling Green, while getting out of his automobile, was assaulted by John Gokey, who was arrested and sentenced to thirty days in the Toledo workhouse. ——Dr. Arl A. Baber has been reelected superintendent of the Dayton State Hospital.——The office of Dr. Herbert E. Noble, Toledo, was damaged by fire to the extent of $600, February 15.

Cincinnati

Personal.—Dr. Robert D. Maddox, Jr., has been appointed chairman of a board to examine officers for the Medical Officers Reserve Corps, U. S. Army, and has associated with him Drs. Goodrich B. Rhodes and Elmer A. Klein, Norwood. ——Dr. Arthur Pfeiffer sustained severe injuries in a collision between automobiles at Newport, recently.

Hospital Staff Appointments.—At the annual meeting of the board of managers of the Episcopal Hospital for Children the following appointments were made on the medical staff: Dr. George M. Allen, consulting physician; Dr. Frank H. Lamb, senior physician; Dr. James M. Bentley, junior physician; Drs. Clarence J. Broeman and James W. Miller, attending dermatologists; Dr. Robert Stevenson, assistant laryngologist, and Dr. Martin H. Urner, junior ophthalmologist.

OKLAHOMA

Personal.—Dr. Matthew Karasek, Drumright, suffered painful injuries recently by the overturning of his automobile. ——Dr. Harvey E. Rappolee, Caddo, was thrown from his buggy in a runaway recently, fracturing his arm.

New Medical License Bill.—The passage of a new medical license bill by the Oklahoma legislature recently was due in great measure to the efforts of the Oklahoma State Medical Association. The bill provides that all persons offering to cure diseases or holding themselves up to the public as doctors or physicians must pass the examination of the State Board of Medical Examiners. The passage of this bill will, it is believed, eliminate chiropractors from Oklahoma.

Convictions.—It is reported that Dr. William S. Clarke, Oklahoma City, was recently convicted in the United States Court, at Guthrie, February 8, of violation of the Harrison Narcotic Law and was given a jail sentence of sixty days.—— William Carver of the Carver Chiropractic College, who inserted an advertisement in an Oklahoma city paper recently, headed, 'Was the Senate Bought," is said to have been found guilty of contempt, March 3, was fined $500 and sentenced to imprisonment for ten days in the county jail.

OREGON

Legislative Appropriations.—The legislature appropriated $25,000 for the state board of health to carry on its work for the next biennium. This is $5,000 less than the last appropriation.——The Oregon Social Hygiene Society was given an appropriation of $20,000, and $100,000 was appropriated for the University of Oregon, Medical School.

Health Service for University Students.—The health service of the Oregon Agricultural College, Corvallis, which was organized last fall, has completed its first semester of work and has moved into a separate building. During the first semester, 3,239 calls were made by the college physician, 830 physical examinations were made and twenty-nine operations were performed. This service is maintained by the college and is available to any student.

Sterilization Measure Passed.—The house of representatives, by a vote of 37 to 18, passed the bill providing for sterilization of the feebleminded, insane, epileptics, habitual criminals, degenerates and perverts. The house bill provides for a board of eugenics composed of the state board of health and the superintendents of the Oregon and East Oregon State hospitals, the feebleminded institute and the penitentiary. This board will have the power to hold investigations and to order sterilization. The senate bill leaves the question to the board of alienists in the county court, and the patient may take an appeal to the circuit court.

Osteopathic Bill Passed.—House Bill No. 311, which entitles osteopaths to practice minor surgery, administer anesthetics and dispense narcotics, was passed by the house and senate, and received the endorsement of the governor. While the profession of Oregon endeavored to defeat the bill, the governor, in the following telegram to the secretary of the state board of health, apparently endeavors to excuse himself for signing it:

> Salem, Ore., Feb. 21, 1917.
>
> Replying to your telegram and others received from Portland physicians, I regret to state that house bill, Number 311, has been signed as no protest whatever was made.
>
> James Withycombe, Governor.

State Board Items.—Drs. Charles T. Bacon, LaGrande, Harry E. Clay, Salem, and Robert J. Marsh, Portland, have been appointed members of the state board of health, succeeding Drs. Willis B. Morse, Salem, Edward A. Pierce, Portland, and Elijah B. Pickel, Medford, who have been members of the board since its inauguration, thirteen years ago. At the reorganization meeting of the board, February 21, Dr. Alvane C. Seely, Roseburg, was elected president; Dr. Marius B. Marcellus, Portland, vice president, and Dr. David N. Roberg was continued as secretary.——Dr. Frank W. Wood, Portland, has succeeded Dr. Luther H. Hamilton, Portland, as a member of the State Board of Medical Examiners.

Personal.—Dr. Walter Anderson has resigned as house surgeon of St. Vincent's Hospital, Portland, and has started for France, where he will take charge of the Red Cross Hospital, established by subscription from Oregon.——Dr. J. Christopher O'Day has resigned the chair of anatomy at the Northern Pacific College and his affiliations with the Medical Department of the University of Oregon. Dr. O'Day and family sailed from Vancouver, B. C., for Honolulu, March 14. A banquet was tendered to Dr. O'Day, March 7, by the City and County Medical Society, at which Dr. Alpha E. Rockey officiated as toastmaster.——Dr. James L. Manion, Portland, has been ordered to report to the United States Naval Hospital, Washington, D. C., for duty.——Dr. Edward P. Geary, former county physician of Multnomah County, was the guest of honor at a banquet, February 20, given by his former associates on the staff of the Multnomah County Hospital. ——Dr. Earl M. Rice, Portland, was surgeon of the British liner *Mantola,* which was sunk by a torpedo, February 10. He and all the passengers were saved.

PENNSYLVANIA

Personal.—Lieuts. Henry B. Davis, Lancaster; J. Stratton Carpenter, Jr., Pottsville, and George R. Winters, Pittsburgh, have resigned from the Medical Corps, N. G. Pa.——The commission of Major George F. Potteiger, M. C., N. G. Pa., Hamburg, expired, February 4.——Lieut. Charles Francis Linn, M. C., Monongahela, has been transferred from the supernumerary list and assigned to duty with the Tenth Infantry.——Dr. Luba Rolin Goldsmith, Pittsburgh, has been elected secretary of the Milk Commission of the Allegheny County Medical Society.

Philadelphia

Visitors at College of Physicians.—At the meeting of the College of Physicians of Philadelphia, March 7, Dr. Rufus I. Cole of the Rockefeller Institute read a paper on "The Serum Treatment of Pneumonia." illustrated by lantern slides, and Dr. Samuel Robinson, Rochester, Minn., delivered an illustrated address on "The Surgical Aspects of Pneumonia and the Intrathoracic Complications of that Disease."

Medical Auxiliary for Defense Work.—The Philadelphia Medical Auxiliary of the Council of National Defense was organized at the Bellevue-Stratford, March 6. The committee is as follows: Dr. John H. Jopson, chairman; Dr. Charles A. E. Codman, secretary, and Drs. Richard H. Harte, Edward Martin, Robert G. LeConte, John M. Baldy, John B. McAlister, Harrisburg; George E. deSchweinitz, Ross V. Patterson, Frank C. Hammond, John H. Gibbon, Elijah H. Siter, Edward Kirk, Cyrus L. Stevens, Athens, William Pepper, Seneca Egbert and Lieut.-Col. Henry F. Page, M. C., U. S. Army. To these will be added an officer of the Medical Department of the National Guard of Pennsylvania.

Personal.—Dr. Harvey M. Righter has been commissioned lieutenant and passed assistant surgeon in the State Naval Militia.——Dr. William M. Sylvis has been commissioned first lieutenant, M. C., N. G. Pa.——The resignations of Lieuts. William W. Van Dolsen and Charles B. Kendall, M. C., have been accepted.——Major Frederick O. Waage, M. C., has been relieved from duty with the First Infantry and assigned to duty at headquarters division.——Dr. Hobart A. Hare, who has been seriously ill, has recovered and resumed his college work and practice.——Dr. Paul J. Pontius has been appointed visiting ophthalmologist to the Philadelphia General Hospital. ——Dr. Charles P. Emerson, Indianapolis, spoke on "Social Service from the Medical Point of View" at the County Medical Society, March 14.——Dr. Simon Wendkos has been appointed medical director of the Lebanon Hospital.——Dr. Frederick P. Henry has resigned as professor of the practice of medicine in the Woman's Medical College of Pennsylvania, Philadelphia, to take effect at the close of the present term.

CANADA

Ontario Board of Health.—The Department of Militia and Defense, Ottawa, has advised the Ontario Board of Health that for the twelve months ending Dec. 31, 1916, only 167 cases of typhoid fever were reported in the Canadian expeditionary force in Canada. Typhoid vaccine amounting to about 600,000 doses for about 450,000 men has been supplied by the Ontario Board of Health.

Hospital Notes.—The hospitals of the Province of Ontario have asked the Ontario government that the grant of 20 cents a day be raised to 40 cents, and that hospitals be allowed to collect from municipalities $1.50 a day for indigent patients instead of $1, as at present.——The chancellor of Queen's University, Kingston, Ont., Dr. John Douglas, New York, has agreed to give $100,000 toward a fund to develop Kingston General Hospital into a capacious modern institution, with a view to improving its teaching facilities in connection with the medical department of Queen's University.

Personal.—Word comes from London, England, that Col. Lorne Drum, Ottawa, has been appointed assistant medical director of the fifth division; Major C. Charles A. Young, deputy director; Col. James W. Bridges, assistant medical director at Bramshott, and Capt. Alexander E. Garrow, acting staff captain, fifteenth brigade.——Col. Herbert A. Bruce, Toronto, has returned to France as an official of the Imperial War Office.——Col. Adam T. Shillington, Ottawa, has become commandant at the Kitchener War Hospital, Brighton, England.——Dr. Newton Albert Powell, Toronto, has been elected president of the Aesculapian Club; Dr. Harry B. Anderson, vice president; Dr. George A. Elliott, secretary; Dr. Edmund E. King, treasurer, and Drs. Frederick A. Cleland, Richard A. Reeve, George A. Bingham and Lieut.-Col. Irving H. Cameron, all of Toronto, executive committee. The latter will soon return to England for hospital duty.

Military Affairs.—Medical officers of the Canadian overseas forces in the future will be appointed with lieutenant's rank, and will draw the pay allowance and pension of a captain. Candidates having graduated one year or over will be appointed to the rank of captain. Lieutenants will be promoted after one year's service.——Every man of the forty members who have enlisted for overseas service of the University of Toronto Masonic Lodge, which has existed only since 1910, is an officer. The list includes three colonels, three lieutenant-colonels, six majors, fourteen captains and fourteen lieutenants. Among the number are several prominent practitioners of medicine in Toronto.——The militia authorities of Ottawa are in communication with the Canadian High Commissioner, Sir George Perley, in regard to securing a competent medical officer to become director of invalids from overseas. The names of Col. John T. Fotheringham, C. M. G., Toronto; Col. Murray Maclaren, C. M. G., St. John, N. B., and a Colonel Ford are mentioned for this position.——The Toronto School Medical Inspection bill before the Ontario legislature has been given its second reading, and will now be sent to the municipal committee for consideration. The bill provides for the transfer of medical inspection from the board of education to the city department of public health.

GENERAL

Personal.—Dr. and Mrs. Philip Ford Prioleau, U. S. Navy, sailed for the Asiatic station from San Francisco on the transport *Sheridan*, March 5.

Grayson Again Nominated as Medical Director.—The president has again sent to the Senate the nomination of Dr. Cary T. Grayson as medical director in the navy. Dr. Grayson's first nomination, to the Congress that has just adjourned, failed because a number of senators believed that his proposed promotion over so many seniors in rank was not in the interest of the naval service.

Dinner to Major Gilchrist.—Major Harry L. Gilchrist, M. C., U. S. Army, chief surgeon of the Eleventh Division, was given a farewell banquet by the officers of the division at the Hotel Sheldon, El Paso, March 5. Major Harry H. Snively, Columbus, commanding Ohio Field Hospital, No. 2, was toastmaster. A pair of field glasses was presented to Major Gilchrist on behalf of the officers by Lieut.-Col. Alexander N. Stark, M. C., U. S. Army.

More Medical Aid Needed.—Dr. Richard H. Harte, president of the Pennsylvania Chapter of the American Red Cross, spoke before the Pennsylvania Women's Division for National Preparedness of the Red Cross on "The Woful Unpreparedness of the Country." He states that England has already 30,000 beds in Boulogne and more than 200,000 beds in England, and that this country at present has twenty base hospitals of 500 beds each, or 10,000 beds.

American Life Convention Meeting.—The Medical Section of the American Life Convention held its annual meeting at Excelsior Springs, Mo., March 7 to 9, under the chairmanship of Dr. Frank P. Foxworthy, Indianapolis. The following officers were elected: chairman, Dr. Joseph P. Turner, Greensboro, N. C.; vice chairman, Dr. Green V. Wollen, Indianapolis; secretary, Dr. Frank L. B. Jenney, Chicago (reelected), and member of the board of managers, Dr. John H. Florence, Houston, Texas. Richmond, Va., was selected as the next place of meeting.

FOREIGN

The Fight Against Tuberculosis in France.—France is organizing to combat the spread of tuberculosis after the war among men weakened by hardships of the campaign. About 100,000 men in the army have already been attacked by tuberculosis, and of these about 80,000 have already been sent to their homes. A great chain of national sanatoriums is proposed to handle this problem. In 1915 a yearly credit was opened by the government which assures tuberculous soldiers of a certain amount of assistance during the war. There is also an arrangement which allows tuberculous soldiers three months in a civil sanatorium at the expense of the state.

Epidemic Diseases.—An outbreak of smallpox is reported in Berlin and its immediate vicinity, and compulsory vaccination has been ordered. Eighty cases of smallpox have already been reported, 90 per cent. of which are among persons over 45 years of age. The disease is believed to have been transmitted from Volhynia.——Smallpox is said to be raging in Canton, China, where forty-eight vaccination stations have been established, and compulsory vaccination is being enforced.——An epidemic of typhoid fever is said to be prevalent in Jerusalem, where only two physicians, one a woman, now remain to care for the 80,000 inhabitants of the city.

PARIS LETTER

Paris, Feb. 15, 1917.

The War

THE CAMPAIGN AGAINST ALCOHOL

In spite of the prohibitive measures taken since the beginning of the war, alcohol continues to make its ravages. The authorities are now considering the absolute prohibition of the use of alcohol, as was done in Russia. Naturally, such action has aroused much feeling among the retailers of alcoholics. The committee of commerce, industry and agriculture, at one of its recent meetings, authorized an investigation of this matter. Members of the section on beverages, who were present at the meeting, complained against what they were pleased to term "the persecution of business." Besides the prohibition of the importation of alcohol and the levying of an extra tax on it, dealers are to be restricted to a stock of 100 hectoliters.

Possibly the government will issue an edict absolutely prohibiting the use of these beverages. The liquor dealers regard this as a disaster, not only for commerce, but also for the country. There are 30,000 wholesale liquor dealers in France, and 500,000 retailers. These men, together with their employees, a not inconsiderable number, would be practically without employment, as they would be forced to close their doors. On the other hand, the retailers claim that the use of alcohol for drinking purposes has diminished 50 per cent. since the beginning of the war. The consumption has fallen from 1,800,000 to 900,000 hectoliters. A strong protest was registered at this meeting against all measures tending to suppress the consumption of alcohol, on the ground that the laws now in existence, if properly administered, were sufficient to control the situation. The authorities, however, are of a different opinion. The Chamber of Deputies has enacted a law to repress intoxication, and to police all places in which liquors are sold. It is interesting that at the meeting referred to it was voted that alcoholism is a national peril, but that it also was one of the nation's most valuable assets. It was urged that the production of alcohol for commercial use be encouraged, but that the drinking of alcohol be restricted. Unfortunately, the dealers in alcoholics are not all in favor of this restriction. An anonymous communication presenting this point of view is being distributed widely. It appeals to the people for support to combat what is regarded as a catastrophe for France. It appeals particularly to the temperance advocates, calling their attention to the fact that the prohibition of the use of alcohol would include cognac, rum, curaçao, black-currant ratafia, Madeira wines, quinin and gentian tonics, etc., thus bringing inevitable ruin on France and her colonies, leading to popular uprisings, and last, but not least, the triumph of German beer.

THE NEW BREAD

M. Herriot, head of the commissary department, presented to the Chamber of Deputies rules for regulating the manufacture of a new bread. According to these rules bread may be made with white flour (15 per cent.) mixed with rye, maize, buckweat and beans. Millers must not sell any flour other than this mixture, nor will the bakers be permitted to sell any other bread than this.

PHYSIOLOGIC NUTRITION

M. Gley, a professor in the College of France, recently discussed the elements of nutrition, especially as they apply to the young and to soldiers. Meat, in moderate proportions, he regards as indispensable to the human organism, because it contains the needed albumin; but unless meat contains tryptophan and lysin, it is worthless as a food. Dried fruits, being rich in cellulose, may be substituted for green vegetables, and therefore would be suitable for inclusion in the rations of the soldiers.

THE SUGAR RATION AND THE USE OF SUBSTITUTES

All the departments of France, except Corsica, have accepted the sugar card, to become effective February 15. On or before March 1, the general adoption of this card becomes obligatory. Prefects will be allowed an additional quantity of sugar to be used for the sick, young children and French prisoners of war in Germany. Saccharin must be used by various industries. The minister of foods, M. Herriot, has proposed the authorization of the use of saccharin or any other artificial sweeting substance in the preparation or manufacture of foods and beverages.

The Moving Picture in the Campaign Against the Fly

The French Sanitary League proposes to make use of the moving picture in the campaign against the fly. Special films have been prepared for that purpose. They will be shown for eight days in each of the 4,000 moving picture theaters of France. These films shows the birth and growth of the fly, its habits and haunts, its familiarity with man, and how diseases are conveyed by it. The mosquito also comes in for its share of attention. The mosquito film will be shown principally in southern France. It covers the same ground as do the fly films. The people are also instructed in the methods of prevention of mosquito propagation.

LONDON LETTER

London, Feb. 19, 1917.

The Health of the Navy

At a meeting of the Medical Society of London, Surg.-Gen. H. D. Rolleston described the organization, equipment and methods in operation to deal with the naval wounded and the sick. In modern naval engagements the hospital ships, for obvious reasons, are unable to accompany the fleet and take charge of the wounded. To meet the need it had been suggested that fast 500-ton boats, registered under the Geneva Convention, and having appliances for rapidly rescuing survivors from the sea, should be employed. This, however, has not yet been done. The general health of the grand fleet has been extremely good. In 1913 the average daily percentage of sick in the whole fleet was 2.37, and in 1914, 2.03. The daily average has always been under 1 per cent. Except in the Mediterranean fleet there have been few cases of typhoid fever; in that fleet, however, during the latter part of 1915, the crews of most of the ships were attacked by gastro-enteritis, the infection having been spread by flies, and by men returning from the beach to their ships. The good bill of health shown by the fleet as a whole is a tribute to preventive medicine. Factors in this result are the comparative isolation of the fleets, especially of the grand fleet, rendering the chances of venereal infection and alcoholic excess practically nonexistent, especially in view of the careful quarantine arrangements, supplemented as these measures are by lectures on hygiene to the men, and the provision of healthy forms of recreation. Compared with land battles, a striking number of the men hit in naval engagements are killed outright. This was true also in the Russo-Japanese War. The wounds, however, owing to the absence of soil contamination, are much cleaner. Burns form at least one third of the casualties, and may be due to the ignition of our own cordite, to burning furniture, or to the momentary flash of high explosive shells in a confined space. Shock is found to be excessive in proportion to the amount of tissue damage. For this reason immediate operation is much less frequent than after land battles. In the gas poisoning resulting from explosives, the most hopeful measures are prophylactic; treatment of the established condition is not very hopeful. There was a striking freedom from cholera among the men of the Royal Naval Division, though they were operating in a locality in which the Turks suffered considerably from it. This immunity is attributable to the anticholera inoculations which had been carried out. Among airmen, leakage of the gasoline spray has caused some to become dizzy, while headache and drowsiness may be produced by exhaust gases from the engine. One airman, who had been exposed to low temperatures at a height of 15,000 feet, suffered from frost-bite.

Boric Acid in Cream

Numerous representations were made to the Local Government Board before the war on the subject of boric acid in cream. Some urged that the use of all preservatives should be prohibited, while others maintained that it would be impracticable to carry on the present trade in jugged cream unless some small amount of preservative was added. The department was asked to lay down a maximum limit, and had decided to appoint a small committee, but owing to the war this intention was not fulfilled. The president has now issued an order directing that no more than 0.4 per cent. of boric acid shall be added to cream, and that cream to which boric acid has been added shall be sold as "preserved cream," and prescribing forms of labels to be affixed to the receptacle containing such cream, stating that it contains boric acid and is unsuitable for infants and invalids. The board desires it to be understood that in temporarily forbidding a greater addition percentage of boric acid than 0.4 it must not be regarded as deciding the question proposed for inquiry as to whether or not this amount is injurious to the consumer. The inquiry, when it takes place, may show that the limit should be lower, and dealers are asked to reduce it to the smallest possible amount, or to dispense with it entirely, so that they may find less difficulty in complying with any further restrictions which may be made on the recommendations of the committee when appointed.

Speech Without Use of the Larynx

In the *Journal of Physiology*, Dr. E. W. Scripture has recorded a remarkable case of speech without use of the larynx. The patient was a girl, aged 17, who had undergone tracheotomy at the age of 3. Ever since, she had breathed through a tracheotomy tube and had been unable to breathe when the tube was stopped or removed. Observation with the laryngoscope showed that the top of the pharynx was closed over the larynx and no air passed through. On retching, the larynx was brought up and became visible. Under no circumstances could she make any air pass through the larynx. She could speak distinctly and correctly in a faint, almost toneless voice. Such a condition seemed astonishing, because all speech sounds require breath. Without breath the person may go through all the movements of enunciation, but he will produce no sound; his speech is visible, but not audible. Careful observation revealed the mechanism. A movement of the muscles at the side and front of her neck, just under the jaw, could be seen from the outside; the movement was of a kind that might contract the pharynx. With the mouth open the tongue could be seen to be raised tightly against the rear edge of the palate and the front part of the velum. There was some slight movement on attempting to change the pitch. The mechanism was evident. The air in the pharynx was compressed; it was allowed to escape between the tongue and the velum in such a way as to produce a tone. The tone was produced by causing the surfaces of the tongue and the palate to vibrate somewhat as the vocal cords do. The change in pitch was produced by changes in the tension. In short, the lacking glottis was replaced by an imitation glottis formed by the tongue and the velum. The different vowels were produced by varying the mouth cavity.

BERLIN LETTER

(*Received, March 2, 1917*)

Berlin, Dec. 20, 1917.

Morbidity Statistics and the War

Owing to the food restrictions, additions to the diet of the sick can be obtained only on physicians' orders, and as these orders must state the nature of the illness, they can be made to serve as bases for a statistical study of the morbidity of certain districts, thus furnishing information which could not be obtained in any other way. That is particularly true of diabetes. In Charlottenburg, 706 requests for food additions were made because of diabetes. There were five cases of conjugal diabetes. In one instance a father and son had diabetes. Fifty-seven per cent. of the cases occurred in males, 43 per cent. in females. The same mortality percentage was noted (Berlin statistics for the five-year period 1905-1910 show 61 per cent. males and 39 per cent. females). The percentage for each thousand population for Charlottenburg (309,000) was 2.3. A survey of the occupation of these patients shows that most of them were merchants; next in order were public officials, academicians and pensioners. The majority of the patients were between 60 and 70 years of age. The death rate was no greater during the war than previously. During the first six months of 1916 the male mortality was lower than it had been at any time during the previous five years; the mortality of the women was about the average. Therefore, the necessary food restrictions have not had any influence on the mortality rate of diabetes.

The influence of the war on the incidence of diabetes has also been studied. Professor Umber found only eleven cases of diabetes among 2,232 soldiers. Von Noorden is of the opinion that the majority of cases of diabetes among soldiers occurred in persons who, previous to their enlistment, were what is termed "hidden diabetics," and therefore military service did not cause the disease, but merely hastened its appearance. Von Noorden's experiences during the war have also strengthened his belief that, excluding certain exceptional instances, diabetes will not develop in any one who was not "born to have the disease." The exceptions are those persons who, for various reasons, have fallen a prey to a disease of the previously healthy pancreas; for instance, arteriosclerosis, trauma, calculus formation, and infections and toxic agents. He does not believe that a persistent and progressive cause of diabetes ever develops because of some condition in the central or sympathetic nervous system. From such a source a transitory hypersuprarenalism may occur, and be accompanied by a temporary increase in the sugar elimination with the appearance of diabetic complications. These factors are more often encountered among the combatants. A soldier who, previous to his enlistment, had a well developed case of diabetes, usually succumbs quickly to the insufficient nourishment and strain of military service. Most of these men were officers in active service who were unwilling to retire. In the milder cases of diabetes the glycosuria is increased in severity during service, but yields quickly to proper treatment at home.

The German Central Book Station for the Blind in Leipzig

This station was opened, December 16. Many books have been provided, enough to supply the demand for twenty years. Every field of study is represented—philosophy, pedagogy, history, geography, law, political economy and civics, art, history of art, literature, biography, medicine, reference works, history of literature, war literature, music and the study of music. There is also a large reading room containing periodicals of all kinds. A special room is provided for music literature and a completely equipped print shop, as well as a large store room.

War Death Rate

In 1911 the death rate per thousand population was 16.3; in 1912, it was 14.6; in 1913, 14.0; in 1914, 16.1; in 1915, 19.7, and during the first six months of 1916 (computed by the year), 17.0. The increase occurred only in cities of 15,000 population and over, including all persons in the military service, especially the wounded. The increase in the mortality for 1916 was only 0.7 per cent. greater than in 1911, certainly not a remarkable increase. The infant mortality during the first year of life was: 1911, 29.7 per cent.; 1912, 24.6 per cent.; 1913, 24.8 per cent.; 1914, 22.7 per cent.; 1915, 13.4 per cent.; 1916 (first half of the year), 11.5 per cent. In other words, a continuous and steady reduction, even during the period of food restriction.

Duration of Prophylactic Smallpox Vaccination

Observation has shown that a single vaccination does not confer permanent immunity from smallpox, and that the second vaccination (made eleven years after the first) conferred permanent immunity. Further, the belief is confirmed that one vaccination confers an immunity of about ten years' duration. The reaction of the tissues against the vaccination itself may be taken as an indication of the activity of the antibodies present in the tissue cells. This applies not to the first, but to subsequent vaccinations. A perfect "take" indicates absence or great attenuation of the antibodies. An imperfect "take" indicates the presence of antibodies in a degree corresponding to the "take." The relationship of age to the protection given by vaccination was studied by Dr. H. A. Gins, one of the associates at the Institute for Infectious Diseases in Berlin. The first immunity had ceased in one fourth of those vaccinated for the second time at the age of 12, whereas the immunity following the second vaccination did not begin to show any sign of waning until the age of 30. After 40 the immunity began to wane in about one third of the vaccinated. It would seem, therefore, that a revaccination at 40 is desirable, as it would prevent the occurrence of smallpox for the remainder of the person's life.

BUDAPEST LETTER

Budapest, Nov. 30, 1916.

The Death of Emperor Francis Joseph

Francis Joseph died, Nov. 21, 1916, at the age of 86, after a reign of forty-seven years. His last illness was of relatively short duration. It began early in November with a slight cold and a cough. His general health was so good that he was able to attend to his duties as usual, although unable to go outdoors. November 15, his condition became worse, his temperature rose to 38.2 C. (100.9 F.) at 4 p. m., and he suffered from fatigue, weakness and a loss of appetite. On the 16th the temperature increased and he became weaker. The attending physicians, Dr. Kerzl, surgeon-general and major, and Dr. Ortner, professor of medicine at the University of Vienna, diagnosed the case as a slight bronchitis. In spite of his illness, the emperor was up and about as late as November 18, giving audiences daily. On the morning of the 19th his condition became serious. Dr. Kerzl and Professor Ortner discovered a pneumonic focus in the right lung, and prescribed quinin and a digitalis preparation. Toward evening the inflammation in the lung decreased slightly; however, the emperor gradually lost strength, although his appetite had improved and he had enjoyed his dinner and drank champagne. Tuesday morning, the fever had risen to 39 C. (102.2 F.), remaining at that height all day despite the administration of antipyretics. At noon he had no appetite, the heart action was feeble, the pulse rate was 108, and the inflammatory focus in the lung was unchanged. During the afternoon the heart gradually became weaker, and subcutaneous injections of camphor were ineffective; at dawn the patient had become stuporous. During the day he was slightly delirious. His last words were, "I am tired."

The body of the emperor was embalmed at Schönbrunn (near Vienna). In accordance with ancient custom, the heart was placed in a silver vessel and the internal organs in a copper jar, and the body together with the silver vessel and the jar were carried into the Hofburg, the royal castle. The interment of the body took place, November 30, amid great pomp.

The medical profession of Austria-Hungary owes a debt of gratitude to the late emperor, who made possible great progress of medical science and marked achievements of the profession. If we compare the condition of the profession at the time of his accession to the Hungarian throne in 1867, when the entire faculty of medicine of the university was located in one building, to its present condition, in which our clinics are universally admired, we cannot forget that the late emperor so led his government that it was able to devote millions of dollars to the development of the universities.

Francis Joseph understood that it was not to the advantage of the medical sciences to be centralized, and he therefore caused the erection of a second university in Kolozsvar (Klausenburg) in 1888, which bore his name, the Francis Joseph Scientific University. Since that time two other universities have been erected, one in Pozsony (Pressburg) and one in Debreczen, both opened during the present war. In 1874, the emperor sanctioned new laws which were the foundation of the new public hygiene and sanitary sciences. These were of great assistance in checking the ravages of the many epidemics which prevailed in the country. It is due to the strict adherence to these laws that no epidemic of contagious diseases developed even during the present war.

Francis Joseph felt great sympathy for suffering, as evidenced by his frequent visits to the hospitals. It gave him pleasure to utter a few consoling words to the patients in the wards, and he continually made liberal donations to the universities and hospitals from his private fortune. During his reign the position of the parish and village doctors was much improved, as they were made state officials with a pension on retirement.

It is an indisputable fact that he took greater interest in medicine than in any other science. During his rule there lived the greatest men of the Vienna school: Schuh and

Skoda, Hyrtl and Rokitansky, the congenial Billroth and the brilliant pedagogue Albert, the universal genius von Brücke, the artistic Meynert, Arls and Jaeger, von Hebra and Kaposi, and the representatives of the modern clinic, Bamberger and Nothnagel.

THE EMPEROR'S PHYSICIAN

For several decades Dr. Josef Kerzl was the guardian of the emperor's health. He knew his patient's nature better than his own, and almost lived the emperor's life over again as he observed his every step and accompanied him wherever he went. Thus they grew old together. Dr. Kerzl was an eminent physician and the foremost scholar of the Vienna school of 1870. He is one of the most modest men in the empire, although as the intimate friend of the emperor he might have acquired great influence. He was the only person, with the exception of the grandchildren of the emperor, who was allowed to enter the emperor's room after simply knocking at the door. During the war Dr. Kerzl was promoted to the rank of "General-Stabsarzt," his title being "His Excellency."

The Diet of Tuberculous Patients, with Special Regard to War Conditions

Dr. Schröder recently delivered an address on this subject before the Vienna Antituberculosis League. He said that the preservation of albumin by tuberculous patients is of the utmost importance. Emaciated patients require a much greater amount of fat and albumin than is required by an ordinary person. For normally nourished tuberculous patients the same rules apply as for working people. The aim of therapy is not the increasing of fat, but the strengthening of the musculature and flesh by exercise. The most important nourishment for tuberculous patients at present is fat. Instead of the 80 gm. of fat required daily, there are only 60 gm. a day at disposal in Germany. The substitution of carbohydrates for fats, though possible in healthy subjects, is impossible in the case of tuberculous patients, as it places too great a strain on the intestinal canal. Moreover, fat has a specific effect in tuberculosis. At least 1 liter of milk is to be given daily, goat's milk to be used if possible, as this is rich in fats. One hundred gm. of animal fat should also be consumed daily in the form of grease, bacon or butter. Cheese, containing much fat, is to be used for dessert. Nuts and cod liver oil are also efficacious, and the soya bean is rich in fat. One part of fat may be replaced by such carbohydrates as do not irritate the intestinal canal, as fruit jelly, dried fruits, honey, light farina puddings and leguminous vegetables. The amount of meat consumed may be restricted, although it may not be entirely dispensed with. Fish is a valuable food. Gelatin is a good means for sparing albumin. Soups made from fruit jellies, as well as meat broths, are to be highly recommended, as is also the utilization of the blood of slaughtered animals.

Association News

THE NEW YORK SESSION

Advisory Committee on Scientific Exhibit

In order to stimulate interest in the Scientific Exhibit, to secure suitable material for it and to counsel on scientific matters, an Advisory Committee on Scientific Exhibit has been appointed consisting of Dr. Harlow Brooks, New York; Dr. A. S. Warthin, Ann Arbor, Mich.; Dr. H. C. Moffitt, San Francisco; Dr. Geo. Dock, St. Louis; Dr. C. C. Bass, New Orleans; Dr. Walter B. Cannon, Boston; Dr. Ludvig Hektoen, Chicago; Dr. L. B. Wilson, Rochester, Minn.; Dr. W. M. L. Coplin, Philadelphia; Dr. James T. Case, Battle Creek, Mich., and Dr. Joseph C. Bloodgood, Baltimore. The Scientific Exhibit at the New York Session will occupy the Belvedere on the ninth floor of the Hotel Astor. The amount of space available is limited and will be assigned to the individuals or institutions presenting the best scientific material. Applications should be made as early as possible. Assignment of space will be made Monday, April 2, and all applications must be received before that time. Application blanks and further details can be secured by addressing the Director of Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

Marriages

Lieut. Louis Anatole LaGarde, Jr., M. R. C., U. S. Army, to Miss Alice Eugenia Hale, both of Washington, D. C., February 26.

Herbert C. Kimberlin, M.D., Trenton, Mo., to Miss Beulah Beatrice Campbell of Gaucett, Mo., at Kansas City, Mo., February 28.

James Collier McConaughey, M.D., Cameron, W. Va., to Miss Edna Margareta O'Neill of Wayne, Pa., in Philadelphia, February 28.

Lieut. Arvid E. Anderson, M. R. C., U. S. Army, Hoquiam, Wash., to Miss Lois Mae Williams of Punxsutawney, Pa., January 1.

Charles Hamlin Pelton, M.D., St. Paul, to Miss Elizabeth S. Sullivan of Mount Clemens, Mich., at St. Paul, February 26.

Asst. Surg. Philip Ford Prioleau, U. S. Navy, to Miss Ruth Vincent Bridgman, at Baltimore, February 24.

William B. Foster, M.D., Woodbine, Kan., to Mrs. Elizabeth Simpson of Lansing, Kan., February 21.

Henry A. Dedman, M.D., Canby, Ore., to Miss Blanche Jobe of Philadelphia, at Seattle, January 27.

Clarence Kenneth Jones, M.D., Indianapolis, to Miss Louise Wille of Chicago, February 26.

James B. Wright, M.D., to Mrs. Emma Wynne Gillilan, both of Trenton, Mo., March 1.

John M. Thomas, M.D., to Miss Pauline Paul, both of Columbus, Ohio, February 28.

Frank Fulton Maple, M.D., to Miss Edith Marian Russell, both of Chicago, March 3.

Deaths

John Little Moffat, M.D., Ithaca, N. Y.; New York Homeopathic Medical College, 1877; aged 63; a member of the American Ophthalmological, Otological and Laryngological Society; for several years consulting ophthalmologist to the Cumberland Street Hospital, Brooklyn; editor of the *Journal of Ophthalmology, Otology and Laryngology* from 1901 to 1904, and of the *Homeopathic Eye, Ear and Throat Journal* from 1905 to 1910; died at his home, February 18, from tuberculosis.

Alfred Owen Hitchcock, M.D., Fitchburg, Mass.; Harvard Medical School, 1870; aged 74; formerly a member of the Massachusetts Medical Society; chairman of the board of health and city physician of Fitchburg; surgeon of the Fifty-Third and Fifty-Seventh Massachusetts Infantry during the Civil War, and brevetted major on the staff of Gen. Nelson A. Miles; died at his home, January 20, from bronchopneumonia.

Joseph Emil Huber, M.D., Peoria, Ill.; Northwestern University Medical School, Chicago, 1910; aged 49; a Fellow of the American Medical Association; a specialist in internal medicine; a member of the medical staff of Proctor Hospital and once president of the Illinois State Pharmaceutical Association; died in the Proctor Hospital, Peoria, February 27, from septicemia three days after an operation for cholelithiasis.

Reuben Howard Osborn, M.D., Detroit; Western Reserve University, Cleveland, 1849; aged 93; formerly chief of the medical staff of the Calumet and Hecla Mining Company, Calumet, Mich.; for several years a member of the school board of Calumet, and state senator in 1877 and 1878; a pioneer practitioner of the copper country; died at his home, February 21, from cerebral hemorrhage.

William T. O'Reilly, M.D., New Orleans; Tulane University, New Orleans, 1884; aged 55; formerly a Fellow of the American Medical Association; a member of the Louisiana State Medical Association; president of the New Orleans City Board of Health since 1906; an active, aggressive and efficient health officer; died at his home, March 9, after an illness of three months.

James Greenup Boyd, M.D., Houston, Texas; Bellevue Hospital Medical College, 1889; aged 54; a Fellow of the American Medical Association; first lieutenant and assistant surgeon of the First United States Volunteer Infantry, during the war with Spain; chief surgeon of the Houston Hospital and Sanitarium; died at his home, February 27, from pneumonia.

Elmer Ellsworth Patton, M.D., New Kensington, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1889; aged 55; a Fellow of the American Medical Association; formerly surgeon of the American Bridge Company and later president of the New Kensington (Pa.) Bridge Company; died at his home, March 2, from pneumonia.

George G. Burns, M.D., Fremont, Mich.; Detroit College of Medicine and Surgery, 1904; aged 40; a Fellow of the American Medical Association, and formerly secretary of the Newaygo County Medical Society; died in the Blodgett Memorial Hospital, Grand Rapids, Mich., from myocarditis, following tonsillectomy, February 23.

John Hopkinson Healy, M.D., San Francisco; Cooper Medical College, San Francisco, 1881; aged 63; at one time superintendent of the San Francisco City and County Hospital, and professor of surgery in the College of Physicians and Surgeons of San Francisco; died at his home, February 18, from hemorrhage of the lungs.

Henry Ruhl, M.D., New York; Bellevue Hospital Medical College, 1873; aged 70; a Fellow of the American Medical Association; formerly visiting physician to Fordham Hospital and physician to the Twenty-Third and Twenty-Fourth Ward dispensaries; died at his home, February 25.

Gustav Theodore Fox, M.D., Bethlehem, Pa.; New York University, New York, 1865; Bellevue Hospital Medical College, 1875; aged 73; a Fellow of the American Medical Association; a specialist in ophthalmology; died in Bethlehem, February 27, from angina pectoris.

Thomas B. Phinizy, M.D., Augusta, Ga.; Medical College of Georgia, Augusta, 1847; aged 91; for many years a member of the board of trustees in his alma mater; one of the oldest and most prominent citizens of Augusta; died at his home, February 16.

Martin Taylor Billingslea, M.D., Altoona, Kan.; Dearborn Medical College, Chicago, 1906; College of Physicians and Surgeons, Chicago, 1908; aged 44; a Fellow of the American Medical Association; died in his apartments, February 26, from heart disease.

Angus H. L. Smith, M.D., New York; Jefferson Medical College, 1915; aged 27; an intern in the New York State Hospital, Blackwell's Island; died in the New York Eye and Ear Infirmary, January 18, from meningitis following a mastoid operation.

Elmer Newcomer, M.D., Baltimore; University of Maryland, Baltimore, 1913; aged 27; a Fellow of the American Medical Association, and superintendent of the Maryland General Hospital; died, March 11, from septicemia due to an autopsy wound.

Oliver Pearce Robinson, M.D., Little Rock, Ark.; Bellevue Hospital Medical College, 1877; aged 63; a retired physician and planter; vice president of the German National Bank, Little Rock; died at his home, February 21, from cerebral hemorrhage.

George Glen Wood, M.D., Muncy, Pa.; Jefferson Medical College, 1872; aged 68; a charter member of the Lycoming County Medical Society, and a member of the state legislature from 1888 to 1892; died at his home, February 23.

William Walton Burnett, Wrentham, Mass. (license, Massachusetts, 1896); aged 68; a practitioner for forty-six years; while making a professional call, February 18, died suddenly from concussion of the brain due to a fall.

Thomas Edward Cunningham, M.D., Cambridge, Mass.; Harvard Medical School, 1883; aged 65; a Fellow of the American Medical Association; a specialist in internal medicine; died at his home, February 27.

Joseph L. Allred, Winters, Texas (license, Texas, Sixth Judicial District Board, 1889); aged 56; a Fellow of the American Medical Association; died at his home, January 13, from phlegmonous erysipelas.

Alfred Sylvester Bair, M.D., Bath, Ohio; University of Wooster, Cleveland, 1884; aged 52; a member of the Ohio State Medical Association; died at his home, February 26, from disease of the intestine.

Luke F. Magee, Huttig, Ark. (license, Arkansas, 1903); aged 43; physician to the Red River Lumber Company and Union Sawmill Company; died at Mineral Wells, Texas, February 20, from nephritis.

George H. T. Johnson, M.D., Atchison, Kan.; Homeopathic Medical College of Missouri, St. Louis, 1869; aged 73; a veteran of the Civil War; died in a hospital in Atchison, February 22.

Henry Thomas McCarthy, M.D., Lewiston, Me.; Medical School of Maine, Brunswick, 1901; aged 38; formerly a member of the Maine Medical Association; died at his home, February 19.

Charles Trumbull, M.D., Port Townsend, Wash.; University of Nebraska, Lincoln, 1885; aged 58; for four years instructor of anatomy in the University of Nebraska; died in Seattle, December 7.

Nicholas L. Toland, Martinsburg, Ohio (license, Ohio, years of practice, 1896); aged 85; a practitioner for fifty-four years; a veteran of the Civil War; died at his home, February 23.

John Edward O'Neil, M.D., Providence, R. I.; New York University, New York, 1892; a Fellow of the American Medical Association; died at his home, Providence, December 7.

Robert B. Taylor, M.D., Arcadia, Ohio; Western Reserve University, Cleveland, 1876; aged 68; a member of the Ohio State Medical Association; died at his home, February 24.

William Edward Buschman, M.D., Milwaukee, Wis.; University of Michigan, Ann Arbor, 1887; aged 51; died at his home, Dec. 17, 1916, from cerebral hemorrhage.

Orrin T. Stacy, M.D., Rochester, N. Y.; University of Buffalo, N. Y., 1860; aged 82; a member of the state legislature in 1875 and 1876; died at his home, February 21.

George J. Tankersley, Benton, Ark. (license, Arkansas, 1903); aged 80; for forty years a practitioner of Arkansas; a Confederate veteran; died at his home, February 3.

Francis P. Martin, M.D., Hannibal, Ohio; Cincinnati College of Medicine and Surgery, 1869; aged 79; died at his home, February 9, from cerebral hemorrhage.

James Taylor Walker, M.D., Falmouth, Mass.; University of Vermont, Burlington, 1879; aged 66; died at his home, January 12, from carcinoma of the rectum.

James W. Russey, M.D., Trenton, Ga.; Louisville (Ky.) Medical College, 1876; aged 66; died in a hospital in Chattanooga, Tenn., recently, from pellagra.

Philip Sack, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1913; aged 29; died at his home, November 5, from tuberculosis of the throat.

Charles Rolin Coffeen, M.D., Piqua, Ohio; Pulte Medical College, Cincinnati, 1878; aged 70; died at his home, February 16, from progressive paralysis.

Jacob S. Allen, Jr., M.D., Washington, D. C.; National Homeopathic Medical College, Washington, D. C., 1895; aged 51; died at his home, February 15.

U. Odell Jones, M.D., Rushylvania, Ohio; Eclectic Medical Institute, Cincinnati, 1898; aged 49; died at his home, January 23, from aneurysm of the aorta.

Martin L. Smiley, M.D., Catlettsburg, Ky.; Eclectic Medical Institute, Cincinnati, 1877; aged 74; a Confederate veteran; died at his home, February 23.

John B. Carder, M.D., Kiowa, Colo.; Long Island College Hospital, Brooklyn, 1876; aged 64; died in Asbury Hospital, Minneapolis, February 15.

Daniel S. Ashby, Paris, Texas (license, Texas Judicial District Board, 1907); aged 53; was shot and instantly killed in his home, February 23.

Edward P. Teague, M.D., New York; College of Physicians and Surgeons, Boston, 1899; aged 42; died at his home in New York, February 22.

John W. Prather, M.D., Woodland Mills, Tenn.; University of Louisville, Ky., 1872; aged 67; died at his home, February 10, from heart disease.

Victor A. Clement, M.D., Augusta, Me.; McGill University, Montreal, 1869; aged 72; died at his home, January 11, from cerebral hemorrhage.

Benjamin H. Price, M.D., Blackford, Ky.; Louisville (Ky.) Medical College, 1890; aged 63; died at his home, February 21, from meningitis.

David C. Schumann, M.D., Willmar, Minn.; King Frederick University, Christiania, Norway, 1871; aged 77; died at his home, February 16.

Charles A. Stafford, M.D., Indianapolis; Physio-Medical College of Indiana, Indianapolis, 1889; died at his home, January 13.

The Propaganda for Reform

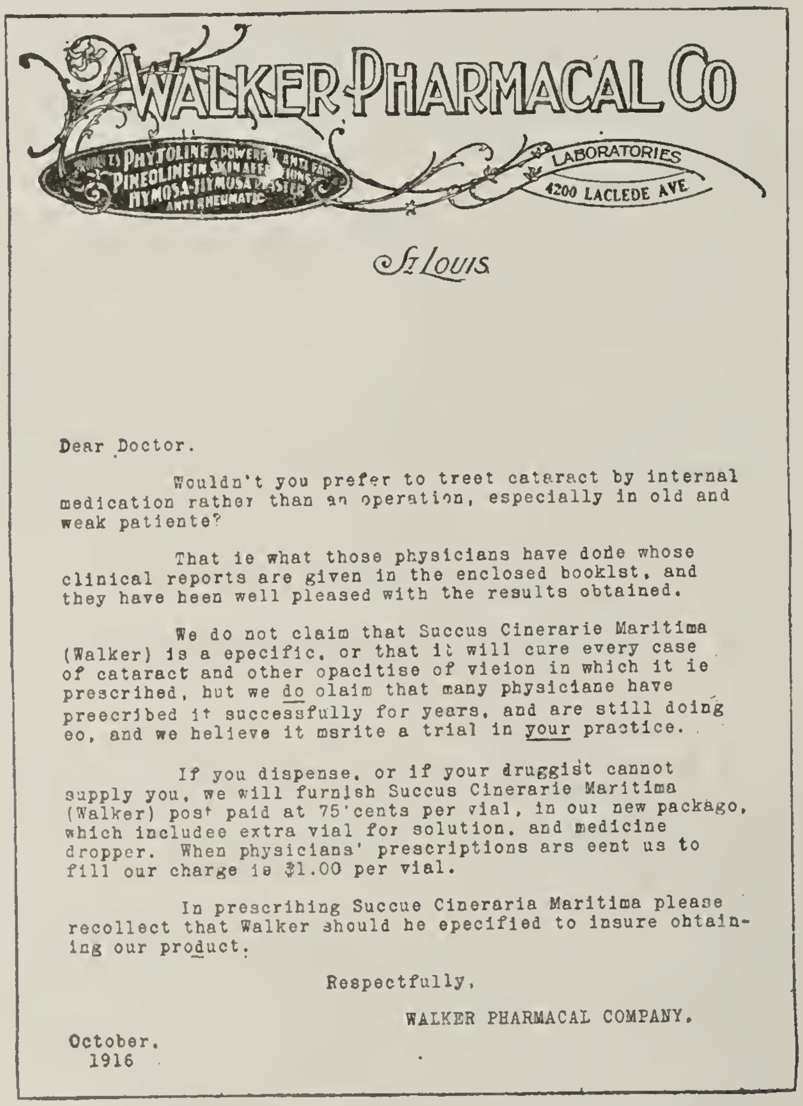
In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

SUCCUS CINERARIA MARITIMA

Another Illustration of One of the Weaknesses of the Federal Food and Drugs Act

The Walker Pharmacal Company of St. Louis was, we understand, if it is not still, one of the subsidiary concerns of the Luyties Homeopathic Pharmacy Company. It has for years sold a nostrum, "Succus Cineraria Maritima," under the claim that by simply dropping this stuff into the eye twice daily cataract and other opacities of the eye will be cured. For instance:

> ". . . the only remedy for the relief of cataract and other opacities of vision, which stands before the medical fraternity on a firm foundation of accomplished results. . . ."
>
> ". . . possesses a specific power in removing the obstruction to vision."
>
> "In this class of cases [cataract] physicians can place reliance on Succus Cineraria Maritima (Walker) which does not require the services of a specialist but is simply dropped into the eye with an ordinary medicine dropper twice daily. . . ."
>
> ". . . has been used with success in cataract, both lenticular and capsular, pterygium and opacities of the cornea, softening the opaque deposits, causing dissolution, and by its stimulating properties, hastening absorption."



WALKER PHARMACAL CO

LABORATORIES
4200 LACLEDE AVE

ST LOUIS

Dear Doctor.

Wouldn't you prefer to treet cataract by internal medication rather than an operation, especially in old and weak patiente?

That ie what those physicians have dode whose clinical reports are given in the enclosed booklst, and they have heen well pleased with the results obtained.

We do not claim that Succus Cinerarie Maritima (Walker) is a epecific, or that it will cure every case of cataract and other opacitise of vieion in which it ie prescribed, hut we do olaim that many physiciane have preecribed it successfully for years, and are still doing eo, and we helieve it merite a trial in your practice.

If you dispense, or if your druggist cannot supply you, we will furnish Succus Cinerarie Maritima (Walker) post paid at 75 cents per vial, in our new packago, which includee extra vial for solution, and medicine dropper. When physicians' prescriptions are eent us to fill our charge is $1.00 per vial.

In prescrihing Succue Cineraria Maritima please recollect that Walker should he epecified to insure ohtaining our product.

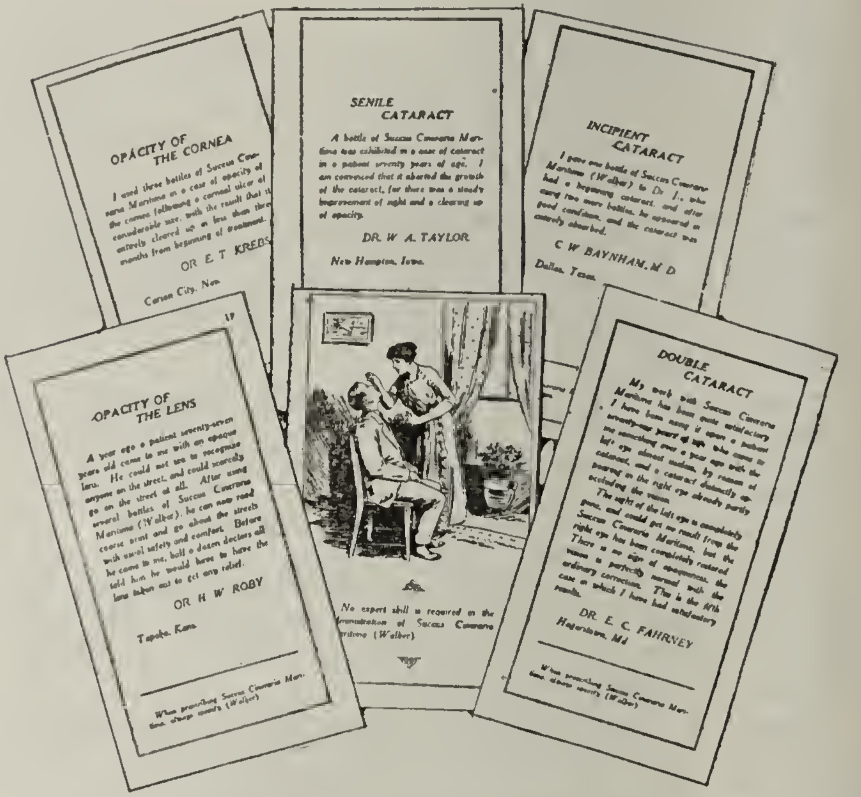
Respectfully,

WALKER PHARMACAL COMPANY.

October,
1916

Facsimile of a letter dated October, 1916, suggesting the use of "Succus Cineraria Maritima" as a cure for cataract and other opacities of vision. Eight months previously (February, 1916) the Walker Pharmacal Company had pleaded guilty to the charge that the claims that "Succus Cineraria Maritima" was a cure for cataract and other eye opacities were false and fraudulent and applied knowingly and in reckless and wanton disregard of their truth or falsity. The federal Food and Drugs Act does not apply to claims made in circular letters or elsewhere than in the trade package.

Succus Cineraria Maritima is advertised to the medical profession in true "patent medicine" style by means of testimonials from doctors, obscure and deceased. The preparation is valueless for the purposes for which it is sold and "has about as much effect on the dissolution or dispersal of opacities due to organic changes in the lens as pouring the same down the back of the patient's neck!" More than five years ago the Council on Pharmacy and Chemistry reported on the worthlessness of the drug, Cineraria Maritima, and, at the same time, The Journal pointed out that the drug would have been forgotten long ago had it not been for the prodigal use of printers' ink by the Walker Pharmacal Company in advertising its Succus Cineraria Maritima.


OPACITY OF THE CORNEA
DR E T KREBS
Carson City, Nev
SENILE CATARACT
DR. W A. TAYLOR
New Hampton, Iowa.
INCIPIENT CATARACT
C W BAYNHAM, M D
Dallas, Texas
OPACITY OF THE LENS
DR H W ROBY
Topeka, Kans
DOUBLE CATARACT
DR. E. C. FAHRNEY
Hagerstown, Md

Facsimile of some of the pages from the booklet that accompanied the letter reproduced in the next column. The obvious intent of this booklet was to lead physicians to believe that Succus Cineraria Maritima will cure "Opacity of the Cornea," "Opacity of the Lens," "Senile Cataract," "Incipient Cataract," "Double Cataract," etc.

These facts are given for the purpose of refreshing the memory of our readers and are but incidental to the object of this article. In due time the federal authorities proceeded against the Walker Pharmacal Company charging that Succus Cineraria Maritima was misbranded under the federal Food and Drugs Act. The government chemists reported that analysis "showed that the product was essentially an aqueous solution of glycerin, boric acid and vegetable drug extractives carrying tannin-like bodies." The direct and inferential claims made in the advertising matter accompanying the trade package were quoted by the federal authorities, who pointed out that the Walker Pharmacal Company was selling the nostrum under claims that would create in the minds of the purchasers the belief that Succus Cineraria Maritima was a remedy for cataract and other opacities of the eye causing impaired vision and that it was a cure for senile cataract, trachoma, secondary opacities, etc. These claims the government charged were "false and fraudulent in that the same were applied to the article knowingly, and in reckless and wanton disregard of their truth or falsity," because "in truth and in fact it was not, in whole or in part, composed of, and did not contain, such ingredients and medicinal agents" as would produce the therapeutic effects claimed.

These charges put the matter flatly up to the Walker Pharmacal Company. This company has for years been telling physicians that their stuff *could* and *would* do just what the federal authorities insisted it can *not* and will *not* do. Did the Walker Pharmacal Company attempt to defend its claims? Did it demonstrate that Succus Cineraria Maritima would cure cataract? Did it produce evidence of the numerous cases of recovery from blindness or partial blindness which must have been available if the preparation had the powers claimed for it? No! The Walker Pharmacal Company in February, 1916, pleaded guilty—and was fined a paltry $10 and costs.

This, however, is not the end of the story. The company was prosecuted because it had published the false and fraudulent claims in the trade package, thus bringing the claims within the purview of the federal Food and Drugs Act. Had the Walker Pharmacal Company confined its false statements to medical-journal advertisements, to the circular letters sent to physicians or to any other advertising matter not part of the trade package, it could have snapped its fingers at the Food and Drugs Act.

It was in February, 1916, that the Walker Pharmacal Company pleaded guilty to the charge of making false and fraudulent claims for Succus Cineraria Maritima. In October, 1916, they were still sending out circular letters to physicians urging the use of Succus Cineraria Maritima in the treatment of cataract and enclosing the usual booklet of testimonials claiming cures for cataract and other opacities of the lens and cornea!

Can one conceive a better illustration of the inadequacy of the Food and Drugs Act? The dishonest exploiter of proprietary medicines cares little that the law requires him to keep within certain bounds of truthfulness in the advertising that accompanies the trade package. It isn't the claims in the trade packages that sell the product; it's the advertising in medical journals, in circular letters, etc. Yet, the Food and Drugs Act offers no check or curb on false statements or fraudulent claims made for proprietary or "patent medicines" in any other place than the trade packages.

A few weeks ago The Journal called attention to a flagrant case of fraud and at that time it said: "It is justifiable to assume that when any man, whatever his business, admits in court that he has made fraudulent claims and then continues to make the same claims through channels that are not controlled by penal enactment, that man's standard of business ethics is such that the public needs protection against it. There are many such men in the 'patent medicines' world. The only way in which the public may properly be protected against being defrauded in such cases is for the federal Food and Drugs Act to have its scope extended to cover *all* advertising of the products coming under the purview of the act."

RHEUME OLUM

Report of the Council on Pharmacy and Chemistry

Rheume Olum (Rheumeolum Chemical Co., Seattle, Wash.) is sold as a "solid liniment," put up in collapsible tubes. It is said by the manufacturers to be composed of camphor 7 per cent., chloral hydrate 7 per cent., menthol 2⅛ per cent., methyl salicylate 25 per cent., oil cajuput 2½ per cent., oleoresin capsicum, lanolin, white wax, "qs."

The amount of the powerful constituent, oleoresin of capsicum, is not declared. It is claimed that Rheume Olum "is especially indicated in Rheumatism, Sprains, La Grippe, Tonsilitis, Pleurisy, Otitis, Neuritis, Lumbago, Lame Back, Pneumonia, Bronchitis, Ovarian and all other kinds of Neuralgia, Chest and Throat diseases," and "mild attacks of Appendicitis" are said to have "responded quickly." It is claimed further, that ". . . in any case of rheumatic diathesis or where a counter-irritant, anodyne, rubifacient, or anti-phlogistic remedy is indicated, nothing will more fully meet such requirements." There is no warrant for the claim that this, or any other fixed combination, is indicated whenever a "counter-irritant, anodyne, rubifacient or anti-phlogistic remedy" is required.

The name of the preparation is nondescriptive of its composition. The rules of the Council provide that in the interest of intelligent prescribing, pharmaceutical mixtures of well-known drugs must bear names descriptive of their composition. The name also suggests "rheumatism oil," thus inviting the use of the preparation as a treatment for rheumatism without consideration of its composition.

Rheume Olum is an irrational mixture, as there is no reason for the fixed combination of the several ingredients said to be present. The exploitation of mixtures such as this is conducive to the irrational and haphazard use of drugs. The tendency is well illustrated by the following from the advertising:

> "When using Rheume Olum it is not necessary to eliminate other medication, but is advisable to use it in conjunction with such recognized medication."
>
> "What better combination of drugs can be compounded, which will meet the numerous requirements of the busy physician."

In view of the various conflicts with the rules of the Council "Rheume Olum" was declared not acceptable for admission to New and Nonofficial Remedies.

Correspondence

Compulsory Health Insurance

To the Editor:—In reply to numerous requests from medical correspondents throughout the country regarding the merits of the present propaganda for compulsory health insurance, the following statement has been prepared, which may be of interest to the medical profession at large:

1. As regards the point of view of organized labor, it is asserted by Prof. Irving Fisher, president of the American Association for Labor Legislation, which is primarily responsible for the present propaganda, that "the greater part of labor men and labor organizations who have seriously studied the subject have favored health insurance." (Newark *Evening News,* Jan. 15, 1917.) In flat contradiction to this statement is the strong opposition of the American Federation of Labor, as presented in convincing arguments by its president, Mr. Samuel Gompers, by a unanimous resolution of the executive committee adopted by the last annual convention of the federation, and the conclusions advanced by Mr. Warren S. Stone, grand chief, International Brotherhood of Locomotive Engineers, and of Mr. Matthew Wohl, president of the Photo-Engravers' International Union, and of other representatives of organized labor.

2. It is asserted by the secretary of the American Association for Labor Legislation in the *Forecast,* August, 1916, that "the National Association of Manufacturers has endorsed a plan for health insurance." In flat contradiction of this statement are the arguments advanced by Mr. A. Parker Nevin, counsel of the National Association of Manufacturers, strongly opposing compulsory insurance as inimical to American industry. To the same effect is a resolution of the Chamber of Commerce of the State of New York, reading in part "this chamber is opposed to the passage of Senate Bill 69, and opposed to the passage of any similar bill at this time." Strong opposition has also been offered by the New York Board of Trade and Transportation and the social insurance department of the National Civic Federation, composed of representatives of organized labor, organized industries and the interests of the general public, declaring itself "opposed to the contemplated legislation with reference to compulsory health insurance as inimical to the best interests, present and future, of the workers of the nation" (adopted Feb. 20, 1917).

3. It has been asserted by Dr. Ira S. Wile, in a paper on "Health Insurance from the Viewpoint of the Physician," that "as far as the general proposition of health insurance is concerned, it may be admitted that physicians in general are in favor of it." This assertion is in flat contradiction to the fact that the American Medical Association has adopted no resolutions on the subject one way or the other; that according to the special inquiry of Dr. Delphey of New York, twenty-four state societies had taken no action with reference to the matter, four were decidedly opposed, two were indifferent, and only two were distinctly favorable. Furthermore, the New York County Medical Association adopted a recent resolution to the effect that "this society disapproves of the medical provisions of the bill for compulsory health insurance and the appointment of a legislative commission to study the subject, and directs its Committee on Legislation and delegates to the Medical Society of the State of New York to take proper measures to oppose its passage by the legislature." Of equal importance is the unanimous report of a special committee of the Chicago Medical Society, adopted Feb. 13, 1917, in which it is said that compulsory health insur-

ance will affect the professional income, lower the professional moral tone, decrease professional efficiency, destroy incentive for medical research, make a dissatisfied profession, prove productive of malingering, and destroy personal relationships between patient and physician.

Thus, briefly restated, organized labor is *not* in favor of compulsory health insurance, but opposed to it; organized industry and business interests are *not* in its favor, but opposed to it; and the organized medical profession is *not* in its favor, but opposed to it.

The argument is advanced that health insurance diminishes illness and that "as a public health measure this is one of the most important bills which has come before the legislature (of the state of New York) for many years." There is no evidence that any of the measures proposed aim specifically and effectively at a well considered plan of coordination of compulsory health insurance and public health administration. In flat contradiction to the assertion is the official statement of the surgeon-general of the U. S. Public Health Service in his annual report for 1916, that "as yet none of the legislative measures proposed has contained anything more than provisions for the relief of sickness." The endorsement of compulsory health insurance by the U. S. Public Health Service provides for the coordination of the proposed organization with national, state and local health agencies. No bills as yet introduced provide for such a plan of administrative coordination. Nor has there been a comprehensive and far-reaching administrative coordination in any one of the foreign countries in which compulsory health insurance has been established.

Frederick L. Hoffman, Statistician, Newark, N. J.

Ankylosis of Hips as Indication for Cesarean Section

To the Editor:—Newell, in his article on "The Present Status of Abdominal Cesarean Section" (The Journal, Feb. 24, 1917, p. 604), gives as an indication for the abdominal operation "some obstruction to delivery or the presence of some condition which renders the abdominal route the safer one for mother or child." A recent cesarean section at the Sabetha Hospital presented a most unusual "obstruction to delivery," and one which is certainly seldom met.

Mrs. U., aged 42, a primipara at full term, was admitted to the obstetric ward of the Sabetha Hospital, Jan. 28, 1917. On examination she was found to have complete ankylosis of both hips, and it was impossible to make a satisfactory vaginal examination because there could be neither abduction nor flexion of the thighs. External measurements showed a contracted pelvis, but because of the ankylosis there could be no natural delivery even with a normal pelvis. A cesarean section was performed, January 31, and mother and baby left the hospital, February 21.

This case presented another interesting fact in that the father of the baby is 72 years old.

W. R. Dillingham, M.D., Sabetha, Kan.

Milk-Borne Infections

To the Editor:—The Journal, Aug. 26, 1916, p. 683, commented editorially on an epidemic of infectious sore throat in an Eastern city directly traceable to a single milk supply. I was led to take up an investigation of this epidemic, first, because the sole evidence of proof was the occurrence of sore throat in the three communities reached by this milk supply, together with the finding of a person with sore throat on that farm at the time of the investigation. Secondly, a personal knowledge of the probable source of the trouble in two of the three communities, coupled with the fact that the producer was later found by me to be in the Class A certified class without the certification, was sufficient reason to demonstrate to the producer, for his own satisfaction, whether or not his milk was the source. An investigation extending over four months with data, it is true, which were not obtainable at the time the original investigation was made, gave absolutely definite evidence that there had not been a milk-borne epidemic. In the interests of those few producers who may have a promising business for infant's food ruined, in this case a business run by a college graduate, with milk from a thoroughbred Guernsey herd, I trust that you will add through your columns this small contribution to justice. I would add that there should also be handed to every health officer before investigation of milk-borne infections, from now on, a reprint of Dr. E. R. Kelley's article on "The Quantitative Relationship of Milk-Borne Infection in the Transmission of Human Communicable Diseases" (The Journal, Dec. 30, 1916, p. 1997), as well as Schneider's "Shortcomings of Socio-Sanitary Investigations."

D. M. Lewis, M.D., New Haven, Conn.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BUSILA'S SERODIAGNOSIS OF SYPHILIS

To the Editor:—Reference was made in The Journal, Nov. 6, 1915, p. 1682, to an article on "Improved Technic for Serodiagnosis of Syphilis," by V. Busila. Please give a detailed description of the method and references.

R. del Valle Sarraga, San Juan, Porto Rico.

Answer.—The Journal published at the time the following summary of the article in question:

> Busila relates that syphilitic serum may contain a sensitizer that resists heating and also one that is destroyed by heat. The deviation of complement and Wassermann tests do not discriminate with sufficient precision between these two sensitizers, while the preponderance or absence of one or the other has a pronounced influence on the outcome of the tests. In order to eliminate error from this source, Busila has modified the technic and states that his method is applicable to all serums and requires only two hours or two and a half from the moment the blood is drawn. Instead of heating, to suppress the human complement, he titrates it simultaneously with the reaction. When the serum is heated this destroys the thermolabile sensitizer, and it is in the cases in which this sensitizer predominates that the syphilis is most difficult to diagnose. Hence his modified technic is particularly useful, he declares, in cases of latent, imperfectly treated, or "nervous" syphilis.

V. Busila is chief of the bacteriologic section of the Pathologic Institute of Bucharest. His first publication on this subject was in a local journal, Oct. 10, 1910, but an account was published in the *Comptes Rendus de la Société de Biologie,* Dec. 7, 1910. He calls his method the Bauer-Hecht-Busila method. It titrates the complement in the guinea-pig serum and uses only the amount needed in the individual instance. His communication in the *Presse Médicale* was entitled "Une 'sensibilisatrice' syphilitique thermolabile. Modification de la technique Bordet-Gengou-Wassermann." He shows the technic by a table as follows:

Sets of Test Tubes	Sodium Chlorid Solution 0.9 per 100	Extract of Syphilitic Liver	Fresh Serum from the Patient. Not Inactivated[1]	Fresh Guinea-Pig Serum, Diluted 1:10[2]	Hemolytic Amboceptor[3]	Five per Cent. Suspension of Sheep Corpuscles[4]
1 *a*	0.9	...	0.1	0.5 or 0.8 or 0.3	0.5	0.5
b	0.8	0.1	0.1	0.5 or 0.8 or 0.3	0.5	0.5
2 *a*	1.0	...	0.1	0.4 or 0.6 or 0.2	0.5	0.5
b	0.9	0.1	0.1	0.4 or 0.6 or 0.2	0.5	0.5
3 *a*	1.1	...	0.1	0.3 or 0.4 or 0.15	0.5	0.5
b	1.0	0.1	0.1	0.3 or 0.4 or 0.15	0.5	0.5
4 *a*	1.2	...	0.1	0.2 or 0.25 or 0.1	0.5	0.5
b	1.1	0.1	0.1	0.2 or 0.25 or 0.1	0.5	0.5
5 *a*	1.3	...	0.1	0.1 or 0.15 or 0.05	0.5	0.5
b	1.2	0.1	0.1	0.1 or 0.15 or 0.05	0.5	0.5
6 *a*	1.4	...	0.1	0 0 0	0.5	0.5
b	1.3	0.1	0.1	0 0 0	0.5	0.5

1. After adding fresh guinea-pig serum incubate at 38 C. for 55 minutes, then add hemolytic amboceptor as noted.
2. Varying according to the proportion of alexin in the guinea-pig serum.
3. Variably according to the hemolytic titer of the human serum.
4. Incubate at 38 C.

The index is the last tube in which the control tube (*a*) shows complete hemolysis. Immediately after the blood is drawn, before coagulation has occurred, he incubates the tube, placed at a considerable slant, at 35 or 37 C. In half an hour, sometimes in fifteen minutes, the serum has separated out and the serodiagnostic test can then be applied.

THE SUPPLY OF SALVARSAN

To the Editor:—Kindly inform me where I can obtain the Canadian preparation of salvarsan and neosalvarsan. I am experiencing some difficulty in getting enough of the German preparation.

S. H. Rosenthal, M.D., Lynchburg, Va.

Answer. — Many medical supply houses now sell the Canadian product. It may also be ordered directly from the manufacturers, The Diarsenol Company, Limited, Toronto, Canada. However, we have received a communication from the American agents for salvarsan stating that they have a sufficient supply available and that the product may be ordered directly from them. Address the Farbwerke-Hoechst Company, 111 Hudson Street, New York City.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

California: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

Colorado: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

District of Columbia: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Idaho: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

Minnesota: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

Missouri: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

Montana: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

Oklahoma: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

Rhode Island: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

Utah: Salt Lake City, April 2. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Amendments to Medical College Requirements in Illinois

The schedule of minimum requirements for medical colleges in good standing with the Illinois State Board of Health was amended recently in two particulars. At the meeting held Nov. 10 and 11, 1916, the board voted to require, after July 1, 1917, a six-year medical course. The first five sessions are to extend over five calendar years, and fifty months must have elapsed between the commencement of the first session and the ending of the fifth. No two sessions of the first five years can begin or end within any consecutive eighteen months, except that the first two sessions may be embraced in sixteen months. The sixth, or final year is to consist of a hospital internship of not less than twelve months' duration, in a hospital approved by the board.

In order that the rule regarding the intern year may accord with the medical practice act, the following procedure is necessary: On the completion of the premedical year and the four-year medical course, each candidate for graduation shall pass the regular licensing examination of the Illinois board, and shall receive a limited license which authorizes him to serve as an intern in a hospital, but which does not authorize him to practice in any other manner or place in Illinois. This limited license will remain in force not exceeding eighteen months from the date of issue. At the expiration of the limited license, or on completion of the twelve months' intern service, the candidate will surrender the limited license, and on presentation of evidence that the internship has been satisfactorily completed and of a diploma from the medical college, and provided that all requirements and rules of the board have been satisfactorily complied with, will receive in lieu thereof a permanent certificate to practice medicine in the state of Illinois, without further examination or fee.

At the meeing held Jan. 27, 1917, the conditions for admission to medical colleges were amended. The clause requiring a certificate of successful examination for admission to the freshman class of a regular literary or scientific college was amended by adding the words "with evidence of actual admission and attendance in said college." This is to provide for the securing of evidence in case the first year of the five-year medical course has been obtained in a college of arts and science and to prevent any institution from taking advantage of this provision by examining a student for admission to their department of arts and sciences and immediately matriculating him in the medical department.

South Carolina June Report

Dr. A. Earle Boozer, secretary of the State Board of Medical Examiners of South Carolina, reports the written examination held at Columbia, June 13-15, 1916. The total number of subjects examined in was 16; total number of questions asked, 105; percentage required to pass, 75. The total number of candidates examined was 62, of whom 43 passed and 19 failed, including 1 osteopath. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Atlanta Medical College (1914) 75; (1915) 75.7;	(1916)	81.9, 82.2, 87.2
Atlanta School of Medicine	(1910)	77.4
Southern College of Med. and Surgery (1913) 75;	(1914)	75
University of Georgia	(1916)	82.1
Johns Hopkins University (1914) 86.5;	(1916)	77.1, 83.6
Maryland Medical College	(1905)	75
University of Maryland	(1916)	75.7, 78.7, 82.4, 84.1, 89, 89.6.
North Carolina Medical College	(1914)	77.9
Jefferson Medical College	(1916)	85, 85.4
University of Pennsylvania	(1916)	88.4
Medical College of the State of South Carolina	(1916)	77.2, 78.9, 79.2, 79.4, 79.6, 80.7, 83.4, 83.9, 83.9, 84.5, 84.6, 85, 85.2, 86.6, 87.1
University of West Tennessee	(1914)	76
Medical College of Virginia	(1916)	75, 75.6, 78.1, 82.4.
FAILED		
Birmingham Medical College	(1915)	68.4
Atlanta College of Physicians and Surgeons	(1912)	71
Atlanta Medical College (1914) 69.6;	(1915)	64.4
Southern College of Medicine and Surgery	(1914)	67.7
University of Georgia	(1914)	72
North Carolina Medical College	(1914)	65.9
University of Oklahoma	(1915)	68.6
Medical College of the State of South Carolina (1895) *; (1900) 67.5; (1901) 55.1;	(1910)	*.
Meharry Medical College (1907) 55.6; (1909) 67.9;	(1916)	69.7
Memphis Hospital Medical College	(1911)	58.1, 64.5
University of Tennessee	(1905)	54.1

* No grade given.

Maine November Report

Dr. Frank W. Searle, secretary of the Maine State Board of Registration of Medicine, reports the written examination held at Portland, Nov. 14-15, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, all of whom passed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University	(1907)	80
Baltimore Medical College	(1896)	80
Harvard University	(1913)	87
Laval University	(1916)	77

Massachusetts November Report

Dr. W. P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, Nov. 14-16, 1916. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 54, of whom 32 passed, including 1 osteopath, and 22 failed, including 9 osteopaths. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University Medical School	(1908)	75.1
Chicago College of Medicine and Surgery	(1914)	78.1
Baltimore Medical College	(1909)	75
Coll. of Phys. and Surgs., Baltimore (1913) 75.6;	(1915)	80.8, 83
University of Maryland	(1916)	77.7, 83.4, 84.3
Boston University (1915) 76.9;	(1916)	76.2, 84.7
College of Phys. and Surgs., Boston*	(1916)	76.6

Harvard University (1915) 75.1;	(1916)	76.1, 83.2
Tufts College Medical School (1913) 75; (1915) 77.1;	(1916)	75.3, 77.2, 78.2, 79.5, 81
Dartmouth Medical School	(1914)	77.3
Albany Medical College	(1914)	79.6
Long Island College Hospital	(1899)	75
N. Y. Homeo. Med. Coll. and Flower Hosp.	(1912)	77.3
Woman's Med. Coll. of Pennsylvania (1899) 75;	(1915)	81.4
University of Vermont	(1915)	77.6
McGill University	(1916)	80.2
FAILED		
Chicago College of Medicine and Surgery	(1916)	66.5
Loyola University	(1916)	73.5
College of Phys. and Surgs., Boston* (1913) 54.6; (1915) 59.6;	(1916)	61.5, 62.7.
Tufts College Medical School	(1916)	72
Columbia University	(1892)	53.5
N. Y. Homeo. Med. Coll. and Flower Hosp.	(1916)	68
Medico-Chirurgical College of Philadelphia	(1916)	67.2
University of Vermont	(1912)	66.7
University of Berlin	(1903)	54.8
University of Naples	(1912)	60.7

* Reported not recognized by the Massachusetts Medical Society.

Rhode Island November Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, Nov. 15-16, 1916. The total number of subjects examined in was 7; total number of questions asked, 63; percentage required to pass, 80. The total number of candidates examined was 7, all of whom passed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Tufts College (1915) 82.3, 82.5;	(1916)	80.1, 89.4
Jefferson Medical College of Philadelphia (1912) 92.6;	(1916)	91
University of Vermont	(1916)	86.6

South Carolina November Report

Dr. A. Earle Boozer, secretary of the State Board of Medical Examiners of South Carolina, reports the written examination held at Columbia, Nov. 14-16, 1916. The total number of subjects examined in was 16; total number of questions asked, 105; percentage required to pass, 75. The total number of candidates examined was 28, of whom 11 passed, including 1 osteopath, and 17 failed, including 1 osteopath. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University	(1916)	75.1
Atlanta Medical College (1915) 77;	(1916)	75, 83
University of Georgia	(1914)	75
University of Maryland (1909) 75;	(1915)	79.7
Harvard University	(1913)	81.5
Medico-Chirurgical College of Philadelphia	(1915)	84.4
Meharry Medical College	(1916)	81.6
FAILED		
Birmingham Medical College	(1915)	66.7
Atlanta College of Physicians and Surgeons	(1912)	71.2
Atlanta Medical College (1914) 70.7;	(1915)	65.6
Southern College of Medicine and Surgery	(1914)	66.6
Loyola University	(1916)	67
Woman's Medical College of New York Inf.	(1899)	67.1
North Carolina Medical College	(1910)	67
University of Oklahoma	(1915)	70.2, 70.4
Meharry Medical College (1914) 70.4;	(1916)	70
Memphis Hospital Medical College	(1911)	55.5, 59.5
University of Tennessee	(1905)	47.7
Medical College of Virginia	(1916)	61.4

Delaware December Report

Dr. Henry W. Briggs, chairman of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, Dec. 12-14, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, of whom 6 passed and 1 failed. Three candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Johns Hopkins University	(1916)	84.7
New York Homeo. Med. Coll. and Flower Hosp.	(1915)	85.5
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1916)	87.7
Medico-Chirurgical Coll. of Philadelphia (1915) 80.1;	(1916)	87.3
University of Pennsylvania	(1913)	85.5
FAILED		
University of Naples	(1914)	68

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Columbian University	(1898)	Dist. Colum.
University of Pennsylvania (1889)	(1913)	Penna.

Book Notices

The Clinical Diagnosis of Internal Diseases. By Lewellys F. Barker, M.D., LL.D., Professor of Medicine, Johns Hopkins University. Three Volumes. Cloth. New York: D. Appleton & Co., 1916.

Dr. Barker's work is limited wholly to diagnosis, but such limitation does not mean that the work is of limited scope, for clinical diagnosis involves an extensive knowledge of anatomy, physiology, pathology, chemistry and laboratory methods; in fact, every phase of the practice of medicine except therapeutics. If there is an actual science of medicine, that science has reached its highest development in diagnosis. The clinician of wide experience who has at his ready command the knowledge which enables him to outline the findings of his complete examination and then to name the disease condition is practicing scientific medicine.

The book is issued in three volumes divided into numerous parts: The first part concerns history at examination and general importance of diagnostic methods; the second part is devoted wholly to the use of the Roentgen ray; the third part, to the various fluids of the body, giving in detail the methods of obtaining these fluids and of examining them; the fourth part concerns the infectious diseases and those due to external physical causes; the fifth part, diseases of the respiratory tract, and the sixth part, the diseases of the circulatory system. Each section is accompanied by an important list of bibliographic references which the author has selected with a view to their historical importance, their accessibility and their newness.

Of especial interest in the first volume is the section on methods of examining the movements of the heart and blood vessels. The clinician to whom McKenzie's ink polygraph and Erlanger's apparatus and the electrocardiograph are merely mechanical curiosities will find here excellent illustrations of these instruments, with outlines of their importance and usefulness in actual diagnosis, and the pages which follow are profusely illustrated with examples taken from the work of these instruments. Volume II is devoted to the blood, digestive system and urology, and Volume III to muscles, bones, joints, the nervous system and metabolism.

To attempt a complete review of this extensive work, even were unlimited space available would, no doubt, be futile. There are points on which every one would not agree with the author. There are, perhaps, omissions of work which to some has seemed significant, and inclusion of other studies which are possibly questionable. But the large amount of exceedingly valuable material, well written and well presented, far exceeds any minor faults which the books may contain. The articles are accompanied with numerous illustrations, many of them in color, the type is large and easily readable, and there are numerous subheadings which enable rapid reference to any subject. Professor Barker has prepared a monumental work, and the publishers have done their share in presenting a work that is a credit to American medicine.

The Surgical Clinics of Chicago. Volume I, Number 1. Published bimonthly. Cloth. Price per year, $14. Pp. 221, with 83 illustrations. Philadelphia: W. B. Saunders Company, 1917.

"The Surgical Clinics of Chicago" is in a way a successor of the Surgical Clinics of Dr. John B. Murphy, which naturally ended with the death of their distinguished author. The first number contains clinics by Drs. A. D. Bevan, A. J. Ochsner, E. Wyllys Andrews, L. L. McArthur, Dean D. Lewis, Carl Beck, Allen B. Kanavel, D. N. Eisendrath, Kellogg Speed, S. C. Plummer, E. W. Ryerson and D. B. Phemister.

The clinics are interesting and instructive. The physician of imagination can picture the patients, can follow the steps of the operation and can, perhaps, learn better from these clinics some of the surgery which is described than he could have learned from an upper seat in the amphitheater when the clinic was given. This is especially true because of the numerous excellent pictures.

The *British Journal of Surgery*, recently reviewing the Murphy Clinics as a whole, notes that the first issues were marked by somewhat careless and indifferent editing, but that latterly this condition had greatly improved. The first issue of the Surgical Clinics of Chicago is marked by many striking features; conspicious among these are the profuseness and excellence of the illustrations, the extensive surgical material offered by the Chicago surgeons, and the somewhat indifferent editing or literary style. It is, of course, impossible to duplicate the intonation of the surgeon's voice, his gestures, and his eccentricities of speech or of action. Would it not be better, then, to edit the reading matter of the clinics in literary style, deleting useless words, verbal eccentricities, and rambling repetitions?

Water-Supply (Considered Principally from a Sanitary Standpoint). By William P. Mason, Professor of Chemistry, Rensselaer Polytechnic Institute. Fourth Edition. Cloth. Price, $3.75 net. Pp. 528, with illustrations. New York: John Wiley & Sons, 1916.

After outlining the methods used in ancient times to insure a supply of pure water, the author discusses drinking water and water-borne diseases, and describes natural and artificial means of purifying water and making it safe. Purification, storage and distribution of water for large communities throughout the world are completely reviewed, different types of purification plants being illustrated and described. Results obtained with different methods are tabulated. Many examples of the inception of water-borne diseases and epidemics are given. All these subjects are presented so interestingly that the reader, even though not versed in the technicalities of the subject, will enjoy the book and profit by reading it. Methods of water analysis capable of ready application by the field sanitarian with simple portable apparatus have not been considered. The author may not be in sympathy with rough and ready methods so often needed by field men. While this may be considered an omission in the light of present day advances in field sanitation work, it is probable that these matters of smaller import should not have place in a work of this size.

Gunshot Wounds: How They Are Inflicted, Their Complications and Treatment. By Colonel Louis A. La Garde, United States Army Medical Corps (Retired). Second Edition. Cloth. Price, $4. Pp. 457, with 159 illustrations. Prepared under the Direction of the Surgeon General United States Army and Published by Authority of the Secretary of War. New York: William Wood & Co., 1916.

Owing to the unprecedented production of gunshot wounds in the two years which have elapsed since the publication of the first edition of this book, the author feels that any work on gunshot injuries, no matter how recently produced, requires extensive additions. He has revised somewhat the chapter on infection of gunshot wounds, and has largely rewritten the chapter on the general treatment of gunshot wounds, so as to include a description of the methods used by Alexis Carrel, Sir A. E. Wright, Col. H. M. W. Gray, and others at the front. Further additions are found in the chapters on the treatment of gunshot wounds of the chest and of the abdomen. A chapter on the war gives statistics of losses, etc., up to the time the book went to press. While it is acknowledged that the figures are far from being complete and that they are made from general estimates, rather than from official sources, they are quite interesting and show the enormous loss of life which has already taken place.

Obstetrics. A Practical Text-Book for Students and Practitioners. By Edwin Bradford Cragin, A.B., A.M., M.D., Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University, New York. Assisted by George H. Ryder, A.B., M.D., Instructor in Gynecology, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, $6 net. Pp. 858, with 512 illustrations. Philadelphia: Lea & Febiger, 1916.

Through his experience as a teacher of obstetrics and gynecology and as the medical head of Sloane Hospital for Women, where over 1,800 deliveries occur annually, the author is well qualified to present a practical textbook on these subjects. Recognizing that many textbooks are too large for the student, he has omitted lengthy discussion and has covered the subjects concisely. The illustrations of the subject of abortion are new and so well done that the student cannot help but understand. The author has wisely placed the subject of pelvimetry and antepartum examinations under the management of normal pregnancy.

Social Medicine, Medical Economics and Miscellany

THE ILLINOIS CONSOLIDATION BILL BECOMES A LAW *

The so-called consolidation bill which has just become a law in Illinois is to be known legally as "the Civil Administrative Code of Illinois." It provides for nine departments of the state government, namely, Finance; Agriculture; Labor, Mines and Minerals; Public Works and Buildings; Public Welfare; Public Health; Trade and Commerce; Registration, and Education. Each department is to have a director as its head. The directors of the Departments of Finance, Public Works and Buildings, Public Welfare, and Trade and Commerce receive $7,000 a year; the directors of the Departments of Agriculture, and Public Health receive $6,000 a year, and the directors of the Departments of Labor, Mines and Minerals, and Registration and Education receive $5,000 a year. In both the Departments of Public Health and of Registration and Education, provision is made for assistant directors, with salaries of $3,600. In the Department of Public Health, provision is made for a board of public health advisers composed of five persons.

The following extracts from the law give the most important provisions regarding the two departments in which physicians are most interested:

DEPARTMENT OF PUBLIC HEALTH

The director of public health shall be a person licensed to practice medicine and surgery in this state and shall have had at least five years' practical experience in the practice of medicine and surgery in this state and at least six years' practical experience in public health work.

The assistant director of public health shall be a person licensed to practice medicine and surgery in this state and shall have had at least five years' practical experience in the practice of medicine and surgery in this state and at least three years' practical experience in public health work.

Neither the director, assistant director, superintendent of registration, nor any other executive and administrative officer in the department of registration and education shall be affiliated with any college or school of medicine, pharmacy, dentistry, nursing, optometry, embalming, barbering, veterinary medicine and surgery, architecture, or structural engineering, either as teacher, officer or stockholder, nor shall he hold a license or certificate to exercise or practice any of the professions, trades or occupations regulated.

ALL FEES TO GO INTO STATE TREASURY

The gross amount of money received by every department, from whatever source, belonging to or for the use of the state, shall be paid into the state treasury, without delay, not later in any event than ten days after the receipt of the same, without any deduction on account of salaries, fees, costs, charges, expenses or claim of any description whatever. No money belonging to, or for the use of, the state shall be expended or applied by any department except in consequence of an appropriation made by law and upon the warrant of the auditor of public accounts.

POWERS OF THE DEPARTMENT OF PUBLIC HEALTH

The department of public health shall have power:

To exercise the rights, powers and duties vested by law in the state board of health, its secretary and executive officer, other officers and employees, except the rights, powers and duties vested by law in the state board of health under the act to regulate the practice of medicine and the act to regulate the practice of embalming;

To have the general supervision of the interests of the health and lives of the people of the state;

To act in advisory capacity relative to public water supplies, water purification works, sewerage system, and sewage treatment works, and to exercise supervision over nuisances growing out of the operation of such water and sewage works, and to make, promulgate and enforce rules and regulations relating to such nuisances;

To make such sanitary investigations as it may, from time to time, deem necessary for the preservation and improvement of public health;

To make examinations into nuisances and questions affecting the security of life and health in any locality in the state;

To maintain chemical, bacteriological and biological laboratories, to make examinations of milk, water, sewage, wastes, and other substances and to make such diagnosis of diseases as may be deemed necessary for the protection of the people of the state;

To purchase and distribute free of charge to citizens of the state diphtheria antitoxin, typhoid vaccine, smallpox vaccine and other sera, vaccines and prophylactics such as are of recognized efficiency in the prevention and treatment of communicable diseases;

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* Compare Progressive Legislation in Illinois, Current Comment, The Journal A. M. A., this issue, p. 855.

To obtain, collect and preserve such information relative to mortality, morbidity, disease and health as may be useful in the discharge of its duties or may contribute to the promotion of health or to the security of life in this state;

To make investigations and inquiries with respect to the causes of disease, especially epidemics, and to investigate the causes of mortality and the effect of localities, and other conditions upon the public health, and to make such other sanitary investigations as it may deem necessary for the preservation and improvement of the public health;

To keep informed of the work of local health officers and agencies throughout the state;

To promote the information of the general public in all matters pertaining to public health;

To supervise, aid, direct and assist local health authorities or agencies in the administration of the health laws;

To enlist the cooperation of organizations of physicians and other agencies for the promotion of the public health in the improvement of health and sanitary conditions throughout the state;

To make sanitary, sewage, health and other inspections and examinations for the charitable, penal and reformatory institutions and the normal schools;

To inspect, from time to time, all hospitals, sanitaria, and other institutions conducted by county, city, village or township authorities, and to report as to the sanitary conditions and needs of such hospitals, sanitaria and institutions to the official authority having jurisdiction over them;

To print, publish and distribute documents, reports, bulletins, certificates and other matter relating to the prevention of diseases and the health and sanitary condition of the state.

DEPARTMENT OF REGISTRATION AND EDUCATION

The department of registration and education shall have power:

To exercise the rights, powers and duties vested by law in the board of education of the state of Illinois, the board of trustees of the Southern Normal University at Carbondale, the board of trustees of the Northern Illinois State Normal School at DeKalb, the board of trustees of the Eastern Illinois State Normal School at Charleston, and the board of trustees of the Western Illinois State Normal School at Macomb;

To exercise the rights, powers and duties vested by law in the board of veterinary examiners and the state board of live stock commissioners relating to the practice of veterinary medicine and surgery in the state of Illinois;

To exercise the rights, powers and duties vested by law in the board of examiners of horseshoers;

To exercise the rights, powers and duties vested by law in the state board of examiners of architects;

To exercise the rights, powers and duties vested by law in the state board of examiners of structural engineers;

To exercise the rights, powers and duties vested by law in the state board of health relating to the practice of medicine, or any of the branches thereof, or midwifery;

To exercise the rights, powers and duties vested by law in the state board of health relating to the regulation of the embalming and disposal of dead bodies, and for a system of examination, registration and licensing of embalmers;

To exercise the rights, powers and duties vested by law in the state board of pharmacy;

To exercise the rights, powers and duties vested by law in the Illinois State Board of Dental Examiners;

To exercise the rights, powers and duties vested by law in the Illinois State Board of Nurse Examiners;

To exercise the rights, powers and duties vested by law in the state board of optometry;

To exercise the rights, powers and duties vested by law in the state board of barber examiners, its officers and employees;

To investigate and study the natural resources of the state and to prepare plans for the conservation and development of the natural resources and for that purpose the officers and employees thereof may enter and cross all lands in this state, doing no damage to private property;

To cooperate with and advise departments having administrative powers and duties relating to the natural resources of the state, and to cooperate with similar departments in other states and with the United States government;

To conduct a natural history survey of the state, giving preference to subjects of educational and economic importance;

To publish, from time to time, reports covering the entire field of zoology and botany of the state;

To maintain a state museum, and to collect and preserve objects of scientific and artistic value, representing past and present fauna and flora, the life and works of man, geological history, natural resources, and the manufacturing and fine arts;

To supply natural history specimens to the state educational institutions and to the public schools;

To investigate the entomology of the state;

To investigate all insects dangerous or injurious to agricultural or horticultural plants and crops, live stock, to nursery trees and plants, to the products of the truck farm and vegetable garden, to shade trees and other ornamental vegetation of cities and villages, to the products of the mills and the contents of warehouses, and all insects injurious or dangerous to the public health;

To conduct experiments with methods for the prevention, arrest, abatement and control of insects injurious to persons or property;

To instruct the people, by lecture, demonstration or bulletin, in the best methods of preserving and protecting their property and health against injuries by insects;

To publish, from time to time, articles on the injurious and beneficial insects of the state;

To study the geological formation of the state with reference to its resources of coal, ores, clays, building stones, cement, materials suitable for use in the construction of roads, gas, mineral and artesian water and other products;

To publish, from time to time, topographical, geological and other maps to illustrate the resources of the state;

To publish, from time to time, bulletins giving a general and detailed description of the geological and mineral resources of the state;

To cooperate with the United States Geological Survey in the preparation and completion of a contour topographical survey and map;

To collect facts and data concerning the water resources of the state;

To determine standards of purity of drinking water for the various sections of the state;

To publish, from time to time, the results of its investigations of the waters of the state to the end that the available water resources of the state may be better known and that the welfare of the people in the various communities may be conserved;

To make analyses of samples of water from municipal or private sources;

To distribute, in its discretion, to the various educational institutions of the state specimens, samples and materials collected by it after the same have served the purposes of the department.

LICENSING OF PROFESSIONS

The department of registration and education shall, wherever the several laws regulating professions, trades and occupations which are devolved upon the department for administration so require, exercise, in its name, but subject to the provisions of this act, the following powers:

Conduct examinations to ascertain the qualifications and fitness of applicants to exercise the profession, trade or occupation for which an examination is held; and pass upon the qualifications of applicants for reciprocal licenses, certificates and authorities;

Prescribe rules and regulations for a fair and wholly impartial method of examination of candidates to exercise the respective professions, trades or occupations;

Prescribe rules and regulations defining, for the respective professions, trades and occupations what shall constitute a school, college or university, or department of a university, or other institutions, reputable and in good standing and to determine the reputability and good standing of a school, college or university, or department of a university, or other institution, reputable and in good standing by reference to a compliance with such rules and regulations;

Adopt rules providing for and establishing a uniform and reasonable standard of maintenance, instruction and training to be observed by all schools for nurses which are to be deemed reputable and in good standing and to determine the reputability and good standing of such schools for nurses by reference to compliance with such rules and regulations;

Establish a standard of preliminary education deemed requisite to admission to a school, college or university, and to require satisfactory proof of the enforcement of such standard by schools, colleges and universities;

Conduct hearings on proceedings to revoke or refuse renewal of licenses, certificates or authorities of persons exercising the respective professions, trades or occupations, and to revoke or refuse to renew such licenses, certificates or authorities;

Formulate rules and regulations which require in any act to be administered.

None of the above enumerated functions and duties shall be exercised by the department of registration and education, except upon the action and report in writing of persons designated from time to time by the director of registration and education to take such action and to make such report, for the respective professions, trades and occupations as follows:

For the medical practitioners, embalmers and midwives, five persons, all of whom shall be reputable physicians licensed to practice medicine and surgery in this state, no one of whom shall be an officer, trustee, instructor or stockholder or otherwise interested directly or indirectly, in any medical college or medical institution. For the purpose of preparing questions and rating papers on practice peculiar to any school, graduates of which may be candidates for registration or license, the director may designate additional examiners whenever occasion may require;

For the pharmacists, five persons, each of whom shall be a competent registered pharmacist, in the state, and shall have had ten years' practical experience in the dispensing of physicians' prescriptions since such registration;

For the dentists, five persons, each of whom has been a licensed practitioner of dentistry or dental surgery in this state for a period of five years or more, and no one of whom is in any way connected with or interested in any dental college or dental department of any institution of learning;

For the registered nurses, five persons, each of whom is a registered nurse in this state and has been graduated for at least a period of five years from a school for nurses in good standing, and, during the course of training, has served for two years in a general hospital, and three of whom shall have had at least two years' experience in education work among nurses;

For the optometrists, five persons from among such practicing optometrists of the state as have had not less than five years' practical experience in optometry, no one of whom is a member of any optical school or college or instructor in optometry or person connected in any way therewith, or is a manufacturer, jobber or jobbing representative;

The action or report in writing of a majority of the persons designated for any given trade, occupation or profession, shall be sufficient authority upon which the director of registration and education may act.

In making the designation of persons to act for the several professions, trades and occupations, the director shall give due consideration to recommendations by members of the respective professions, trades and occupations and by organizations therein.

Whenever the director is satisfied that substantial justice has not been done either in an examination or in the revocation of or refusal to renew a license, certificate or authority, he may order reexaminations or rehearings by the same or other examiners.

All certificates, licenses and authorities shall be issued by the department of registration and education, in the name of such department, with the seal thereof attached.

Medicolegal

Removal of Public Officers by State Board of Health

(State ex rel. Attorney General vs. McDowell (Miss.), 71 So. R. 867; also Ware vs. State ex rel. Poole (Miss.), 71 So. R. 868)

The Supreme Court of Mississippi, Division B, says that the question to be determined in the first or McDowell case was whether or not, under a statute giving the state board of health authority to remove the state factory inspector "for cause," the board has the authority to remove such officer without specifying any cause satisfactory or otherwise and to remove him without a hearing. In the court's opinion, the authority conferred on the board of health to remove the factory inspector can be exercised only on "charges, notice and an opportunity to be heard." While the board of health under the statute in question has the authority to remove the factory inspector for cause, this cause must be a good cause, and not a mere arbitrary exercise of the authority thus conferred. The factory inspector must be informed of the nature of the charges preferred against him, and an opportunity must be afforded him to be heard; in other words, he is entitled to his day in court.

The same court says, in the second or Poole case, which involved the question of the power of the state board of health to remove a county health officer, that the case was ruled by the principle announced in the McDowell case, which was argued and submitted rather as a companion case. The position of county health officer is one provided by the legislature many years ago, and the incumbent is beyond question a servant of the public, and responsible to the people of his county for the manner in which he discharges the large and important duties imposed on him by statute. Matters affecting the public health and quarantine are intrusted to him. The statute contemplates that if he is faithful to the trust imposed, he will serve at least a term of two years, and it is to be noted that his salary is fixed by the year. The legislature never contemplated or intended that the state board of health should have or exercise the power of removal "at any meeting" without reason, notice or hearing. The proper construction of the statute simply means that the state board may exercise the power of removal for good or reasonable cause. What is or is not reasonable cause may well be a matter largely within the discretion of the board, but certain it is that the legislature never intended that one of our public officers should be thrust out of office without any reason whatever. This interpretation of the statute does no violence to the language employed by the legislature. If this is not the meaning of that section giving the board the right to remove, then the other provision of the statute fixing the term of office at two years would mean nothing.

Not Bound by Diagnosis of Physician

(Southern Woodmen vs. Davis (Ark.), 187 S. W. R. 638)

The Supreme Court of Arkansas, in affirming a judgment in favor of Plaintiff Davis for $1,700 for alleged total disability, says the proof in the blanks filled out tended to show a total and permanent disability, while the ailment disclosed in the examination of the physician was shown in the affidavit of the physician to be tuberculosis. The society caused an examination to be made by another physician, who failed to find any indications of the disease named, and refused payment, whereupon this suit was commenced to recover the amount. The proof adduced by the plaintiff tended to show, not a case of tuberculosis, but of interstitial nephritis or Bright's disease. The evidence was sufficient to establish the fact that the plaintiff was incurably afflicted with that disease, and that he was totally and permanently incapacitated from any kind of manual labor such as was necessary to carry on his business of farming or logging. The defendant contended that he was not entitled to recover because he did not furnish satisfactory proof of loss. The contention was that his case must fail because he sent in proof of disability on account of tuberculosis, and that he subsequently abandoned that and undertook to prove that he was suffering from another disease which caused his alleged total disability. But the court does not think there was any merit in the defendant's contention, for it simply came down to the point whether or not the plaintiff was bound by the diagnosis of the physician as to the cause of his disability. He furnished proof on blank forms prescribed by the home office of the defendant society, and those proofs tended to show that he was permanently and totally disabled, and his right to recover was not defeated because there was an error made by the physician in the diagnosis of his case.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
American Gastro-Enterological Assn., Atlantic City, April 30-May 1.
American Urological Association, Chicago, April 2-4.
Arizona Medical Association, Douglas, April 17-18.
Arkansas Medical Society, Little Rock, May 1-3.
California State Medical Society, San Diego, April 17-19.
Georgia Medical Association, Augusta, April 18-20.
Illinois State Medical Society, Bloomington, May 8-10.
Iowa State Medical Society, Des Moines, May 9-11.
Kansas Medical Society, Salina, May 2-4.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Mississippi State Medical Association, Jackson, May 8-9.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
Nebraska State Medical Association, Lincoln, May 8-10.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
Oklahoma State Medical Assn., Lawton-Medicine Park, May 8-10.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.
Texas State Medical Association, Dallas, May 8-10.

THE THIRTEENTH ANNUAL CONFERENCE OF THE COUNCIL ON HEALTH AND PUBLIC INSTRUCTION OF THE AMERICAN MEDICAL ASSOCIATION

Held in Chicago, Feb. 6, 1917

Dr. Henry M. Bracken, St. Paul, in the Chair

Public Health Training in Universities

Dr. George E. Vincent, President-Elect, Rockefeller Foundation: Successful public health training must be carried on either by universities or by schools in close affiliation with them. This is not to say that the university can provide all of the necessary conditions. The closest and most sympathetic cooperation with agencies which are carrying on actual public health activities is of fundamental importance. All the schools provide for practical field work. The need of connecting the experience in the laboratory and the material of the lecture room with the actual concrete problems of the profession is universally recognized.

A few phases of public health work seem either to have been overlooked or only incidentally recognized. For example, the function of public health education and publicity is one which deserves study and for which special types of training should be provided. The education of public opinion in a democratic country is necessary for the progress and stability of public health work. In an attempt to outline the chief lines of future development, it may be well to enumerate the different types of public health functionaries for whom training will have to be provided. These fall into a number of fairly well defined groups: 1. Public health administrators; men with fundamental and thorough training who are capable of serving as federal functionaries, and as state, city and county health officers. 2. Laboratory men who have had sufficient contact with field work to be thoroughly intelligent about their duties. In this group may be included also statisticians whose training in public health enables them to interpret with some intelligence the data with which they deal, and to estimate with reasonable accuracy the coefficient of corruption and the mean of mendacity by which vital statistics are so largely vitiated. 3. Administrative specialists who, with a background of general training, have become proficient as epidemiologists, authorities in tuberculosis, or specialists in venereal diseases. 4. Sanitary engineers who deal with engineering problems not merely from a physical but from a biologic point of view. 5. School medical officers who are more than practitioners and see the health of the school in its wide relations to community life on the one hand and to individual efficiency on the other. 6. Specialists in public health education and publicity who combine with accurate knowledge the capacity to apply practically the principles of individual and group psychology. 7. Public health nurses with special training and aptitude for the important duties which more and more will devolve on them. These nurses will be differentiated, for example, into the city nurse, the town nurse and the rural nurse. 8. Sanitary inspectors of many kinds, the artisans of the public health service, who nevertheless require a training which will enable them to do their work intelligently and with satisfaction both to themselves and to the community.

In order to insure this unified, purposeful kind of organization, the agency for teaching public health must have reasonable autonomy. It will not do to make the new curriculum a mere by-product of medical education or subject to its sole control. There should be a special administrative board and a director imbued with the ideals of preventive medicine. Only under such conditions can a public health teaching organization gain the requisite authority, coordinated efficiency and professional spirit. The outlook for public health in the United States is encouraging. There is an increasing recognition of its economic and social importance as well as its bearing on individual happiness.

Public Health Instruction in Medical Schools

Dr. M. J. Rosenau, Boston: We must keep clearly before us that the purpose of teaching public health in medical schools is not to make health officers of medical students, but to broaden their training so as to fit them better for the practice of medicine. Special training for a public health career requires special courses and even special schools. The importance of training health officers deserves the recognition which it is getting. The teaching of hygiene may then be used as one of the means to broaden the point of view of the medical school and to widen the horizon of the medical student. The medical profession is one of the most important links in the sanitary chain. The efficiency of any system of health administration depends on the cooperation of a trained group of skilled physicians, acting independently and collectively. No medical school can ever be complete enough to offer facilities to cover the entire field of public health instruction. Cooperation must be established with federal, state and city health departments, and with many philanthropic and semipublic agencies. Milk stations, baby welfare work, antituberculosis societies, psychopathic clinics, institutions for the feebleminded, water and sewage boards, hospitals for contagious diseases, board of health laboratories, quarantine stations, medical inspection of schools, and many other agencies may be utilized with advantage in teaching the subject.

DISCUSSION ON THE PAPERS OF PRESIDENT VINCENT AND DR. ROSENAU

Dr. Victor C. Vaughan, Ann Arbor, Mich.: Medicine consists of that knowledge which can be utilized in the prevention or cure of disease. Hygiene consists of that knowledge which can be used in the prevention of disease. No one can teach medicine without teaching hygiene. No student can read a textbook on any infectious disease without getting some knowledge of its prevention, so that the teaching of preventive medicine necessarily goes with that of curative medicine. The clinical teacher must discuss antitoxin; he must discuss the diphtheria bacillus, how the disease is spread, how it is prevented. This is true of other infectious diseases. In discussing smallpox and typhoid fever he must bring out the principles of vaccination, and so on. Notwithstanding the fact that preventive medicine is taught along with curative medicine, there must be a distinct and well defined course in hygiene per se. As dean of a medical school, I try to take into consideration all the subjects that must be taught in that school, and not overemphasize or magnify what I myself teach. All my students must read either Rosenau's "Preventive Medicine" or Harrington's "Hygiene." We have optional courses in water analysis, food analysis and sanitary surveys. The course in hygiene includes those things not likely to be taught from other chairs, as, personal hygiene, food, drink, clothing, exercise and mental hygiene. We then take up the hygiene of the home, ventilation, heating, the hygiene of the community, municipal hygiene, rural hygiene, state hygiene and national hygiene. In studying hygiene we study the law, the public acts of various cities in Michigan especially, although I encourage students to make a special study of the acts of the state in which they live or intend to practice. No better or more efficient course in hygiene can be given than would be secured by universal military training.

Dr. C. E. Cantrell, Greenville, Texas: The people of this country, outside of large cities, have not men qualified to do this work. The universities must do graduate teaching.

Dr. H. B. Hemenway, Evanston, Ill.: Malcolm Watson says that a sanitarian has to approach the subject through medical practice, a handicap which very few men have ever been able to overcome. The medical profession has been the greatest stumbling block to sanitary progress in the past. For the trained specialist a school should be entirely independent. There is a great difference between the work of the public sanitarian and that of the medical profession. One of the great weaknesses in our administration has been ignorance of law.

Dr. M. F. Boyd, Iowa City, Iowa: Those engaged professionally in public health work look forward to the time when the public health administration of this country will be in the hands of professionally trained sanitarians, even though the most optimistic of us will admit that that time is far off. Who is going to supervise the health of the people in the meantime? The medical profession. No profession is so well qualified to handle public health work under present circumstances. If our medical schools would devote more attention to this subject, an immense improvement would result. The men who are destined at some time in their practice to serve as local health officers would understand their duties. That is perhaps the best solution of the problem until the advent of whole time health officers professionally trained as such. The American Public Health Association, realizing the difficulties which exist at present, at the Cincinnati meeting of 1916 passed a resolution creating a permanent committee on public health education. One of the duties of the committee is to endeavor, in the course of years, to increase the amount of time and attention paid to the subject in medical schools. To that end they directed that the committee cooperate with the Council on Health and Public Instruction and the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges, and to this end, as representatives of this body, I would urge that these councils of the American Medical Association appoint representatives to cooperate with the Committee on Public Health Education of the American Public Health Association.

Dr. A. W. Abbott, Philadelphia: Dr. Rosenau asked in his questionnaire whether I regarded the number of hours allotted to me at the university for teaching hygiene sufficient? I replied that I did. I am opposed to increasing the complexities of our medical curriculum. That of the University of Pennsylvania differs little from that of other good schools.

They all want remodeling. Hygiene is too big a subject to be taught in toto in any course except a special course in hygiene. As a part of the medical course, the most that one can aspire to do is to give the candidate for a medical degree a review of the problems which have been accomplished.

Dr. John M. Dodson, Chicago: We may before long have to go farther than Dr. Abbott has indicated and specifically educate young men for family health officers. Medicine is becoming so specialized that the function of the general practitioner is gradually disappearing, even in the smaller towns. The conscientious practitioner long ago recognized the importance of referring difficult surgical cases—everything except emergency surgical cases—to some special man. What applies to all recognized special lines is becoming equally true of general medicine, that adequate modern care cannot be given to the man ill with acute disease except by men with special facilities and special training, and that leaves the general practitioner with not very much to do. Large industrial organizations, and other types of organizations, are looking to the purely preventive side of the health of their employees, and we may find it necessary to direct our education along different lines, giving students instruction in hygiene and preventive medicine.

Prof. E. O. Jordan, Chicago: The provision for the teaching of hygiene in our medical schools has not only for a long time been inadequate, but is at present lamentably so. Outside of the handful of schools that Dr. Rosenau mentioned, very little provision is made for the teaching of hygiene in our medical schools throughout the United States. We are talking now about introducing a course in military hygiene and sanitation into our medical schools. The first step is to provide in every medical school for a full time man on this subject. That could have been done at any time in the last ten years. We find ourselves now lacking any number of medical men trained in hygiene. One of the speakers has pointed out that for a long time to come we shall have to depend on graduates in medicine for the supervision and control of much of our public health work. These men should receive an adequate outline of training in hygiene.

Dr. Victor G. Heiser, New York: During the past fifteen years I have had working with me graduates from medical schools of the United States, and their woful deficiencies in matters of hygiene and sanitation have been harder to overcome than the apathy of the public with which we have to deal. I am pleased to see that there has been a recognition of the necessity of improving instruction in these lines. During the past few years I have had occasion to visit most of the medical schools in the eastern hemisphere, particularly those of India. Hygiene and sanitation, and much of medicine is far better taught in the average school in India than it is taught in the United States. The facilities and equipment and the ability of the teachers themselves far exceed the average in this country.

The State Regulation of the Practice of Medicine as an Executive Problem

Hon. James M. Cox, Governor of Ohio: Every important calling has to be regulated, and the logical arrangement is regulation by government because the individual citizenship has neither the time nor the agency to work out this regulation. The motive of the medical profession is to conserve the public health. When you establish the motive of the other fellow, you have accomplished nine tenths of the task of analysis.

I know of no physician who ever entered the medical profession prompted by a lust for a million dollars. If he did, he probably did not remain in it long. There is no profession that is making more progress than the medical fraternity, and certainly none that is rendering a greater service to humanity. Members of your profession are apt to get restive because of the difficulties that you encounter in your affairs with the cults, so called. You must remember, and if any of you have had public experience you will know the force of my contention, that we can work things out in this country only by the processes that are given to us by democracy in government. You know in your own minds full well just what sort of statutory provision would best conserve public health, and yet if you were arbitrarily to put it into effect now you might delay your ultimate accomplishment many years. Now, I speak from experience because I was the governor of the state of Ohio, if you will permit a personal reference, immediately after the adoption of a new constitution. I have never felt it was a revoluntionary upheaval in Ohio. I always looked on it as an evolutionary upheaval in authority, and we have had fifty-six varieties of laws in Ohio. I knew they were right and we passed them, but my friends, the populace, had not caught the glimpse, and they gave me a two years' vacation.

You are not going to be enabled to stamp things out that you think are harmful today. But if your concept of things is sound, and I am rather disposed to think that it is, then you can depend first on the intelligence of public opinion, and secondly on the courageous exercise or manifestation of that public opinion. It is singular how many of our citizens in every state inveigh against a standard. It seems to me, that is your great battle. But I urge you to stand by it with all the militancy of a great profession. Do not lower the standard of your profession, regardless of the cults who oppose you.

To the state medical boards and boards of health, there should always be attached men of principle, men of courage, who get a vision of the real ideals that you men are holding to, and then you have the courage not to depart from those ideals. My observation in Ohio has been that in Dr. Matson, for instance, laws are all safe because I have found that the governor of the state can be looked squarely in the eye by Dr. Matson, and if he does not agree with the executive thought he firmly but respectfully says so. Now, I speak of him as a type. Of course, we feel that all things are a little bit better in Ohio, and the nearest approach you make to Ohio standards and ideals, the better.

While the governor has the right of saying what the state medical board does in Ohio, I have never run counter to the recommendation of the medical board. I know that the members of the medical board are devoted to high ideals, and so far as I can give them cooperation and help to maintain those ideals, I shall do it.

I do not know what your experience is in other states, but in the state of Ohio the time has come, and I assume the situation is very much the same with you, for a more rigid supervision of health matters in the rural counties. It is only by the grace of God that half of the population have not died from typhoid fever in communities in which they have open wells and insanitary situations. In Knox County they had a widespread epidemic of typhoid fever. No one was sick save those who took milk from one dairyman. That circumstance made some impression on the imagination and the understanding of that community, and now the health officer has no trouble. There are rural counties in Ohio in which there is no supervision over health matters except that exercised by the state under its police powers. Society was delinquent. We have demonstrated that by the establishment of a branch of government which is more or less new.

The probate courts and juvenile courts in our state have to do with the assignment of delinquent youths to our state institutions. We found at Lancaster, for instance, that boys mentally unsound were put in close contact with boys who were perfectly sound mentally, but who had slipped their foot in some moral way either by virtue of their home association, or of their not having a home worth while. We have changed the law to provide that instead of the probate judge sending these delinquent youths to the institution at Lancaster, to the institution at Delaware or to some other institution, they are sent to the board of administration at Columbus, and are held in surveillance under inspection as long as necessary by the board of administration. How did it work out? They found an ever-ceasing stream of boys and girls with poor eyesight, some of them mentally delinquent, some of them not; some of them suffering from enlarged tonsils, and still others suffering from profound anemia. The board of administration through this newly created department built up these boys, and it was amazing how the crop improved.

Those youngsters were simply plants of humanity that had been reared low in the valley, probably under the stones, and they gained their first glimpses of those elements of nature which are so essential to life itself, and we found that in from thirty to sixty days we changed the whole aspect of things. We found some children, for instance, 10 and 15 years of age who had the mental equipment of children of 5 or 6 years of age. We resorted to the Binet test; then we established the placing out process, finding homes for these children so that they might grow into useful citizens. We found homes for them because there are thousands of homes without children as there are thousands of homeless children. Then we kept our eye on both these children and those homes, making sure, in the first place, the children were making progress, and, in the second instance, that the homes were satisfactory places for the children.

I believe that you should require a physician to have a four year course in a high school, a two year course in a university or college of arts and sciences, a four year course in a reputable medical school, and at least a year's experience in some hospital. We have no fear in our state as to the efficiency of physicians, if that standard is to be maintained. Probably the rapid development of what we designate as cults is due in some instances to the standards that have been established. I will urge on you, for the time being at least, a common sense mental attitude toward the cults, so called, basing that observation on the thought that if they are not going to make a useful contribution to society, then their failure will, in more or less quick time, be recognized by society, and society will help stamp it out.

DISCUSSION

Dr. Thompson, President, University of Ohio, Columbus: We all believe in the fundamental principles of education. Americans believe that education is a panacea for all human ills if you let it work long enough. We are interested in educational administration from the standpoint of the profession. This is particularly true of universities and colleges that have professional schools. I am interested in the legislation of our states bearing on the practice of medicine. A serious problem which presents itself to the educational portion of the community is the administration of these laws. We have to deal fundamentally with the questions which underlie these professions. These questions are chiefly those of applied science. Our institution is interested in the problems with which the board of health must deal. As deans and trustees, we feel it would be well to take a friendly attitude toward any body of men interested in the application of science to human welfare. That is the attitude university presidents and university boards of regents take concerning the larger questions of medicine. The state university and the privately endowed university have for their broad outlook public welfare, and so we are interested in the administration of applied science toward public welfare. That, more than any other reason, is the one that underlies our belief that the medical college should be associated with a university.

Dr. John A. Robison, President of the Illinois State Board of Health, Chicago: In regard to cults, the Illinois law requires that a physician shall have a certain preliminary education, that he shall attend a recognized medical college, and be examined before he can receive a license to practice. The law, however, permits any individual who does not wish to practice regular medicine, but who wishes to practice it in some other form, to submit merely to an examination by the state board of health. He does not have to exhibit any preliminary education, he does not have to be a graduate of a high school or university, nor does he have to attend any particular college of his own cult for training. It is an injustice to the physician that he has to spend so many years and so much time and have to undergo examination before he receives a license to practice. But the injustice is not so much to the physician as it is an injustice to the people of the state of Illinois, in which persons can be licensed by the state to practice on them without the requisite training.

Dr. David A. Strickler, Secretary, Colorado State Board of Medical Examiners, Denver: The laws are safe in the hands of good men. A board is effective only if its members are men of good executive ability. The medical profession should insist that it be represented by men of good executive ability, and to this end should bring influence to bear on those who make the appointments. The public does not have confidence in the purposes of the medical profession that it should have. If a jury is under the impression that the state board of medical examiners is back of a prosecution, it will free the individual in a large percentage of cases, no matter what the evidence against him is with relation to practicing medicine. If it be a question between an ethical physician and an unethical physician, the jury will give the advantage to the unethical physician every time. If it be a question between a layman and ethical physician or an unethical physician, the jury will give the advantage to the layman every time. I speak of this as a practical point in the administration of laws, and I believe it is true in every state. I know it is true in Colorado.

Current Medical Literature

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

March, LXXV, No. 3

1 Conservation of Energy in Spinal Anesthesia; Its Value in Weakness of Cardiac Muscle. R. R. Huggins and B. Z. Casleman, Pittsburgh.—p. 353.
2 Organotherapy in Gynecology; Report of Cases. F. B. Block and T. H. Llewellyn, Philadelphia.—p. 357.
3 Relation of Glands of Internal Secretion to Female Pelvic Organs. C. W. Vest, Baltimore.—p. 366.
4 *End Results of Cesarean Section. O. P. Humpstone, Brooklyn.—p. 372.
5 Gynecologic Postoperative Treatment at Long Island College Hospital. C, R. Hyde, Brooklyn.—p. 378.
6 Case of Adenomyoma of Rectovaginal Septum. A. Heineberg, Philadelphia.—p. 384.
7 Imperforate Hymen; Large Serocolpos in Child. S. Wiener, New York.—p. 398.
8 Diffuse Fibromas of Ovary. P. J. Reel, Columbus, Ohio.—p. 400.
9 Cases of Myomectomy in Pregnancy. J. A. McGlinn, Philadelphia. —p. 406.
10 When to Use Curet in Infected Abortions. J. O. Polak, Brooklyn.—p. 409.
11 Treatment of Papillomatous Growths of Ovary After Pozzi Method. C. R. Hyde, Brooklyn.—p. 412.
12 *Tuberculous Glands of Mesentery; Report of Cases. A. T. Jones, Providence, R. I.—p. 417.
13 *Relation of So-Called Ether Pneumonia to Pelvic and Abdominal Surgery. W. E. Darnall, Atlantic City, N. J.—p. 426.
14 Hospital Management. G. K. Dickinson, Jersey City, N. J.—p. 434.
15 Surgeon's Responsibility to Economics of Hospital. E. Marvel, Atlantic City, N. J.—p. 439.
16 Goiter and Pregnancy. A. Crotti, Columbus, Ohio.—p. 450.
17 Postpuerperal Sterility; Its Cause and Surgical Treatment. H. S. Lott, Winston-Salem, N. C.—p. 456.
18 Strangulated Ovarian Cyst Simulating Appendicitis; Report of Cases. E. A. Vander Veer, Albany, N. Y.—p. 459.
19 Digital Rotation in Occipitoposterior Positions of Vertex. G. A. Peck, New Rochelle, N. Y.—p. 463.
20 Premature Separation of Normally Situated Placenta in Latter Months of Pregnancy. L. A. Wing, New York—p. 471.

4. **End Results of Cesarean Section.**—One hundred and forty-eight consecutive cases of abdominal hysterotomy were analyzed by Humpstone. Dystocia due to disproportion is by far the most frequent indication in this report, 109 cases, in three of which prolapse of the funis was also found. Dystocia from the soft parts alone led to cesarean section in several cases. Ventral fixation, intentional or accidental, was the cause for ten operations, and one case of dystocia from a Coffey plication. There was one full term pregnancy after an interposition operation, one case of vaginal stenosis and one of osteoma on the posterior surface of the lateral ramus of the pubes. Three cases of contraction ring with impending rupture of the uterus gave three live babies, from uteri foul with odorous meconium, without serious morbidity to mothers. Ovarian cysts were the causative factor in three cases. Impacted face presentation with the chin posterior and tonic uterus was three times treated in this manner. Accidental hemorrhage led to operation in two cases, one of them in

which the hemorrhage was caused by a bougie employed in an attempt to induce labor. Placenta praevia was found as an indication in only one case. Oversize and overtime children twice afforded an indication. Ten sections were done for eclampsia. The maternal mortality in this whole series was 1.357 per cent. All the babies were born alive. Humpstone believes that abdominal delivery has no greater effect than pelvic delivery on the future health of the mother.

12. **Tuberculous Glands of Mesentery.**—Nine cases, the ages of the patients varying between 5 and 50 years, are reported by Jones. He believes that tuberculous mesenteric glands often occur primary to the true tuberculous type. The bovine type is undoubtedly present in many children without producing symptoms, the glands remaining quiescent, or having a tendency to subside. It is impossible to make a correct diagnosis before operation, as a rule, unless there are palpable glands which may be felt through the abdominal wall, or by the finger in the rectum. Tuberculous mesenteric glands may be present without giving symptoms. There are two clinical types: (*a*) a slightly progressing one generally with palpable glands; (*b*) an acute fulminating type most often simulating and impossible generally to differentiate from appendicitis. Prognosis in subacute stage good without operation. In acute stage exploratory laparotomy should be done, but glands not removed unless definite indications either from adhesions, ulceration or size of mass producing pain or much obstruction. Tuberculous glands of the mesentery may not present any symptoms until breaking down begins in the glands, after which the author gets symptoms of tuberculous peritonitis, intestinal obstruction, or symptoms simulating acute appendicitis. In children and young adults with history of right-sided abdominal pain, with or without palpable masses, inflamed mesenteric glands should always be considered as a possibility.

13. Abstracted in The Journal, Oct. 28, 1916, p. 1325.

American Journal of Roentgenology, New York

February, IV, No. 2

21 Bucky Diaphragm Adapted to Fluoroscopy. H. E. Potter, Chicago. —p. 47.
22 Nature and Origin of Secondary Radiation. J. S. Shearer, Ithaca. —p. 50.
23 Physical Investigation Work in Progress on Tubes and Accessories. W. D. Coolidge, Schenectady.—p. 56.
24 New Developing Formula for Roentgen Ray Plates. V. Aagaard, Battle Creek, Mich.—p. 66.
25 *Pathologic Reasons for Legitimate Error in Roentgen Ray Diagnosis of Gastric Carcinoma and Ulcer. W. C. MacCarty, Rochester, Minn.—p. 67.
26 *Syphilis of Stomach. L. T. Le Wald, New York.—p. 76.
27 *Indications for Surgical Intervention in Gastric Cancer. L. G. Cole, New York.—p. 81.

25, 26 and 27. Abstracted in The Journal, Nov. 11, 1916, p. 1470.

Arkansas Medical Society Journal, Little Rock

February, XIII, No. 9

28 Metastatic Arthritis. A. G. Lee, Texarkana.—p. 179.
29 Experiences in Cataract Extraction. H. Moulton, Fort Smith.—p. 185.
30 Peritonitis. C. S. Holt, Fort Smith.—p. 189.

Boston Medical and Surgical Journal

February 22, CLXXVI, No. 8

31 Hypertrophic Ileocecal Tuberculosis; Report of Cases. H. Gage and E. L. Hunt, Worcester.—p. 259.
32 Right Colectomy; End Results of Twelve Cases. P. P. Johnson, Beverly.—p. 266.
33 Advantages of Conservative Surgery in Operations for Diverticulitis of Descending and Pelvic Colon. J. W. Keefe, Providence, R. I. —p. 271.
34 Resection of Descending Colon and Rectum. F. H. Lahey, Boston. —p. 275.

Georgia Medical Association Journal, Augusta

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35 Surgical Treatment of Dyspepsia. C. W. Roberts, Atlanta.—p. 195.
36 Treatment of Bronchial Asthma with Autogenous Vaccines. C. W. Findley, Broxton.—p. 198.
37 Salvarsan in Treatment of Syphilis. C. Swanson, Atlanta.—p. 201.
38 Plea for Fuller Recognition of Importance of Psychical Disorders in Medical Practice. W. W. Young, Atlanta.—p. 204.
39 Probable Case of Ovarian Pregnancy. J. I. Garrard, Milledgeville. —p. 206.
40 Comparative Study of Two Cases of Tubal Pregnancy Terminating in Rupture. E. M. Stokes, Moultrie.—p. 208.
41 Hernia. A. D. Little, Thomasville.—p. 209.

Journal of Cutaneous Diseases, Boston

February, XXXV, No. 2

42 Case of Acnitis in Negro. F. C. Knowles, Philadelphia.—p. 61.
43 So-Called White Spot Disease or Sclerodermia Circumscripta. F. Wise and I. Rosen, New York.—p. 66.
44 *Treatment of Acne. R. A. McDonnell, New Haven, Conn. —p. 90.
45 Sclerodactylia with Calcareous Concretions; Report of Case. G. M. Olson, Minneapolis.—p. 96.
46 Pigmented Stripe in Thumb Nail. D. W. Montgomery, San Francisco.—p. 99.

44. **Treatment of Acne.**—That vaccination has run riot in the treatment of acne is McDonnell's opinion. The real cause of acne, he is convinced, is intestinal fermentation. Therefore regulation of the diet is the most important step in the management of acne. The following should never be eaten: breakfast cereals, potatoes, fresh bread, macaroni, apples, bananas and nuts. Everything sweet should be prohibited, including candy, preserves, cake, pie, ice cream, soda water. For two weeks the patient is limited to milk toast, soft boiled eggs, dry toast and soup. After that, the diet list may include soups, fish, meats, vegetables (except potatoes and beans), fruits (except bananas and apples), eggs, toast, salads, tea, coffee and milk. At the beginning of treatment it is highly desirable to have the teeth overhauled by a competent man, and made capable of mastication. Next, the importance of chewing should be drilled into the patient. There are some drugs which are capable, to a limited extent, of holding intestinal fermentation in check. In McDonnell's opinion the best of these is ichthyol. A common prescription with him is, aloin, 0.10, ichthyol, 10.00, a sufficient quantity of licorice powder, to be mixed and divided into thirty capsules, of which one is to be taken after each meal. Other drugs will readily suggest themselves.

Journal of Immunology, Baltimore

February, II, No. 2

47 *Disappearance of Agglutinin from Blood of Anaphylactic and Normal Animals. H. Hempl, Copenhagen.—p. 141.
48 *Specific and Nonspecific Action of Rabbit Blood Serum in Complement Fixation Test. I. F. Huddleson, Ann Arbor, Mich. —p. 147.
49 *Analysis of Anaphylactic and Immune Reactions by Means of Isolated Guinea-Pig Lungs. W. H. Manwaring and Y. Kusama, San Francisco.—p. 157.
50 *Bacteriolytic Power of Normal and Immune Rabbit Serum for Typhoid Bacilli and Influence of Intravenous Injection of Vaccine on Same. O. Teague and H. I. McWilliams, New York.—p. 167.
51 *Experiments with Possible Bearing on Treatment of Typhoid with Typhoid Vaccine Administered Intravenously. O. Teague and H. I. McWilliams, Rosebank, N. Y.—p. 185.
52 *Bacteriolytic Power of Normal Human Serums and Typhoid Patients' Serum for Typhoid Bacilli and an Inquiry into Theoretical Basis for Treatment of Typhoid with Vaccine Administered Intravenously. O. Teague and H. I. McWilliams, Rosebank, N. Y.—p. 193.
53 *Hay-Fever. Nature of Process and of Mechanism of Alleviating Effect of Specific Treatment. R. A. Cooke. E. P. Flood and A. F. Coca, New York.—p. 217.

47. **Disappearance of Agglutinin from Blood.**—To eliminate the question of absorption and to limit the problem to the destruction of agglutinin in a heterologous serum in animals sensitized to that serum, and in normal animals, Hempl made intracardiac, and, in two cases, intravenous injections of an agglutinin so strong that it could be detected in minute quantities. Guinea-pigs sensitized with a very small dose of serum were selected as the experimental animals. Hempl says that individual variation in reaction is so great that experiments in this line of work require statistical control and must be carried out with large numbers of animals to give definite conclusions. In general a foreign serum disappears more quickly from the blood of an animal sensitized to that serum than from that of a normal animal. It disappears more quickly from the blood of highly reacting animals than from that of slightly reacting animals. These experiments corroborate those of Römer and Viereck.

48. **Specific Action of Rabbit Blood Serum.**—The purpose of Huddleson's investigation was to determine whether rabbits would become infected and show *Bact. abortus* antibodies in their blood as a result of ingesting milk reacting positively to the agglutination and complement fixation tests. The results were negative. There is not sufficient evidence to condemn naturally infected milk as dangerous to rabbits by ingestion since it has shown no pathogenic action and no antigenic action. However, a nonspecific absorption of complement takes place in the presence of inactivated rabbit blood serum and a bacterial antigen of *Bact. abortus.*

49. **Analysis of Anaphylactic and Immune Reactions of Isolated Guinea-Pig Lungs.**—The authors' analyses of the anaphylactic and immune reactions by means of perfusion experiments with the isolated guinea-pig lungs show that three essential factors are to be considered: (*a*) cellular hypersensitiveness, or the anaphylactic response of the hypersensitive fixed pulmonary tissues; (*b*) humoral anaphylaxis, or the chemical response (anaphylatoxin formation) of the anaphylactic blood, and (*c*) humoral immunity, or the inhibiting or protecting action of the immune blood. In the 14-day anaphylactic guinea-pig, the fatal bronchial spasm is due, in part to fixed cellular hypersensitiveness, in part to humoral anaphylaxis. In the 4-week anaphylactic guinea-pig, the fixed cellular hypersensitiveness is usually greater than that of the 14-day anaphylactic guinea-pig. The humoral reaction, however, is usually absent. The fatal bronchial spasm in the 4-week anaphylactic guinea-pig is usually due solely to fixed cellular hypersensitiveness. The immune guinea-pig usually shows a fixed cellular hypersensitiveness greater than that of the 14-day anaphylactic guinea-pig. A fatal bronchial spasm is prevented in the immune guinea-pig, however, by the inhibiting or protecting action of the immune blood. The immune guinea-pig, therefore, shows a seemingly paradoxical phenomenon, the coexistence of a fixed cellular hypersensitiveness and a humoral immunity.

50. **Bacteriolytic Power of Rabbit Serum for Typhoid.**—The work of Buxton and others showing that normal rabbit serum is capable of killing large numbers of typhoid and paratyphoid bacilli, and that the serums of rabbits highly immunized against typhoid and paratyphoid bacilli do not kill these organisms, is confirmed by Teague and McWilliams; it is emphasized, therefore, that the titer of an immune serum as determined by the usual dilution method, with the addition of complement, is not an indication of the bactericidal power of the blood plasma in vivo. The bacteriolytic power of normal and highly immune antityphoid rabbit serum for typhoid bacilli is neither increased nor decreased by the intravenous injection of a large dose of typhoid bacilli; the serum of a rabbit that has received only one or two immunizing injections shows a distinct, but not a great, increase in its bactericidal power at five and twenty-four-hour intervals after such an injection.

51. **Typhoid Vaccine Administered Intravenously.**—The experiments reported on by Teague and McWilliams were planned to determine whether a rabbit that had received a dose of typhoid vaccine twenty-four hours previously was more resistant to a large dose of typhoid bacilli than a normal control rabbit. The result was confirmative. Therefore the authors point out a possible relationship between the phenomenon and the cure of typhoid by means of the intravenous injection of typhoid vaccine, without attempting to set up any hypothesis as to the mechanism of the process.

52. **Bacteriolytic Power of Normal Human Serums.**—The authors believe that typhoid is a local disease and not a septicemia; therefore the curative process must take place at the site of the local lesions. In almost all cases of typhoid the serum is strongly bacteriolytic for typhoid bacilli throughout the disease; it would seem that the bacteria multiply in certain tissues because the tissue fluid or lymph does not possess this property. If the intravenous injection of vaccine should cause a more active passage of bacteriolytic substances from the blood capillaries into the lymph, the destruction of the typhoid bacilli and healing of the local lesions should be effected. This is the hypothesis the authors suggest.

53. **Hay-Fever.**—The available facts, clinical and experimental, relating to hay-fever form the basis of the authors' conception of that and all other forms of natural human sensitization: (1) Hay-fever is the clinical symptomatic expression of local hypersensitiveness. The active pollen substances are not toxins; (2) the hypersensitiveness is established spontaneously and never by immunologic process. This has been shown in two ways; first, by the observation that individuals may be sensitive to pollens of plants that are indigenous in foreign countries and with which they have never come in contact; and second, by the observation that individuals who are naturally sensitive to one protein only cannot be artificially sensitized to another protein, either animal or vegetable; (3) the sensitization is not directly inherited, although the tendency to spontaneous sensitization is inherited as a dominant character; (4) the antibody-like substances of human sensitization are not demonstrable in the blood of sensitive persons by any of the immunity reactions. They are present in the cells of the sensitive tissues. They cannot be increased artificially by the usual process of immunization; (5) the mechanism of the alleviating effect of specific, that is, vaccine therapy, is the same as that of desensitization in experimental anaphylaxis. The freedom from symptoms lasts as long as the respective "antigenic" substances remain in combination with the antibody-like substances in the tissues.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

February, IX, No. 5

54 *Salicylates. V. Excretion of Salicyl in Urines of Rheumatic and Nonrheumatic Individuals. P. J. Hanzlik, R. W. Scott and T. W. Thoburn, Cleveland.—p. 247.
55 *Fate of Iodin, Iodids and Iodates in the Body. T. Sollmann, Cleveland.—p. 269.

54. **Excretion of Salicyl in Urine.**—The object of this contribution is to compare the quantitative excretion of salicyl in rheumatic and nonrheumatic, or practically normal, subjects. This was intended to show whether the therapeutic effects of salicylate could be based on differences in the retention or "affinity" of the normal and rheumatic organism for salicyl. The total excretion of salicyl is about 15 per cent. less in rheumatic than normal individuals. This difference is greatest in the early periods after the administration of the drug; that is, during the first ten to twenty hours. The concentration of salicyl in the blood of rheumatic individuals at "toxicity" is less, and the concentration in the urine at this time is also less than in normal individuals. These differences are not due to diuresis; nor to retention and vicarious excretion of the salicyl. They seem to be due to an increased destruction of the salicyl in the febrile rheumatic organism. A lessened excretion of salicyl was demonstrated in a number of individuals representing such conditions as chronic alcoholism and morphinism, tuberculosis and diminished renal functional efficiency as compared with normal individuals. The administration of sodium bicarbonate together with the salicylate has practically no effect on the excretion of salicyl in the urine, or its "toxic" effects.

55. **Fate of Iodin in the Body.**—An investigation was planned by Sollmann to determine (1) whether the administration of elementary iodin can result in the appearance of iodid and iodate in the blood or tissues; and (2), whether elementary iodin can be liberated from iodid and iodate, combined or separately, with the reaction (hydrogen ion concentration) that is known to exist in the body. He found that large doses of free iodin, administered by the stomach, exist in the blood solely as iodid. The addition of acid to the blood does not regenerate iodin. No iodin is liberated from iodid-iodate or iodid-nitrate or iodate-sulphocyanid mixtures, until the acidity surpasses Hp-4. It is therefore impossible that iodin should be liberated from iodid under any conditions existing in the body (excepting solely the gastric juice). On the other hand, the alkalinity of the body is not sufficient to bind any noticeable quantity of free iodin—even in the absence of proteins and aromatic groups. The questions that were proposed are therefore answered in the negative: (1) the blood, after the administration of free iodin, does not liberate

iodin on acidulation, because the iodin is bound through the protein, and not through the alkali; (2) free iodin cannot be liberated in the body, since all the conceivable reactions for the liberation of iodin from its compounds require much higher hydrogen ion concentrations than exist anywhere in the body.

Journal of Urology, Baltimore

February, I, No. 1

56 *Studies on Growth of Cells. Cultivation of Bladder and Prostatic Tumors Outside the Body. M. T. Burrows, J. E. Burns and Y. Suzuki, Baltimore.—p. 3.
57 *Double Ureter and Kidney, with Calculous Pyonephrosis of One Half; Cure by Resection. Embryology and Surgery of Double Ureter and Kidney. H. H. Young and E. G. Davis, Baltimore.—p. 17.
58 *Bacteriology and Microscopy of Contents of Seminal Vesicles; Postmortem Study of Fifty-Two Cases. B. A. Thomas and F. G. Harrison, Philadelphia.—p. 59.
59 Relation of Nonprotein Nitrogen to Urea Nitrogen of Blood. H. O. Mosenthal and A. Hiller, Baltimore.—p. 75.
60 *Advantages of Pyelotomy Drainage for Nephrotomy Wounds. E. L. Keyes, Jr., New York.—p. 91.
61 *Physiology of Ureter and Vas Deferens. D. I. Macht, Baltimore. —p. 97.
62 *Effect of Calcium, Water and Other Substances Given Intravenously on Blood Composition and Urine Secretion. D. M. Davis, Baltimore.—p. 113.
63 Modified Woodyatt Pump. D. M. Davis and W. S. Gorton, Baltimore.—p. 135.

56. **Cultivation of Bladder and Prostatic Tumors.**—The authors studied the cultures of twelve tumors of the bladder and the prostate. Seven were clinically malignant bladder papillomas; one, a benign bladder tumor; two benign hypertrophy of the prostate, and two prostatic tumors, each of which showed one portion of typically benign hypertrophy, the other part having undergone a carcinomatous change. Besides these, one series of cultures of normal bladder epithelium was also tested. The culture medium consisted of the patient's blood plasma, normal blood plasma, agar and isotonic sodium chlorid. Of the seven malignant bladder tumors cultivated, one only failed to show cellular activity in the first twenty hours. This tumor had been removed after the application of a strong solution of cocain. The cultures of the benign tumor, on the other hand, have shown no cellular activity either in the first or the second transplants. All of the cultures of the bladder tumors were infected with bacteria. However, previous to the time that the bacteria became very numerous the tumor cells showed activity except in two instances.

57. **Double Ureter and Kidney.**—The case reported by Young and Davis is unique in that it is the only such case to be found fully reported in the literature. The condition of double kidney and ureter is not rare, and the upper half is most often the seat of disease; its surgical importance is therefore great. The advent of ureteral catheterization, roentgenography and pyelography has made the diagnosis easy. The radical cure by excision of the diseased half of the kidney with its pelvis and ureter is undoubtedly the method of choice.

58. **Contents of Seminal Vesicles.**—A postmortem examination of the seminal vesicles of fifty-two human male cadavers was made by Thomas and Harrison. They found that the seminal vesicles harbor spermatozoa after death, and therefore presumably during life. This function is exercised in the presence of inflammation (spermatocystitis), although in a large percentage of inflammatory cases no spermatozoa can be found (postmortem). The determination of the viability of the zoosperm in the presence of seminal vesiculitis, the exact identification, classification and relative frequency of the invading bacteria, particularly with reference to gonorrhea, are questions impossible of solution by postmortem investigation, and will constitute a secondary and final report after bacteriologic and microscopic study conducted in conjunction with seminal vesiculotomy on the living subject.

60. **Drainage for Nephrotomy Wounds.**—During the past six months Keyes has opened the kidney parenchyma three times for the extraction of stone, and then deliberately inserted a probe into the kidney pelvis, and on this opened the pelvis widely, inserted a rubber tube there for drainage, and closed the parenchyma by suture. Each one of these cases has healed with the promptness characteristic of a pyelotomy; one of them with surprising promptness, for the wound became gravely infected with staphylococci from the kidney, and nevertheless all trace of urine coming from it disappeared within eight days, though the wound has been about four weeks in healing. It seems, therefore, possible, not only that pyelotomy is to be preferred to nephrotomy for extraction of stone, etc., when this is possible, but that when nephrotomy is done it may seem wiser to suture the incision in the kidney parenchyma and to drain through a counterincision made in the kidney pelvis.

61. **Physiology of Ureter and Vas Deferens.**—The behavior of the ureter and vas deferens was studied, by Macht first, on surviving excised organs, second, by observations of those organs in situ, in the living body, and third on excised human ureters and vasa deferentia after operation. He found that the isolated ureter contracts best in a slightly acid medium; the isolated vas contracts best in a slightly alkaline medium. This corresponds to the natural conditions in the body. A rise in temperature at first stimulates and subsequently paralyzes the contractions of the ureter and vas. A fall in temperature inhibits the contractions. Adequate oxygenation is essential for the maintenance of the contractions of the ureter and vas deferens in vitro. The response of the ureter and vas to epinephrin and ergotoxin is an evidence of their innervation by the dorsal lumbar or true sympathetic nervous system. The response of the ureter and vas to pilocarpin, physostigmin, muscarin, cholin and atropin is an evidence of their being also innervated by the sacral autonomic or parasympathetic nervous system. The response of the ureter and vas to nicotin points to the presence of ganglion cells in the walls of those organs.

62. **Changes in Blood Composition and Urine Secretion.**—Injections of fluid of considerable size were made intravenously by Davis in dogs, according to three methods, without producing diuresis. He suggests that in such cases definite hydremia and definite hyperglycemia may be present without diuresis. In cases in which hydremia occurs without diuresis, there has usually been a definite decrease in the molecular concentration of the plasma, as shown by the depression of the freezing point(△). Solutions of calcium chlorid given intravenously cause the urinary secretion to diminish, and, in addition, precipitate a great loss of water from the blood to the tissues. Given with sodium chlorid, calcium chlorid will antagonize the diuretic effect of sodium chlorid. In such a case, the general blood pressure is not changed.

Medical Record, New York

February 24, XCI, No. 8

64 Question of Operation for Suspected Perforation in Typhoid. J. S. Thacher, New York.—p. 311.
65 Heredity; in Its Relation to Psychopathy and Clinical Psychology. J. V. Haberman, New York.—p. 313.
66 Appendix Dyspepsia. C. A. McWilliams, New York.—p. 323.
67 As Rabelais Saw Rosacea. D. W. Montgomery, San Francisco. —p. 325.
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69 Barber's Itch. O. L. Levin, New York.—p. 328.

Nebraska State Medical Journal, Norfolk

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70 Mouth Infections in Systemic and Remote Disease; Report of Cases. A. D. Dunn, Omaha.—p. 223.
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72 Study of Intrathoracic Lymph Adenitis in Children, with Special Reference to Signs and Roentgen Ray Findings. W. O. Colburn, Lincoln.—p. 232.
73 Management of Corneal Injuries. F. F. Teal, Lincoln.—p. 234.
74 Value of Roentgenography in Focal Infections About Teeth. C. H. Ballard, Omaha.—p. 239.
75 Treatment of Malignant Conditions with Roentgen Ray. A. P. Overgaard, Omaha.—p. 241.
76 Resection of Duodenopyloric Region for Extensive Ulceration. H. W. Wightman, Omaha.—p. 243.

New Jersey Medical Society Journal, Orange

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77 Metabolism, Arteriosclerosis and Diet. L. F. Bishop, New York. —p. 49.

78 Acute Conditions of Abdomen in Child. L. M. Kahn, New York. —p. 53.
79 Eugenics—Sanitary Aspects. H. Brooks, New York.—p. 57.
80 Eugenics from Professional Standpoint. H. H. Goddard, Vineland.—p. 62.

New York Medical Journal

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81 Responsibilities and Dangers of Medical Practice Among Primitive Men. J. Wright, Pleasantville.—p. 337.
82 Use of Ethylhydrocuprein in Diseases of Eye. W. Zentmayer, Philadelphia.—p. 342.
83 Research in Epilepsy. H. A. Knox, Bayonne, N. J.—p. 344. To be concluded.
84 Is Gastric Secretion Altered in Gallbladder Disease? M. G. Wohl, Omaha.—p. 347.
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88 Guarding Portals of Entry. F. W. Bock, Rochester.—p. 355.
89 Interperitoneal Adhesions and Their Prevention. G. Gellhorn, St. Louis.—p. 358.

Ophthalmology, Seattle

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90 Old and New Cataract Operation. M. Corry and H. Shanker, Delhi, India.—p. 169.
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94 Tuberculosis of Retinal Vessels. F. R. Speneer, Boulder, Colo. —p. 225.
95 Prevention of Infection of Cornea. L. Ostrom, Rock Island, Ill.—p. 238.
96 State Legislation Concerning Optometry. F. Allport, Chicago. —p. 247.

South Carolina Medical Association Journal, Greenville

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97 Practical Hydrotherapeutics as Applied to Some Gastro-Intestinal Disorders. G. M. Niles, Atlanta.—p. 432.
98 Tuberculosis. A. D. Morgan, North.—p. 438.
99 Nephritis—Why Phenolsulphonephthalein? N. B. Edgerton, Columbia.—p. 444.
100 Two Cases of Sudden Death Associated with Enlargement of Thymus, Occurring in Same Family. A. M. Brailsford, Mullins.—p. 447.
101 Conquering Medicine and Surgery. R. T. Ferguson, Gaffney.—p. 449.
102 Eye of Pregnant Woman. C. W. Kollock, Charleston.—p. 452.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

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103 Blood Pressure. R. L. Kimmons, Temple, Texas.—p. 1.
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108 Tuberculosis of Hip Joint. W. D. McVicker, Wichita, Kan.—p. 49.
109 Salvarsan in Aural Therapy. L. H. Lanier, Texarkana, Ark. —p. 52.
110 Unusual Case of Iridocyclitis. R. H. T. Mann, Texarkana, Ark. —p. 55.
111 Ophthalmia Neonatorum. W. A. Cook, Tulsa.—p. 55.

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112 Carrel Method of Wound Sterilization. W. O. Sherman, Pittsburgh.—p. 255.
113 *Indications for Cholecystectomy. F. B. Lund, Boston.—p. 275.
114 Relative Merits of Cholecystostomy and Cholecystectomy. C. H. Mayo, Rochester, Minn.—p. 281.
115 *Cholecystostomy vs. Cholecystectomy. J. B. Deaver, Pittsburgh. —p. 284.
116 *Familial Fibromyxomas of Peripheral Nerves; Report of Three Cases. L. N. Fleming and F. W. Marvin, Boston.—p. 287.
117 Incontinence of Urine in Women. H. C. Taylor and C. H. Watt, New York.—p. 296.
118 Etiology and Treatment of Varicose Ulcers of Leg. J. Homans, Boston.—p. 300.
119 Anencephaly Successfully Diagnosed Roentgenographically Before Birth. J. T. Case, Battle Creek, Mich.—p. 312.
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121 Chronic Hemogenic Salpingitis; Report of Case. W. C. Danforth, Evanston, Ill.—p. 327.
122 Abdominal Myomectomy and Hysteromyomectomy by Morcellation. Report of Cases. C. G. Child, Jr., New York.—p. 329.
123 Sarcoma of Prostate; Report of Cases. F. J. Parmenter, Buffalo. —p. 336.
124 *Variations in Blood Supply of Ovary and Their Possible Operative Importance. J. A. Sampson, Albany, N. Y.—p. 339.
125 *Chronic Gastric and Duodenal Ulcer; Report of Cases. R. C. Coffey, Portland, Ore.—p. 350.
126 Modern Treatment of Club-Foot. R. J. Behan, Pittsburgh.—p. 356.
127 Air in Ventricles of Brain, Following Fracture of Skull. W. H. Luckett, New York.—p. 362.
128 *Compound Fracture of Skull with Loss of Nearly Half of Frontal Bone, and Parts of Left Frontal Lobe of Brain; Recovery. U. S. Kann, New York.—p. 364.
129 Telephone as Used for Localization and Removal of Metallic Foreign Bodies in Tissues. K. Bulkley, New York.—p. 366.
130 Rectal Anesthesia by Means of Ether; Report of Cases. J. B. M. y Flórez, Colombia, S. A.—p. 370.
131 *Closing Skin in Abdominal Incisions. C. S. White, Washington, D. C.—p. 373.
132 New Method of Turning Down Bone Flaps on Skull. R. E. Farr, Minneapolis.—p. 374.
133 *Simple and Efficient Preparation of Field of Operation. G. S. Foster, Manchester, N. H.—p. 375.
134 Ectopic Pregnancy Following Ligature and Section of Fallopian Tubes. J. C. Wood, Cleveland.—p. 376.

113. **Indications for Cholecystectomy.**—Lund maintains that the gallbladder should be removed under the following conditions: 1. In cases of very thick, acutely inflamed, bright red or gangrenous gallbladders due to impaction of a stone in the cystic duct. 2. In cases of chronically thickened gallbladders. 3. In cases of gallbladders very much distended with clear fluid from impaction of a stone in the cystic duct. 4. Whenever suspicion exists of malignant disease. 5. In chronic cholecystitis without stones, but with moderate thickening and ulceration of the mucous membrane, giving little yellow spots on the mucous surfaces, the so-called "strawberry gallbladder." 6. In chronic cholecystitis without stones but with adhesions to the surrounding organs, especially the pylorus, which cripple the latter and cause symptoms. 7. Cancer of the gallbladder. 8. All cases of gallstones in which the operation is not for any reason unusually difficult or dangerous. 9. All cases of cholecystitis without stones where the same conditions exist.

115. **Cholecystostomy vs. Cholecystectomy.**—Deaver's position speaking generally, is as follows: Cholecystectomy is preferable in the hands of the master of biliary surgery, since the mortality is but little higher in selected cases and the percentage of cures of the infection of the tract is greater. Cholecystostomy is slightly safer, is in many cases an eminently successful operation, and the surgeon may always reflect that two operations on a living patient are better than one on a dead one. He should remember also that prolonged drainage is the secret of sterilization of the biliary tract and by this means may convert unsuccessful cholecystectomies into successful ones. Cholecystectomy in the presence of jaundice and in the absence of a markedly and macroscopically diseased gallbladder is, in Deaver's judgment, out of place. Under these conditions cholecystostomy is the operation of choice. Jaundice in the absence of inflammation and obstruction of the common duct is most probably due to cholangitis, which calls for drainge. Drainage by way of the gallbladder is much more simply made than is drainage by the common duct. Further, the less the common duct is interfered with the better.

116. **Familial Fibromyxomas of Peripheral Nerves.**—The matter of chief interest in these three cases of multiple peripheral nerve tumors lies in the fact that they have occurred in members of the same family, a sister and two brothers. It would appear, moreover, that the tendency among the members of this family to these isolated tumors bears a definite relation to trauma. At least, in two cases the fact that a direct injury of unusual severity, occurring in the same situation, was followed in each instance by a sciatic tumor, would seem to be more than a coincidence.

124. Abstracted in The Journal, June 17, 1916, p. 2033.

125. **Chronic Gastric and Duodenal Ulcer.**—As a result of a careful study of this subject, Coffey says that his practice in the future will be as follows: All duodenal ulcers will be

covered over by omentum, and a posterior gastro-enterostomy by the Mayo or Moynihan technic performed, without artificial obstruction. Or, in certain cases, it is convenient to excise an ulcer near the pylorus combined with a Finney pyloroplasty. Gastric ulcers on the lesser curvature, which are small and indurated, will be treated by the Balfour cautery plus the Finney pyloroplasty, or gastro-enterostomy. Large ulcers in other parts of the stomach will be treated by first doing a gastro-enterostomy, or a Finney pyloroplasty, followed by Sippy's plan of medical treatment, with a resection later, if necessary. Ulcers involving a very large area of the wall of the stomach may be given rest and the patient nourished by jejunostomy. Ulcers near the pylorus, having a suspicion of cancer, will be treated by the Rodman operation done in two stages.

128. **Compound Fracture of Skull.**—Kann's patient was struck on the forehead by the blade of a powerful electric fan. The frontal bone was cut just above the supra-orbital margin a little more on the right side and broke in two pieces at the crest of the attachment of the falx cerebri. The pieces of frontal bone missing measured 8 by 10 cm. The mental status of the patient is given as follows: The chief characteristics appear to be a marked indifference, with lack of spontaneity, defective memory for the period following the accident, but with excellent memory for the remote past; defective calculation, judgment poor and insight absent. No delusions, illusions or hallucinations. Orientation for time, place and person correct.

131. **Closing Skin in Abdominal Incisions.**—The suture which White has found quite satisfactory is one which he terms a continuous vertical mattress. The material usually employed is No. 00 or No. 000 chromic catgut, though fine silk or linen under some conditions is preferable; any needle of small diameter, straight or curved, may be used, this being a matter of personal choice. The suture should have a knot or small loop tied in the long end, or fixed by a split knot and begun by taking a deep suture to include the entire thickness of the skin, from one side of the incision to the opposite, about 1 cm. from the edge. The needle is then reversed in the holder, and the suture passed obliquely toward the other side, or the side on which the suture was started, barely engaging the edges of the wound. The needle is then introduced a trifle lower, on the side on which it originally entered, 1 cm. from the edge and the first deep suture is repeated. These deep and superficial sutures are continued until the wound is closed, drawing up the thread gently as each suture is completed.

133. **Simple Preparation of Field of Operation.**—The evening before the operation Foster has the field carefully shaved and well sudsed. It is then rinsed with sterile water and carefully dried with sterile towels, after which it is covered with dry sterile gauze and a binder applied to keep the gauze in place. This is all the preparation made before taking the patient to the operating room. On the operating table, when the patient is yet but semi-anesthetized, the field of operation is made bare and all covering is walled off with carefully placed sterile towels. The dry field of operation is then carefully and thoroughly bathed with gasoline. The gasoline coat is wiped off very thoroughly with sterile gauze, and the entire field is then carefully bathed with 70 per cent. alcohol which is allowed to remain without being dried. The field is now ready for operation.

Texas State Journal of Medicine, Fort Worth

February, XII, No. 10

135 Hemorrhagic Tendency in Obstructive Jaundice and Its Preoperative Treatment. F. W. Aves, Galveston.—p. 382.
136 Diseases of Accessory Nasal Cavities. M. E. Taber, Dallas.—p. 386.
137 Complications of Accessory Sinus Disease. W. P. Breath, Galveston.—p. 387
138 Diagnosis of Nasal Accessory Sinus Disease. J. H. Foster, Houston.—p. 389.
139 Blood Clot Method of Treating Mastoiditis. W. R. Thompson, Fort Worth.—p. 392.
140 Glass Sphere Implantation. W. Ralston, Houston.—p. 394.
141 Enucleation of Eye Followed by Fat Implantation. J. W. Head, Fort Worth.—p. 395.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

February 3, I, No. 2927

1 *Influence of Antiseptics on Activities of Leukocytes and Healing of Wounds. C. J. Bond.—p. 145.
2 Diseases of Male Urethra. F. S. Kidd.—p. 148.
3 Salvarsan Treatment of Syphilis: Analysis of Two Hundred Cases. L. Jones and A. J. Gibson.—p. 152.
4 *Simple Dietetic Treatment in Diabetes Mellitus. R. T. Williamson.—p. 154.

1. **Influence of Antiseptics on Leukocytes.**—Certain facts about the iodin reaction in leukocytes and other cells, Bond believes, have an important bearing on phagocytosis and immunity. Even in health a large proportion of the white blood corpuscles normally give, under certain conditions, a color reaction with iodin, which is closely related to, if not identical with, the so-called glycogen reaction met with in the same cells in disease. The reaction Bond describes occurs not only in the white blood cells, but in many pus cells, in some of the cellular elements of granulation tissue, in some marrow cells, and in the cells of certain cancerous tumors. The cells which gave the mauve reaction are the finely granular polymorphonuclear leukocytes. The large mononuclears and the small lymphocytes do not usually give the reaction, and Bond has not detected it in the eosinophil cells. A considerable proportion of pus cells from a healthy granulating wound will show the characteristic mauve reaction. Pus aspirated from an empyema or an acutely infected knee joint may fail to give the reaction when first withdrawn, whereas, if the discharge which flows freely from the empyema or the joint cavity be examined a few days later, after efficient drainage has been established, quite a number of the cells will show the mauve colored exudation. The capacity to give the iodin mauve color reaction depends largely on the vitality of the pus cell, and pus cells which have lain for some time in a closed cavity in a tryptic medium, have undergone partial cytolysis. It is the living leukocyte which has recently emigrated from its natural environment—the blood or lymph stream—which shows the reaction. This fact must be borne in mind in making use of the reaction as an indication of the healthiness of a wound. On the whole, efficient drainage and the establishment of a flow of rapidly renewed phagocytes seems to have more influence on the iodin reaction than the nature of the solutions used in the treatment of the wound. The iodin reaction is not confined to the cells of the purulent discharge. If a small portion of healthy granulation tissue be removed from a wound and examined in salt solution while alive, and a 1 per cent. watery iodin solution be added, a considerable number of the cellular elements will show the mauve colored exudation. If a small piece of healthy red marrow be examined in 1 per cent. watery iodin solution a considerable number of the marrow cells will show the mauve colored reaction.

Bond thinks there can be little doubt that the substance which gives the mauve colored reaction with iodin in the white blood cells in health is either glycogen or a precursor of glycogen, possibly a complex substance, from which; as the result of emigration, the carbohydrate molecule may be concerned with the elaboration of ferments or antibodies formed by the phagocytes in response to a toxin. Cancer cells from some actively growing cancers give the mauve reaction when examined fresh in salt solution and iodin; they also (like some pus cells) give the mahogany reaction when treated with iodin vapor. The iodophil substance in leukocytes is not destroyed by foreign serum and the iodophil substance may be present in leukocytes in an infected area though absent in leukocytes drawn from the general circulation. A personal observation made by Bond shows the intimate association between the circulation of bacillary toxins and the occurrence of iodophilia in the leukocytes. It also shows the phases of increased formation of iodophil substance by the phagocytes—first the increase in the extracellular soluble mauve colored exudation, then the occurrence of the less soluble intracellular mahogany colored deposit.

Both these occur before any corresponding change can be detected in the leukocytes in the general blood stream, and they are still present in the incubated leukocytes for some time after the constitutional reaction to the infection has disappeared. This shows the close association which exists between leukocytic activity in response to infection and the formation of an iodophil substance by the phagocytes.

4. **Dietetic Treatment of Diabetes.**—The treatment employed by Williamson lasts for a week or ten days only; during this period the patient ceases work and rests. Every two hours from 8 a. m. to 10 p. m. he receives a small amount of food—eggs, cream, milk, beef tea and tea according to the following diet sheet: 8 a. m. coffee or tea, with one tablespoonful of cream. One egg (poached, boiled or buttered); 10 a. m., a glass of warm milk (half a pint); 12 noon, custard (prepared from one egg and half a pint of milk); 2 p. m., a glass of warm milk (half a pint); 4 p. m., tea, with one tablespoonful of cream. One egg (poached, boiled or buttered); 6 p. m., cream, two tablespoonfuls in half a pint of warm beef tea; 8 p. m., a glass of warm milk, or one egg beaten up and added to half a pint of warm beef tea; 10 p. m., cream, two tablespoonfuls in half a pint of warm beef tea. The order of these meals may be varied or slightly modified as the patient desires. The patient takes no other food. The bowels are kept regular. Williamson claims that in many cases the glycosuria ceases in a few days, in other cases in a week or ten days, although an ordinary rigid diabetic diet had failed to check the sugar excretion.

Edinburgh Medical Journal

February, XVIII, No. 2

5 *Comparison of Some Antiseptics in Respect to Their Diffusibility, Action on Leukocytes and Action on Ferment Activity. H. E. Magee.—p. 86.
6 Etiology of Disseminated Sclerosis. B. Bramwell.—p. 96.
7 War Injuries of Ear. J. S. Fraser.—p. 107.
8 Case of Idiopathic Dislocation of Eyeball. D. M. Greig.—p. 129.

5. **Comparison of Some Antiseptics.**—In order to demonstrate wherein antiseptic solutions differ from each other, a comparative study was made by Magee of some of the commoner bactericidal agents in regard to diffusibility, chemiotactic action, and action on ferment activity. To prevent ferment activity of any kind in an infected wound is the most important indication. Chinosol was by far the most diffusible substance dealt with, and tincture of iodin the least. Thymol and potassium iodid occupy first place as positive chemiotactic substances. Salicylic acid and low concentrations of sodium bicarbonate have a much less marked effect. Dakin's solution, phenol, sodium fluorid and fairly strong solutions of acetic acid are decidedly negative chemiotactic substances, while quinin and weak acetic acid have a much less pronounced action. Chinosol, physiologic saline solution, camphor, strong solutions of sodium bicarbonate, have only a slight influence on the white corpuscles. Antiferment chemical substances fall into two main groups: (1) protein precipitants; (2) true antiferments. The members of the former group inhibit ferment activity in three ways: (*a*) by removal of the ferment by precipitation; (*b*) by a direct antiferment action; (*c*) by combining with the substrate. As the result of the ferment action, amino-acids and the antiseptics are set free. Quinin and chinosol not being protein precipitants, must be placed in the second group. They stop tryptic action in low concentrations. Magee is of the opinion that it is safe to assume that their action is specific in nature.

Practitioner, London

February, XCVIII, No. 2

9 *Intrathoracic Aneurysm; Report of Cases. W. J. Fenton.—p. 101.
10 *Epidemic Nephritis. W. L. Brown.—p. 111.
11 Sudden Death. B. H. Spilsbury.—p. 132.
12 Eczematoid Ringworm of Hands, Feet and Groin. J. M. H. Macleod.—p. 146.
13 Uses of Some Electric Methods in War Injuries E. L. Ash.—p. 155.
14 Treatment of Cough. A. Stewart.—p. 159.
15 Parodontal Disease. J. E. Blomfield.—p. 165.
16 Severe Case of Tetanus Treated with Repeated Intrathecal Injections of Antitoxin; Recovery. C. Worster-Drought.—p. 182.
17 Excision vs. Amputation in Certain Cases of Sarcomas of Long Bones. P. J. Byrne.—p. 189.

9. **Intrathoracic Aneurysm.**—The history of three cases is cited by Fenton. All three patients were about 48 years of age. The first man dated his symptoms from lifting heavy casks, five years ago. Shortly afterward he began to get short of breath, and developed a cough. The second patient, likewise, was accustomed to lift weights, the third was a general laborer. All three have had syphilis, the first two admit infection, and have a positive Wassermann reaction; but the third denies having had syphilis, though he admits gonorrhea twenty years ago. In this case, the Wassermann was positive likewise. In these three patients, the common etiologic factor was specific infection and occupational stress.

10. **Epidemic Nephritis.**—Up till the end of June, 1915, 1,062 cases of epidemic nephritis had occurred in the British army. Brown has made a careful study and analysis of 166 cases. As to etiology, he believes that this epidemic has disposed of the tradition that exposure is a very important cause of nephritis. While the troops were enduring much cold and exposure there were but few cases of nephritis; it was not until the weather was better that the disease assumed epidemic proportions and the cases continued to increase into the summer. The water supply did not appear to play any rôle, neither did the lead used in the tinning of foods or diet. Other suggested causes such as suppressed scarlet fever, dysentery and typhoid, exacerbation of chronic nephritis, antityphoid inoculation and trench fever are also disregarded. Brown favors the infection theory, which, he says, easily accounts for the pathology and the clinical course. Investigations were next made as to infection by an ultramicroscopic filter passer. A definite illness was produced in rabbits and monkeys after an incubation period of eight days by injections of urine prepared so as to be free from bacteria, but containing any filter passer present. The relative frequency of different symptoms was as follows: edema, 97 per cent.; headache, 77 per cent.; dyspnea, 76 per cent.; pains in the back, 60 per cent.; cough, 51 per cent.; sore throat, 27 per cent.; vomiting, 24 per cent.; retinal changes, 18 per cent.; diarrhea, 16 per cent.; nausea, 12 per cent., and fits, 4 per cent. Other symptoms which have occasionally been observed are herpes and parotitis, both of which suggest an infective origin.

Archives des Maladies du Cœur, etc., Paris

January, X, I, pp. 1-48

18 *Disturbances in Lungs and Pleura in the Course of Heart Disease. (Formes cliniques des accidents pleuropolmonaires chez les cardiaques.) H. Vaquez.—p. 1.
19 Unilateral Paradoxic Pulse with Subclavian Arteriovenous Aneurysm. D. Danielopolu and V. Danulescu (Bucharest).—p. 13.

18. **Pleuro-pulmonary Symptoms with Heart Disease.**—Vaquez discusses the various complications of heart disease that may develop in lungs or pleura, ranging from simple dyspnea during exertion and cardiac asthma to functional disturbances without anatomic basis, pulmonary edema, congestion and edema, and the apoplexy sometimes discovered postmortem. He regards cardiac asthma as something analogous to the angina pectoris that comes on when reclining, or like pulmonary edema, all are the result of insufficiency of the left ventricle. He has known cardiac asthma to merge insensibly into pulmonary edema. The latter he explains as of mechanical origin, the result of an afflux of serous fluid into the lung when the pressure in the pleura, previously positive, changes to negative. Intravenous injection of saline, in animals, has been known to bring on acute edema of the lungs, and Achard and Laubry have witnessed its development in persons with insufficient kidneys after subcutaneous injection of physiologic salt solution. Vaquez has noted the same in persons with high arterial pressure and general arteriosclerosis. Ingestion of excessive amounts of fluids may have a similar effect. Distension of the ventricles, especially of the left, is the immediate cause of edema of the lungs. A nervous factor may be superposed, but the overloading of the heart is the main thing. Pleurisy is frequent with heart disease, he continues; patients with mitral insufficiency, pleural adhesion or myocardial degeneration are particularly liable to pleurisy. It usually locates on the right side, probably

secondary to the congested condition of the liver, and it displays a marked tendency to recurrence. The aggravation of the dyspnea is often the only symptom to call attention to it. The effusion increases slowly and progressively. He adds that the effusion should be tapped even when it does not seem very abundant; the amount withdrawn often surpasses the anticipations. The relief from evacuation of the fluid is liable to be marked, the heart being thus enabled to work properly once more and to respond to digitalis, when before digitalis seemed to have lost all efficacy. Sometimes eight or ten punctures may be necessary; he had one patient who required forty.

Journal de Médecine de Bordeaux

January, LXXXVIII, No. 1, pp. 1-20

20 Impressions of a Surgeon at the Front. Charbonnel.—p. 3.
21 Summer Diarrhea in the Troops. (Les entérites dysentériformes estivales des troupes en campagne.) Chayron.—p. 9.
22 Paratyphoid Fever plus Dysentery. J. Carles and Charrier.—p. 13.
23 Food Value of Tendons and Fascia Tissue. P. Carles.—p. 16.

Paris Médical

January 13, VII, No. 2, pp. 37-52

24 *Pathogenesis of Gonococcus Infection. (Action des courants énergétiques de l'organisme sur l'automotilité du gonocoque.) E. Roucayrol.—p. 37.
25 Apparatus for Continuous Extension for Fractures. M. Deguy.—p. 43.
26 *Albuminuria in the Troops of the Far Eastern Front. Massy and C. Richet, Jr.—p. 47.
27 *Shrapnel Ball Entering the Shoulder Passes through Right Auricle into Femoral Vein. Grandgérard.—p. 48.

24. **Pathogenesis of Gonococcus Infection.**—Roucayrol insists that the urethra, while it may be the portal of entry for the gonococci, does not detain them. They soon spread to a distance, but not by the lymphatics and not by the blood. They are seldom and only transiently found in the blood. He thinks it more likely that they pass upward by way of the nerves, and he gives diagrams to show how the electric charge of the gonococcus might aid in its transportation along the nerves, the natural electric currents of the nerve serving to propel it along by the rotation of the gonococci. In any event, general gonococcus infection must be reckoned with almost from the very first.

27. **Migration of Projectile through the Heart.**—The shrapnel ball entered at the shoulder and its course was traced, by radioscopy as it entered and lingered in the right auricle and passed thence into the inferior vena cava and the femoral vein, finally lodging in the hypogastric vein, all without inducing any appreciable symptoms. The practical lesson from the case is that it may be possible to learn the manipulations that would expel a projectile from the heart, and thus facilitate its removal by a minor operation, instead of incising the heart itself. In this case the vein was so difficult to reach and suture that the ball was left in it, with merely a ligature thrown around it to prevent further migration of the projectile.

Presse Médicale, Paris

January 4, XXV, No. 1, pp. 1-8

28 *Simplified Technic for Vaccination against Typhoid and Paratyphoid. (Réduction du nombre des injections employées pour la vaccination mixte antityphoïdique et antiparatyphoïdique A et B.) F. Widal and A. T. Salimbeni.—p. 1.
29 Paralysis of Superior Facial Nerve with Cerebral Hemiplegia. M. P. Le Damany.—p. 1.
30 Local Eosinophilia with Factitious Conjunctivitis. J. Bollack.—p. 3.

28. **Simplified Technic for Antityphoid Vaccination.**—Widal and Salimbeni use a simple emulsion of typhoid and paratyphoid A and B bacilli killed by heat in 9: 1,000 saline. It contains 10 billion germs to each 3 c.c. This amount is injected, first 1 c.c. and then 2 c.c. after a seven day interval, and this is all. Nearly 5,000 persons given this concentrated vaccine showed no more reaction than is customary with the weaker vaccines, while the antibodies were found later in the blood as abundant as in those given the usual four doses. They have given the total dose at once to a number of persons while others in the same environment were given the two or the four doses. These persons are now being supervised to learn the difference in the effect with the various technics. To date the advantages seem all on the side of the stronger vaccine, with fewer injections.

Progrès Médical, Paris

January 6, XXXII, No. 1, pp. 1-8

31 Spastic Brachial Diplegia Following War Wounds of the Neck. M. Dide and J. Lhermitte.—p. 1.
32 Traumatic Hemianopsia in Quadrant Form. E. Ginestous.—p. 3.
33 Perverse Sexual Psychology. (A propos de Sacher Masoch.) P. Voivennel.—p. 4.

Correspondenz-Blatt für Schweizer Aerzte, Basel

January 6, XLVII, No. 1, pp. 1-32

34 *Study on the Cadaver of Frank's Subcutaneous Symphyseotomy. O. Burckhardt.—p. 1.
35 Surgical Experiences in Swiss Military Hospital. A. L. Vischer.—p. 19.

January 13, No. 2, pp. 33-64

36 War Fractures of the Femur. (Kriegschirurgische Erfahrungen bei der Behandlung von Oberschenkelfrakturen.) J. Ledergerber and F. Zollinger.—p. 33. Commenced in No. 1 p. 10.

34. **Subcutaneous Symphyseotomy.**—Burckhardt has been doing symphyseotomy on cadavers by various technics, and asserts that Frank's subcutaneous method is easy to apply and no special instruments are required for it, while anatomic study of the parts afterward fully justifies the claims that have been made for it. The incision in the lower part of the symphysis and in the suspensory ligament of the clitoris allows the latter and the urethra to sag loosely, which leaves an open space between the edge of the symphysis and the clitoris region. There was no injury of soft parts on any of the cadavers, not even the young nulliparae. The incision in the skin is no longer than the width of the scalpel blade, and it can be sutured securely. Frank's innovation of cutting from below upward entails a number of advantages, the importance of which is scarcely realized except by study of conditions on the cadaver. Burckhardt declares that it places symphyseotomy at once in the hands of the general practitioner, but he warns that we must not expect the impossible from it. A true conjugate of 7 cm. or, at the utmost, 6.5 cm. is the extreme limit. He undertook the research to aid him in his own practice, but found matters so surprisingly encouraging that he reports them in detail.

The scalpel is introduced at the middle of the symphysis, and the lower half and clitoris suspensory ligament are severed. Then the scalpel is drawn out of the symphysis below, and its blade is pressed against the front of the upper half of the symphysis, cutting it through from the front, the scalpel always in the one hole in the soft parts through which it entered. This small hole can be sutured at once or covered with a tampon until after delivery. Burckhardt found the symphysis from 36 to 51 mm. high and from 18 to 26 mm. thick in fourteen female cadavers. In thirteen others, from 15 to 91 years of age, the range was 42 to 52 and from 14 to 30 mm. respectively. He lists these measurements in detail, comparing them with the height. As the clitoris sags as its ligament is divided, it drags its vessels out of the way. The vessels behind the symphysis are separated from it by a layer of tissue, and no important vessels of any kind are encountered on the median line.

Deutsche medizinische Wochenschrift, Berlin

January 4, XLIII, No. 1, pp. 1-32

37 *Digitalis Treatment and Arrhythmia. H. Boruttau and E. Stadelmann.—p. 1.
38 *Physical Exercise as Influencing the Weight of the Heart. (Die Beeinflussung des Herzgewichts durch körperliche Arbeit.) W. Dibbelt.—p. 4.
39 *Hernia and War. (Eingeweidebrüche und Krieg.) F. König (Marburg).—p. 6.
40 *Ferments of the Cerebrospinal Fluid in Man. E. Leschke and L. Pincussohn.—p. 8.
41 Psychogenous Tremor. (Das ideogene Moment in der Entstehung des Zitterns bei Kriegsteilnehmern.) W. Fürnrohr.—p. 9.
42 *Contralateral Treatment of Functional Paralysis and Contracture. Stulz.—p. 12.
43 *Traumatic Scarlet Fever. S. Korach.—p. 12.
44 Hormonal in Treatment of Dysentery. G. Zuelzer.—p. 14.

45 The Prognosis with Conservative Treatment of Abdominal Wounds. (Die Aussichten der konservativen Behandlung Bauchverletzer im Bewegungskrieg.) C. Jacobs.—p. 15.
46 Sterilization of the Hands in First Aid to the Wounded. (Die Händedesinfektion beim Verbinden, besonders im Kriege.) Renner.—p. 18.
47 Advantages of Certain Mineral Waters in Treatment of Nephritis. (Sind Brunnenkuren bei Behandlung der Nephritiker zweckdienlich?) Lenné.—p. 18.
48 Bone Marrow as Nourishing Food. (Knochenmarkmehl zur Hebung der Volksernährung.) Werckmeister.—p. 19.
49 Fraudulent Alleged Substitutes for Food. (Gegen den Schwindel mit Lebensmittelersatz.) J. Schwalbe.—p. 20.

37. **Digitalis Treatment of Arrhythmia.**—Boruttau and Stadelmann expatiate on the insight into arrhythmia in recent years afforded by electrocardiography. It has shown that constant arrhythmia often occurs with a comparatively sufficient heart. This has hitherto been entirely overlooked when the intervals between the pulse beats do not show extreme and sudden differences. Very small doses of digitalis restore conditions promptly to approximately normal in these cases, slowing the heart beat and strengthening the pulse, and the phenomena from stasis subside. Fahrenkamp has recently published a study of this subject based on 412 cases of heart disease. His conclusions are said to sustain those emphasizing the value of very small doses of digitalis long kept up in treatment of arrhythmia perpetua. The digitalis should be supplemented and alternated with diuretics and the mode of life and diet regulated to correspond. The digitalis can be given repeatedly or continuously, under control of electrocardiography. The latter is as indispensable here as for the certain diagnosis of the arrhythmia perpetua and its differentiation from other conditions which call for different treatment. Seven cases are described in detail to show the more serious types liable to be encountered. The experiences related demonstrate the retarding action of small doses of digitalis on the overfrequent beat of the auricles bordering on fibrillation. They think that the vagus is primarily involved in the retarding of the pulse by small doses of digitalis, as a similar result can sometimes be transiently obtained by compression of the vagi.

38. **Influencing the Weight of the Heart by Physical Labor.**—Dibbelt records the data from examination of the heart from twenty-two soldier cadavers, comparing them with the total weight, the occupation, etc. The men accustomed to manual work or doing such work under the conditions of the war, had as a rule strong, large hearts. All parts of the heart shared proportionately in the increased strength and weight of the body in general.

39. **Hernia in Wartime.**—König remarks that civilians are showing in a number of ways the pathogenic influence of the war, as in the greater prevalence of pyogenic infections, crops of boils and eruptions, explainable in part by alimentary disturbance and in part by the difficulty in getting bed and body linen washed on account of the poor quality of the soap. He has been impressed further by the remarkable frequency of hernia; for this he regards the loss of adipose tissue as responsible. The loss of flesh is the result of the change in the customary diet. This and the greater amount of roughage in the bowels, and often the unaccustomed physical labor for those past the vigor of youth, readily explain the frequency of hernia as another consequence of the war. The number of cases of incarcerated hernia in his service is also greater: from 40 in 1913-1914, to 68 in 1915-1916, and these almost all in civilians. This is the more remarkable as the proportion of civilians in his service is very much smaller. Femoral hernias have increased out of all proportion, and gangrene develops exceptionally rapidly after incarceration. Hernia into the abdominal wall was encountered in 30 per cent. of the operative cases last year; thirty-four died out of the sixty-three abdominal wall hernias that formed 11.5 per cent. of Riedel's total 550 hernia cases. König ascribes the prevalence of abdominal wall hernias to the stronger peristalsis, that is the rule now on the war diet.

40. **The Ferments of the Cerebrospinal Fluid.**—Leschke and Pincussohn found diastase in all the cerebrospinal fluids they examined, taken from healthy persons and from patients with all kinds of different diseases. It was present only in very small amounts, and no regularity was apparent in any respect. The ferment content of the fluid seemed to be independent of the cell content. They never found any evidence suggesting the passage of ferments from the blood into the fluid. This they regard as testifying to the fact that the cerebrospinal fluid is a specific secretion, and not of the nature of lymph or a transudate.

42. **Contralateral Treatment of Functional Paralysis and Contracture.**—Stulz has often succeeded in curing hysteric contracture by getting the patient to imitate exactly with the sound mate the contracture of the affected side. When the patient sees that the contracture is such a simple matter to reproduce with the sound limb, he seems to lose his fear of it, and the contracture disappears spontaneously in the course of a day or so.

43. **Traumatic Scarlet Fever.**—The young physician had been repeatedly exposed to scarlet fever at different times but had never contracted it. After casual excoriation of one hand and further exposure to scarlet fever, he developed typical scarlatinal lymphangitis in forty-eight hours. By the third day he presented the general symptoms of scarlet fever with the exanthem. Korach compares with this the few similar cases on record.

Medizinische Klinik, Berlin

January 7, XIII, No. 1, pp. 1-30

50 Experiences with Field Surgery. F. Krause.—p. 1.
51 The Internal Medicine Course. (Antrittsvorlesung.) M. Matthes.—p. 3.
52 *The Difficulties of Differential Diagnosis of Convulsions. (Diagnostische Schwierigkeiten bei Krampfleiden.) G. Flatau.—p. 9.
53 Determination of the Limits of the Frontal Sinus by Percussion. (Methode zur Bestimmung der Stirnhöhlengrenzen und ihre diagnostische Bedeutung.) R. Goldmann.—p. 11.
54 Provisional Ligation in Shoulder or Pelvis Region of Artery Injured in Limb Below. (Versorgung verletzter Extremitäten-Schlagadern in der Nähe des Schultergürtels und des Beckenringes.) Busalla.—p. 14.
55 *Trauma in Etiology of Cancer. (Bösartige Geschwülste als Unfallfolgen.) v. Kuester.—p. 15.
56 Reasons Why Diseases, Germs and Signs Should Not Be Named for Those Who Describe Them First. K. Brandenburg.—p. 28.

52. **Differential Diagnosis of Convulsions.**—Flatau comments on the diversity of symptoms accompanying convulsions or their equivalents, and especially those just preceding them. Differentiation is particularly difficult when there is merely an aura without an actual seizure. When the patient suddenly sees things around as if removed to a distance or become very small, the trouble is more liable to be hysteria than epilepsy. He insists that an actual epileptic seizure must have occurred before it is possible to label the case as epilepsy. With convulsions at night, waking out of sleep, epilepsy is more probable, as also when convulsions occur without known cause. Fainting may sometimes be the first manifestation of a tendency to epilepsy. It is sometimes impossible to distinguish between a fainting attack and an attack of petit mal. With epilepsy, the loss of consciousness is comparatively brief, very rarely lasting longer than half an hour, while with hysteria, prolonged unconsciousness is the rule, although usually not equally profound all the time. The reaction to irritation during the loss of consciousness also differs. Violent flinging the arms around and curving the whole body (*arc de cercle*) speak for hysteria, but it is possible for an epileptic to have hysteric convulsions. The family history is also instructive. He has so frequently found a history of migraine in one of the parents that he has become convinced that there is a close connection between migraine and epilepsy. In conclusion he mentions a rare form of convulsions simulating the epileptic seizure but there is no inherited taint and no somnolence afterward; the attacks come on only after some emotional stress and only late in life and they are amenable to psychotherapy.

55. **Trauma as Factor in Cancer.**—In the case described a factory worker fell with one arm in boiling 10 per cent. sulphuric acid. The cicatrix from the corrosion kept getting inflamed, with eczema and ulceration, and final malignant degeneration of the scar tissue and death twenty-three years after the accident. A causal connection between the accident

and the cancer was admitted by the courts and workman's compensation was paid to the heirs.

Münchener medizinische Wochenschrift, Munich

December 19, 1916, LXIII, No. 51, pp. 1785-1820

57 *Intensive Roentgenotherapy of Uterine Hemorrhage. (Beseitigung von Myom- und Wechselblutungen in einmaliger Sitzung durch Zinkfilterintensivbestrahlung.) L. Seitz and H. Wintz.—p. 1785.
58 *Febrile Pernicious Anemia. F. Jessen and W. Unverricht.—p. 1787.
59 *Predetermination of Sex. (Zur willkürlichen Geschlechtsbestimmung.) P. W. Siegel.—p. 1787.
60 Prevention and Treatment of Diphtheria. F. Reiche.—p. 1788.
61 *The Diet with a Weak Heart. (Die rationelle Ernährung des schwachen Herzens.) A. Lorand.—p. 1790.
62 *Clinical and Functional Studies of Nephritis. III. H. Machwitz and M. Rosenberg.—p. 1791. Continuation.
63 Legal Decisions Affecting Physicians. (Aerztliche Standesangelegenheiten. XV.) P. Kaestner.—p. 1795.
64 Methyl Violet for Treatment and Dressing of Wounds. E. Baumann.—p. 1805.
65 Explanation of Hard Traumatic Edema of Back of Hand. G. Hohmann.—p. 1810.
66 The Difficult Differential Diagnosis of Typhus; Importance of Agglutination of Strain of Proteus. (Fleckfieber.) A. Soucek.—p. 1814.
67 Rebuilding the Orbit. (Neue Methode zerschossene und verunstaltete Augenhöhlen zu dehnen und zu formen.) B. Sachse.—p. 1815.
68 New Formation of Bone from Displaced Periosteum after Grazing Bullet Wound. L. Neugarten.—p. 1817.
69 Working Artificial Arm. Mosberg.—p. 1818.
70 Reeducation after Amputation of Leg. F. Kirchberg.—p. 1818.

57. **Cure of Uterine Hemorrhage under Single Intensive Roentgen Exposure.**—Seitz and Wintz report excellent results in cases of hemorrhage from myomas and climacteric hemorrhage from a single exposure to intensive Roentgen-ray treatment, using a 0.5 mm. zinc filter. This allows twice the dose practicable with an aluminum filter. Several fields are exposed, and with very sensitive patients it is better to fraction the total dose over two or three sittings. But it is possible to accomplish the desired result at a single four or five hour exposure, each field taking about an hour.

58. **Febrile Pernicious Anemia.**—In the case described the fever was remittent but without any regularity; attacks of pain and circumscribed swellings developed at various points but subsided completely. The patient was a man of 58 and the anemia was of the pure pernicious type. Some minute bodies were found in the blood and red corpuscles, and symptomatic benefit was realized under neosalvarsan, but the disease progressed in waves to final heart failure in less than a year. The same small bodies were found in the blood of a rabbit inoculated with the patient's blood, but to date the animal has shown no symptoms.

59. **Predetermination of Sex.**—Siegel's compilation of data showing a connection between the state of ripening of the ovum at the time of conception and the sex of the embryo has already been mentioned in these columns, Dec. 18, 1915, p. 2205. He now has records of 300 pregnancies following the brief leave of absence of the soldier husband from the front. He classifies the conception by four periods: from the first to the ninth day after the onset of menstruation; from the tenth to the fourteenth day, and from the fifteenth to the twenty-second. The remaining few days before the return of menstruation show so few conceptions that he omits this premenstruum period altogether from his tabulations. The findings in the latest series confirm his previous conclusions, namely, that a girl may be expected when the ovum is young, from the fifteenth to the twenty-third day. A boy is more probable when the ovum is overripe, that is, from the twenty-seventh day from the onset of menstruation to the ninth day following the onset of the next menstruation. During the periods between these the chances are about even for a boy or girl. One of his tables embraces 115 cases. It shows in the first to the ninth day period, 48 boys and 8 girls; from the ninth to the fourteenth, 10 boys and 14 girls; from the fifteenth to the twenty-third, inclusive, 5 boys and 26 girls; from the twenty-fourth to the twenty-sixth, no boys and no girls; from the twenty-seventh to the onset of the next menses, 4 boys and no girls. Pryll has recently published a somewhat similar series of 25 cases, his findings showing a similar connection with the ripening of the ovum. The young ovum (fifteenth to the twenty-third day inclusive) gave, in Pryll's series, 71 per cent. girls; in Siegel's series 84 per cent. girls. The overripe ovum, (two days before to nine days after the onset of menstruation), gave 86 per cent. boys (Siegel), and 82 per cent. (Pryll).

61. **The Diet with a Weak Heart.**—Lorand has often noticed that persons on a predominantly vegetable diet do not get fatigued so readily as on an abundant meat diet. He has also noted often a remarkable improvement in the muscular weariness of diabetics when they are placed on a vegetable diet. There seems to be something in vegetables and fruits that enhances muscular activity. This may be the explanation for the almost unbelievable capacity of the Bulgarian peasant for muscular work without fatigue; his food consists only of vegetables with black bread and a little cheese. Vegetables contain potassium, and the importance of this in the diet has been recently emphasized anew by Urbeanu who found that fowls and rats kept on an abundant albumin and ample calories diet, but deprived almost entirely of potassium, developed paralysis, hemorrhages, and other symptoms characteristic of deficit diseases, with fatal cachexia. The nerve substance was found very much degenerated in all the animals. If potassium was fed to them in time, they recuperated perfectly and grew strong again. Lorand's conclusion is that organic compounds of potassium are indispensable to keep nerve and muscle substance in normal condition. Human muscles, including the heart muscle, contain large proportions of potassium. Everything that promotes muscular functioning helps to keep the heart muscle in good condition, as well as the other muscles. Muscular fatigue is a prominent symptom in diseases of deranged metabolism, such as myxedema, exophthalmic goiter, and severe diabetes. The muscular fatigue under these conditions shows marked improvement on a cereal or vegetable diet. This supplies the needed potassium and phosphoric acid. Lorand thinks that the instinctive longing for bread and potatoes is due to their content in salts, etc., more than to their carbohydrate value. No other articles of food are missed so much as these in special diets. With a weak heart, particular care must be paid to these intangible elements in the diet. An unbalanced diet is especially dangerous with a weak heart. The heart action should be constantly supervised on an antidiabetic diet or obesity starvation diet; also on an antigout diet, and in the elderly with weak hearts. Any undernourishment of this kind might have very serious results in their case. The elderly should never be allowed to fast for religious purposes, and persons with weak hearts should never go long without food. Lorand adds that the dependence of the heart action on the intake of nourishment is shown by the facts that the heart beat is less vigorous with a fasting stomach, and that in fatal disease the heart gives out entirely, that is, death occurs, in the early morning hours, when the stomach has long been empty.

62. **Treatment of Nephritis.**—In this third instalment of their study of nephritis, Machwitz and Rosenberg warn that with syphilitic nephrosis mercury must be used very cautiously as this has a toxic action on the same tissues, the epithelium of the tubuli, which suffer predominantly from the syphilis toxins. Salvarsan, on the other hand, does not have this by-effect on the kidneys, but, in giving it, we must not forget that salt and fluid have to be restricted as much as possible. With acute glomerular nephritis, rest in bed is the most important of all measures. Volhard had only 3 of his 71 cases of acute diffuse glomerular nephritis pass into a chronic phase, but Machwitz and Rosenberg say that of their 150 patients of this group only 74 recovered entirely; 12 died of uremia, 6 from heart failure and in 18 the disease passed into a chronic phase; 35 were improved but 5 others failed to improve and have probably developed a chronic phase. Of their 40 cases, chronic when first seen, only 11 had been kept in bed during the acute phase, including 6 who had been treated in the hospital. Absolute bed rest is imperative as long as there is any blood in the urine, and while there is still an appreciable albumin content in the urine much physical exertion should be avoided. Their experience has shown

that the albumin intake must not be over nor much below 30 gm. a day; the salt intake about 5 gm., and the fluids restricted to 1.5 or 2 liters a day. Daily analyses of the urine and repeated tests of kidney functioning over long periods in long series of cases have confirmed that it is immaterial so far as the kidneys are concerned, whether animal or vegetable albumin is given, meat instead of milk, and black bread or white bread. An exclusive milk diet would give more than the permissible albumin intake. Sweetened fruit juices are useful to supply calories in part of the fluid. Venesection is undoubtedly of benefit although the assumption that the retained albumin is thus released has not been sustained by recent research; the residual nitrogen does not decline but rather rises a trifle even after profuse venesection. With uremic convulsions, lumbar puncture is the sovereign measure. With chronic glomerular nephritis in the second phase with hypertonia and albuminuria but no functional disturbances, a light mixed diet is indicated. When it passes into the terminal phase, dietetic restrictions are of vital importance, cutting off from the diet as much nitrogen as possible, allowing only 3 or 5 gm. of salt. The residual nitrogen of the blood is the guide to treatment here. The article is to be continued.

Gazzetta degli Ospedali e delle Cliniche, Milan

January 4, XXXVIII, No. 1, pp. 1-16

71 Case of Partial Monoplegic Tetanus with Death from Supposed Anaphylaxis. T. Salvatore.—p. 5.

Pediatria, Naples

January, XXV, No. 1, pp. 1-64

72 *Improved Technic for Vaccination against Typhoid and Paratyphoid. (Nuovi metodi di vaccinoterapia antitifica ed antiparatifica.) G. Caronia.—p. 1.
73 *Interval before Immunization after Vaccination against Typhoid. (Sul tempo di comparsa dei fenomeni immunitarii nei bambini immunizzati con vaccino antitifico.) Pastore.—p. 38.

72. **Vaccines against Typhoid and Paratyphoid.**—Caronia says that vaccines made with bacilli killed by heat or chemical action, such as the Wright-Leishman, Pfeiffer-Kolle, Russel and Besredka vaccines and Vincent's first vaccine, are more effectual in prophylaxis than in curing the established disease. On the other hand, vaccines made with products of the bacterial body under the action of chemical, physical or biologic agents have actual curative value. This latter group includes the Wassermann vaccine, the Noguchi, Sclavo, Vincent's second, and the Di Cristina vaccine. Caronia regards the latter as especially promising, his experiences with it and with two vaccines made on the same principles were invariably favorable, as he describes in detail. The benefit seemed equally pronounced by the intramuscular or intravenous route. The strength should be kept up by nourishing food, semiliquid. He is convinced that many mishaps in typhoid have been ascribed to the disease when in fact the lack of nourishment was the decisive factor. The Di Cristina vaccine is made by mixing with a slightly alkaline bouillon (*acqua di carne*) blood from a typhoid patient. The blood must have pronounced agglutinating power and be mixed with the bouillon in a 5 per cent. dilution. The medium thus prepared is inoculated with from four to six typhoid strains and the whole set aside for two days. Then guinea-pig complement is added to complete the bacteriolysis, and the whole is incubated at 37 C. for another twenty-four hours, then centrifugated; phenol is added to 0.5 per cent. and the whole inactivated at 50 C. Caronia has modified this technic somewhat, his first vaccine being made with five or six typhoid strains grown on agar for from sixteen to twenty-four hours. Then the colonies are transferred to physiologic solution and fresh typhoid serum is added. This serum must be rich in agglutinins and amboceptors. The emulsion thus obtained is incubated at 37 C. for about seventy-two hours, then more fresh typhoid serum is added, with 0.5 per cent. phenol. The bacteria bodies not destroyed by this time are removed by centrifugating, and the whole is kept at 55 C. for an hour on three successive days. His second vaccine is made like Di Cristina's except that he adds, just before centrifuging, more fresh typhoid serum to replace the complement that has been used up. These three vaccines act about the same. Caronia's first vaccine has the advantage of not containing any extraneous substance (meat broth or guinea-pig serum), but it requires more typhoid serum. His second vaccine contains a larger proportion of the products from the lysis of the bacilli. Similar vaccines are made for paratyphoid. All these three vaccines displayed a potent action on typhoid patients, leading to resolution of the process in a few days and sometimes in a few hours. The general condition and the nervous system seem to feel the benefit first, then appetite returns and the bowel functioning becomes regular. There is usually a general reaction after each injection, most pronounced by the intravenous route, but the reaction is less at each injection. The chart is given for each of the forty-five cases given this vaccine therapy alone.

73. **Immunization Process under Vaccine Therapy.**—The preceding article is from the clinic at Naples. Pastore is intern at the Palermo clinic in charge of Di Cristina, and here reports experiences there with a number of children given preventive injections of antityphoid vaccine made by the current technics in vogue. The aim was to determine how soon after the injection the serum acquired agglutinating and complement-deviating properties. The effect of the various vaccines was tested and recorded according to the length of the interval before the immune bodies appeared in the serum. She found the Wassermann and Kolle vaccines most powerful. The Di Cristina and the Caronia vaccines took a little longer and slightly larger doses were required to accomplish the same result.

Policlinico, Rome

January 7, XXIV, No. 2, pp. 41-72

74 Emergency Treatment of Deep Wounds. (Sulla cura dei feriti gravi cavitari in un' ambulanza chirurgica avanzata.) R. Alessandri.—p. 41.
75 Test to Estimate Hardness of Roentgen Tubes. L. Siciliano.—p. 45.
76 *Iodin Treatment of Tuberculous Epididymitis. (Caso di tubercolosi dell'epididimo guarito con la cura alla Durante.) A. Sofia.—p. 55.

76. **Iodin Treatment of Tuberculous Epididymitis.**—The man of 24 had a fistulous epididymitis, and Sofia gave him a local injection of Durante's iodo-iodid solution every fourth day and a subcutaneous dose every day. The cure was almost complete by the end of a year and a half, the process having subsided to a few soft and indolent minute lumps.

[Durante's solution is a mixture of iodin, potassium iodid and distilled water, usually in the proportion of 1 part iodin, 3 parts potassium iodid, and 100 parts distilled water.]

Semana Medica, Buenos Aires

1916, XXIII, No. 45, pp. 457-482

77 Classification of Inorganic Acids. (Separacion y caracterizacion sistematica de acidos de un mismo grupo.) P. J. Pando.—p. 457.
78 Influenza in 1916. (Consideraciones acerca de la epidemia de grippe de este año.) J. Solari.—p. 466.
79 *Suggestion to Aid in Radioscopy of the Lungs. C. Heuser.—p. 474.
80 *Lymphocytosis in Syphilis. C. P. Mayer and A. C. Gourdy.—p. 475. Continuation.

No. 46, pp. 483-510

81 High Application of Forceps. (Consideraciones sobre la aplicacion de forceps en el estrecho superior.) J. C. L. Massini.—p. 483.
82 The Recent Epidemic of Influenza. J. C. Mira.—p. 485.
83 *Genital Prolapse. T. J. Piccardo.—p. 499.

79. **Device to Facilitate Radioscopy of Lungs.**—Heuser uses in radioscopy a screen of paper on which are fastened strips of lead running entirely across the screen, each 10 mm. wide, leaving spaces of 1 cm. wide between them. The effect of this, as is well known in optics, is to make the light strips much clearer to the view by this kind of doubling of the field to be inspected. This innovation was suggested to him by looking out through the slits in a window blind. He says it is like a segmented diaphragm, rendering it much easier to compare the lung on the two sides.

80. **Lymphocytosis in Syphilis.**—This part of Mayer and Gourdy's long serial article shows that lymphocytosis is liable to be not only the earliest sign of syphilis but that it persists and may increase during the secondary phase of the disease. (Their article was summarized in these columns Feb. 24, 668, as two months' issues of this exchange were received at one time.)

83. **Genital Prolapse.**—Piccardo regards genital prolapse as an ordinary hernia, the vaginal wall representing the hernial sac, and he treats it on this basis, like any hernia. The details of ten cases are tabulated to show the advantages of this vagino-perineal plastic method of treatment, and also to show the importance of the levator ani in correction of the prolapse.

Siglo Medico, Madrid

January 6, LXIV, No. 3291, pp. 1-16

84 *Vinegar-Water and Acid Wines in Treatment of Typhoid and Paratyphoid. B. G. Alvarez.—p. 2.
85 Asphyxiating Gases as Weapon in War. F. Rabena.—p. 3.
86 Colitis with Ulceration and Erosions. L. Urrutia.—p. 4.

84. **Vinegar in Typhoid.**—Alvarez expresses surprise that more attention has not been paid to the statement of A. Loir, three or four years ago, to the effect that 20 gm. of vinegar in a liter of contaminated water kills bacteria in it, including those of the typhoid group. The same occurs when the water is mixed half and half with an acid wine. It has been Alvarez' experience in forty years of practice to give typhoid and paratyphoid patients an abundance of acid drinks, and he ascribes his clinical success mainly to this fact. He formerly used lemonade or diluted wine, but has lately used the vinegar water more and more, or hydrochloric acid lemonade. The mortality in his cases has been small and always from complications.

Russkiy Vrach, Petrograd

1916, XV, No. 46, pp. 1081-1104

87 Some of the Medical-Surgical Sanitary Problems at the Front. N. A. Velyaminoff.—p. 1081. Concluded in No. 47, p. 1108.
88 The Russian Substitutes for Salvarsan. (Arsola, arsenola i benzarsan.) V. V. Ivanoff.—p. 1088; Idem. M. N. M. Aitova.—p. 1095.

No. 47, pp. 1105-1128

89 Some Unpublished Letters of Pirogoff. (N. I. Pirogoff nakanunie professuri.) S. Y. Shtraikh.—p. 1105.
90 Bacteriologic Technic as Modified for War Conditions. B. A. Bolter.—p. 1117.
91 Operative Treatment of War Wounds of the Skull. M. S. Astroff.—p. 1119. Conclusion.
92 *The Spleen as a Regulator of Blood Production. (O vliyanie selezenki na krovetvornuiu sposobnost kostnago mozga.) B. N. Stradomsky.—p. 1122.

92. **Influence of the Spleen on the Blood-Producing Function.**—Stradomsky reports the results of experimental research and clinical experience which seem to have demonstrated that the spleen has a twofold hormone action on the bone marrow. It seems to have an inhibiting action on the production of red corpuscles in the bone marrow, while at the same time it stimulates to increased destruction of reds. In normal conditions these two influences balance each other, but when the spleen hormone is abnormal or lacking, the bone marrow produces unlimited quantities of reds but their quality deteriorates. They die off more readily, and this increased erythrolysis sets up an automatic vicious circle. Among the facts on which these assumptions are based are the increased numbers of red corpuscles found in the blood stream after splenectomy, the number rising in the course of one, four or six weeks after the removal of the spleen, while almost at once afterward the red corpuscles present the Howell-Jolly bodies, showing that these reds are young, immature forms. These findings indicate that the bone marrow is functioning to excess after having been released from the controlling influence of the spleen hormone. After splenectomy, administration of spleen extract is liable to give results confirming this rôle of the spleen and its extract as a regulator of blood production. Another argument in favor of his assumptions is the atrophy of the follicles in the spleen to which Hutchinson and others have called attention in cases of polycythemia. It might be objected that polycythemia would follow in every case of disease of the spleen, but the diversity of pathologic conditions in the spleen may leave some parts of the organ intact, at least enough to produce sufficient of the hormone to prevent excessive production of reds. There is also a possibility that the bone marrow may not respond in every case always in the same way. Another objection is that the efficacy of spleen extract in treatment of anemia seems to contradict his views, but he explains this away by certain biologic laws on the effect of small doses in contrast to that from large amounts. The work issues from the pathologic laboratory and clinic of the University of Kharkov.

Mitteilungen a. d. Fakultät der k. Univ., Tokyo

1916, XV, No. 3, pp. 397-542. German Edition. Last indexed May 27, 1916, p. 1751

93 Vasoconstrictor Action of Human Serum on Isolated Heart of Frogs Probably Due to Globulin Content. S. Sakai and T. Hiramatsu.—p. 397.
94 *Chief Mode of Infection with the Ankylostoma Duodenale and Its Route after Oral Infection. Y. Miyagawa.—p. 411.
95 *Prophylaxis of Infection with Japanese Schistosoma. (Veränderungen der Eier des Schistosomum japonicum under den Einwirkungen verschiedener physikalischen und chemischen Agenzien und über einige prophylaktische Massregeln der Schistosomiasis.) Y. Miyagawa.—p. 453.
96 *Pancreatic Diabetes. (Experimentelle Untersuchungen über Pankreasdiabetes mit bes. Berücksichtigung des Eiweissabbaues und der Zucker- und Glykogenbildung aus Eiweiss.) K. Ujihara.—p. 477.

94. **Modes of Hookworm Infection.**—Miyagawa gives four double page charts showing the findings in different phases of his research. His work is accompanied by five photographic plates with twenty microscopic views. He states that sunlight is not necessary for the development of the eggs but rather detrimental, while oxygen and moisture are indispensable. He also states as a fact that ankylostoma eggs can be easily destroyed by mixing the egg-containing fecal material with urine and allowing it to putrefy well. This he regards as extremely important from the practical standpoint. The larvae can be collected most readily by placing a small dish of pure water in a larger Petri dish containing the egg-laden fecal material. As the larvae hatch out, they collect in the water dish as they seek water, and they will be found assembled in this dish in from ten to thirty days. Whether infection occurs by the mouth or through the skin the larvae pass into the lung tissue to begin their development, and they are more resistant to chemical action thereafter than larvae that have not been in lung tissues. The young ankylostomas coming from their trip through lung tissue are able to resist the action of gastric juice for twenty-four hours. The chief mode of infection with the ankylostoma is through the skin. This he proved by experiments on dogs in open fields. The larvae are so resistant to lime and other salts that encysted larvae retained their vitality after being kept for six hours in milk of lime, and for twenty-four hours in the same twice diluted.

95. **Prophylaxis of Infection with Asiatic Blood-Fluke.**—Miyagawa reports that the results of his research show that if a lime-containing fertilizer (*Kalkstickstoff*) is scattered systematically over a field and its watercourses, all the schistosoma eggs and the intermediate hosts will be destroyed. The eggs in stools mixed with urine and putrefying all die in two weeks in summer and in sixteen days at other seasons. This fact makes it imperative not to deposit the egg-infested stools on open ground or allow them to get into running water. The most favorable conditions for the hatching out of these eggs is in running water.

96. **Pancreatic Diabetes in Dogs.**—Ujihara gives sixteen two or three page charts of the metabolic findings and other details in regard to dogs before and after removal of the pancreas and then treated with various substances. He states that his demonstrations of the direct formation of sugar from amino acid throws light on certain phenomena of glycogen production and metabolism, as he explains in detail. The article fills sixty-five pages, including seven pages of bibliographic references with the titles in full.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 30, 1916, II, No. 27, pp. 2321-2364

97 *Behavior of Entameba Histolytica in Presence of Emetin in Human Intestines. J. R. Schiess and N. H. Swellengrebel.—p. 2328.
98 Epidemic Cerebrospinal Meningitis; Four Cases. F. J. Hagen.—p. 2335.

97. **Behavior of Ameba under Emetin.**—The daily ameba findings in the stools of a man of 50 are tabulated to final

recovery under emetin. The *Entameba histolytica* was found in large numbers at first, and later the minute or tetragena form, but in a cat inoculated with the ameba from the stools, only the histolytica form was found, as also in cat after cat inoculated one from another. In the entire series of sixteen cats, nothing but the histolytica form could be discovered. These experiences disprove Darling's assertions as to the diagnostic importance of this method of experimental inoculations. The development of the ameba in the cat does not reproduce the cycle of development as in man.

Finska Läkaresällskapets Handlingar, Helsingfors

December, 1916, LVIII, No 12, pp. 1755-1935

99 *Chromosomes and Heredity. (Kromosomer och ärftlighet.) H. Federley.—p. 1755.
100 *Familial Abnormally Large Cornea and Its Relation to Hydrophthalmos. (Om megalokorneas ärftlighet.) V. Grönholm.—p. 1792.
101 *Supernumerary Breasts and Nipples in Child-Bearing Women in Finland. (Om förekomsten af hyperteli och hypermasti hos puerperae i Finland, med särskildt beaktande af de s. k. axelhålemjölk körtlarna.) M. Schroderus and S. E. Wichmann.—p. 1813.
102 *Tuberculosis in a Finnish Province. H. Granfelt.—p. 1880.

99. **Chromosomes and Heredity.**—Thirty-three illustrations or diagrams accompany Federley's article in which he seeks to prove that Mendel's law is the result of the reduction of chromosomes in the maturing of the sexual cells. He reviews the more important publications in this line in the last few years, reproducing many of the illustrations, saying that the more important data have been obtained by parallel cytologic and experimental research. Complicated phenomena of heredity can be traced to the chromosomes.

100. **Familial Megacornea.**—Grönholm relates that he knows a family in which the five sons present a malformation in both eyes, the cornea being abnormally large. The father, mother and the daughter show no signs of the anomaly. The sons' ages range from 2 to 24 years. The diameter of the cornea is 14 mm. in one; 13 mm. in the other of the two brothers whose pictures are given. The normal diameter is about 10 or 11.5 mm. The eyeball itself does not seem unduly large. Two of the brothers have a zonular cataract in both eyes. The same megacolon is pronounced in two male cousins of the mother and in the two daughters of one of these cousins. In all, he found it in thirteen persons in the family, eleven males and two females, in the course of three generations. When a man with the anomaly married outside the family, his children were all free from it. But the daughters in the family, although free from the anomaly themselves, transmitted it to their sons when marrying outside the family. There are five instances of this in the family. The affected fathers have normal children, while the normal mothers have sons affected with the anomaly. A further remarkable feature of this family transmission is that the daughter of a normal daughter in the family likewise transmitted the anomaly to her sons. Grönholm states further that when a man with megacornea married a cousin whose father had the same anomaly, it occurs in his daughters, but if the cousin happens to be a nonconductor, his children will be free from it. The bilateral development and other features of the anomaly point to some constitutional rather than a local cause.

101. **Supernumerary Nipples and Mammary Glands.**—Schroderus and Wichmann found supernumerary mammary glands in 3 per cent. of the 3,350 women delivered at the Helsingfors maternity during their time of service there. This proportion is three times larger than any other yet published. In 41.7 per cent. the anomaly was bilateral; thus they had opportunity to examine 146 axillary mammary glands. About three-fifths secreted a fluid which microscopically seemed to be colostrum at first and actual milk later. In ten cases described more fully a glandular connection between the axillary mammary gland and the main gland could be palpated. These supernumerary glands were among the larger ones, but in none of the cases was there an actual complete mamma in the axilla. In two other cases, of which illustrations are given, the glands in both axillae grew very large as lactation commenced, but later subsided. In one woman each mamma was double, milk flowing from two nipples on each breast. The child nursed the four nipples in turn. The size of the axillary glands ranged from very small to 18 by 7 cm., but after the puerperium they shrank in size.

102. **Tuberculosis in Finland Province.**—Among the 5,300 persons of the Malak province only 3,960 were living there at the time of the examination; 1,700 had emigrated, mostly to America. The data in regard to tuberculosis are classified in fifteen tables; tuberculosis in some form was found in 6.87 per cent. of the 3,868 examined and in 3.14 per cent. of the children under 15. Active pulmonary tuberculosis was manifest in 1.68 per cent. of the adults and in 0.27 of the children examined.

Hygiea, Stockholm

LXXIX, No. 1, pp. 1-48

103 *Auditory Reeducation with Electric Sonorous Vibrations. (Erfarenheter med kinesiphone-terapi enligt Maurice.) G. Holmgren.—p. 1.
104 Cerebellar Symptoms after Recovery from Otogenous Meningitis. (Fall av läkt, diffus, varig, otogen meningit med sekundära lillhjärnssymtom.) E. Erici.—p. 27.

103. **Auditory Reeducation.**—Holmgren reports his experiences with the Maurice kinesiphone, an electrically driven apparatus for inducing tones with a range of about two and a half octaves. In 70 of his 147 cases the deafness was the work of otosclerosis and this was probable in 22 others. In 25 the deafness had been left by chronic otitis media, and in 15 was the result of a "dry" catarrh of the middle ear. The benefit was most pronounced in these two last groups, about half the patients in these groups showing remarkable improvement, but whether more than can be obtained with the ordinary measures, is open to question. Of the 70 patients with certain otosclerosis, only 6 were much improved but 25 showed slight improvement. The much improved patients were all young women. One for three years had been able to hear a whisper only at 4 and 3 meters, but after ten sittings the figures became 10 and 8 meters. These figures for a girl of 19 were 1 and 6 meters before and 4 and 8 meters after a course of twenty-seven sittings. Holmgren remarks that we are frequently consulted on account of deafness brought on by a cold, fatigue, general depression, etc. Whatever treatment is applied is credited with the improvement that follows the subsidence of the occasional cause. This, he thinks, is the explanation for the "brilliant" results that have been reported in French and Belgian literature from the kinesiphone. The principle of the apparatus is simple, and in the hands of a trained attendant, under the supervision of the physician, the method has the advantage of being less expensive than other methods which have to be applied by the physician himself.

Ugeskrift for Læger, Copenhagen

January 4, LXXIX, No. 1, pp. 1-42

105 *"Assisted" Infants up to Two Months of Age. (Erfaringer om Ernæring og Livsvilkaar hos et større Antal "Plejehjælpsbørn" i de to første Levemaaneder.) P. Hertz.—p. 4.

105. **"Assisted" Infants.**—By this term Hertz refers to the children of unmarried mothers delivered at the public maternity at Copenhagen, who are given 1.5 kroner (about 40 cents) a week for thirteen weeks after the birth of the child. The woman returns once a month for the money and she is expected to bring her child each time. By this means oversight of the children for two months was possible. Of the total 4,115 of these "assisted" infants, only 1.6 per cent. were exclusively bottle-fed from the first, but this proportion increased by the end of the first month, only 40.7 per cent. being still breast fed at that time, and, by the end of the second month, only 27.3 per cent. The bottle-fed children seemed to thrive under the directions for feeding given the mothers, especially when the mothers could give the child the breast at night although during the day it had to be fed artificially. The mortality was considerably less than in previous years. Hertz disapproves of pasteurized milk, saying, "It would be better if this disappeared entirely from the big city." His objection is that as the milk is always boiled again, just before using, the preceding process is superfluous and only injures the milk unnecessarily.

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MYOMAS OF THE UTERUS

WITH SPECIAL REFERENCE TO MYOMECTOMY *

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ROCHESTER, MINN.

To my knowledge there has been no reported case of a tumor composed of voluntary (striped) muscle fibers of the fully developed type found in voluntary muscle. It is true that rhabdomyomas occur, especially in the genito-urinary tract, but the striped fibers are always embryonic in character. True myomas are therefore of the involuntary (nonstriped) muscle, and wherever smooth muscle is to be found they are an inherent possibility. Smooth muscle has a remarkable power of hypertrophy, but this is not true of striated muscle, which reaches its maximum in adult life and appears to be incapable of greater development in later years.

Meltzer,[1] referring to Triepel's investigations, calls attention to the fact that the permanent reserve power of the voluntary muscles is comparatively small. Crile[2] and Cannon[3] have shown that under the influence of fear or anger extraordinary reserve of the voluntary muscles can be brought about temporarily. This, however, is not due to hypertrophy, but is the result of acceleration of the blood supply through increased activity of the internal secretion of the thyroid, suprarenals, and other endocrine glands, which at the same time inhibit gastro-intestinal action through the autonomic system and reduce the circulation of blood to the viscera. The increased muscular power comes about in the same way in which an engine steaming at 190 pounds' pressure would produce greater power than when steaming at 160 pounds' pressure. Increased activity of the voluntary muscles results in fatigue, owing to the acid products which accumulate, and these acids are removed from the muscular system through bases which are quickly supplied by food during rest. Stonewall Jackson, one of the greatest soldiers America has produced, by taking advantage of this fact — dividing the march into periods with complete relaxation for a short time between each period and giving the soldiers, during this time of rest, such food as he could obtain — was able to march infantry as many as 40 miles over bad roads in twenty-four hours. This obtained for them the unique appellation of "foot cavalry."

Smooth muscle, on the contrary, apparently cannot be speeded up to the same extent to meet emergencies, but must have time for muscle hypertrophy to take place. Muscle hypertrophies are work hypertrophies, such as occur from obstruction in the gastro-intestinal tract, or they depend on lack of proper stimulation, owing probably to failure of the nodal system, as shown by Keith,[4] which failure gives rise to such various conditions as cardiospasm, pylorospasm, stasis, Hirschsprung's disease, etc.

It has been shown by Cannon and Alvarez[5] that smooth muscle fiber has within itself the power of contraction independent of nerve or blood supply. A bit of intestine placed in Locke's solution will beat for hours. Our knowledge of the heart is most complete in this detail; the heart beat begins in the muscle fibers of the auricle, and the impulses are collected in the sino-auricular node — a primitive muscle-nerve type of ganglion endowed with automatic function. These impulses are carried to the ventricle through the muscle bundle of His, timing the ventricular beat. All smooth muscle, as shown by Keith, has its primary contraction or its beat, so to speak. The intestinal tract has two beats: one from fifteen to twenty times to the minute, which may act as the heart of the portal circulation (Mall), and the second, once or twice to the minute. The latter we recognize as peristalsis. The uterus has its beat, which, during pregnancy, becomes so marked that it is a diagnostic sign of value as the examiner places his hand over the suprapubic region to feel the uterine contractions.

As yet there has been no good explanation of the absence of myomas in the voluntary muscle and the frequency of these tumors in the involuntary muscle. The cause is undoubtedly connected with the primitive power of contraction of smooth-muscle fibers and their ability to hypertrophy quickly in response to demand. In this connection it is well to remember that the round, broad, ovarian and uterosacral ligaments contain smooth muscle derived from the uterine wall, and that myomas and adenomyomas (Cullen[6]) may occur in these locations.

It has been shown that 12 per cent. of white and 30 per cent. of colored women of 50 years of age have uterine myomas. Clark and Miller[7] state that at the Charity Hospital in New Orleans 50 per cent. of colored women of 35 who have not borne children have myomas of the uterus. This high percentage indicates that only a small proportion of women with myomas have symptoms, and therefore we cannot accept the opinion so frequently expressed that every myomatous

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* From the Mayo Clinic.

[1] Meltzer, S. J.: The Factors of Safety in Animal Structure and Animal Economy, Harvey Lectures, 1916-1917, **2**, 139-169.

[2] Crile, G. W.: Acidosis and Its Dominating Influence in Surgery, Tr. Am. Surg. Assn., 1915, **33**, 419-429.

[3] Cannon, W. B.: Some Relations Between Emotions and Glands of Internal Secretion, Journal-Lancet, 1916, **36**, 685-688.

[4] Keith, A.: A New Theory of the Causation of Enterostasis, Lancet, London, 1915, **2**, 371-375.

[5] Alvarez, W. C.: The Motor Functions of the Intestine from a New Point of View, The Journal A. M. A., July 31, 1915, pp. 388-394.

[6] Cullen, T. S.: Adenomyoma of the Round Ligament and Incarcerated Omentum in an Inguinal Hernia, Together Forming One Tumor, Surg., Gynec. and Obst., 1916, **22**, 258-260.

[7] Clark and Miller: Personal communication to the author.

uterus should be considered surgical. We should believe, rather, that only those myomas which are giving rise to symptoms require operation, although all women who have myomas should be examined at intervals to see that the tumors are causing no harm. It has been estimated that 30 per cent. of women with myomas die within five years if not operated on. Noble,[8] as a result of his investigation of 2,274 cases in which myomas were removed by hysterectomy, states that in 30 per cent. there were pathologic conditions present which would have led to death. We can accept these figures if the premise be changed; that is, that the lives of 30 per cent. of women who have myomas which cause symptoms would be materially shortened if the myomas were not removed. Thus we exclude that large number of women who have small myomas which are not producing symptoms.

The most common conditions indicating operation are those which result from: (*a*) hemorrhage; (*b*) degeneration of the tumor (22 per cent.); (*c*) malignant disease, usually carcinoma of the body of the uterus (4 per cent.); 10 per cent. of women more than 50 years of age who come to operation for uterine myoma have complicating malignancy; (*d*) tumors causing pressure. The large majority of patients with tumors which can be felt suprapubically belong to this group, and, with or without symptoms, should be operated on. In 30 per cent. of patients with myomatous uteri causing symptoms, the ovaries and tubes are so seriously diseased as to require operation independently of the myomas.

The diagnosis of uterine myomas in about 5 per cent. of our cases was more or less incorrect. The presence of a tumor of the ovary, either benign or malignant, usually caused the failure of differentiation, especially when small fibroid nodules, of no consequence in themselves, were to be felt in the uterus.

The use of the Roentgen ray and radium in disease is interesting and in some respects encouraging. It seems to be generally agreed that the gamma rays are the responsible agents, and that there is little difference in effect whether they are produced by radium or the Roentgen ray. Radium has the advantage of containing definite and measurable quantities. It is portable and convenient, and does not require great skill in application. The Roentgen ray requires greater skill, and should be used only by the more expert. The treatment of uterine myomas by irradiation would appear to be contraindicated in degenerating and submucous tumors, where inflammatory disease of the ovaries and tubes co-exist, and in all doubtful tumors. Forssell,[9] the leading Scandinavian roentgenologist, states that he caused the disappearance of 30 per cent. of sarcomas; but he has had no four year cures. He further states that he has many cures of superficial carcinomas, but few of deep seated carcinomas. Holding, of the Memorial Cancer Institute of Cornell, agrees with these statements and adds much to our knowledge of the subject. He calls attention to the fact that irradiation has an especially destructive effect on nuclei, and the greater the nucleation of the growth the better the effect of irradiation. He states also that irradiation will often cause healing over a cancerous surface and give a fictitious appearance of cure. Colwell and Russ[10] show that irradiation acts markedly to obliterate the capillaries, perhaps because they have only the inner endothelial coat. It does not act to a great extent on the larger three-coated blood vessels. This peculiarity accounts for the splendid results obtained by irradiation in vascular and lymph tumors, and also for the extraordinary reduction of the enlarged leukemic spleen. The splenic vessels have only the inner coat. Colwell and Russ, however, show that islands of cancerous tissue cling to the larger vessels where irradiation will seldom destroy them. Certainly one would hesitate to trust to irradiation for the cure of a probably malignant change in a myomatous uterus. Our own experience in this connection is too limited to be of value, although in the modest number of cases of all sorts in which we have used these agents during the past seven years we have had a few excellent results, but unfortunately only a few in malignant disease excepting superficial lesions.

One cannot escape from the conviction that in myomatous disease, the use of radioactive substances is destructive — nonoperative, but not conservative. In the great majority, if not all, of the cases in which the myomas completely disappear under their use, the patient loses the function of the ovaries, tubes and uterus, although the nonfunctionating remnants were left in situ.

It is urged by those who are devoted to the radioactive treatment of myomas that many patients are such poor surgical risks that they cannot be operated on, and for that reason there is a wide field of usefulness for these agents. We are told that certain patients cannot be operated on because of marked secondary anemia, yet I have operated many times when the hemoglobin was under 30 and twice when it was under 20, with recovery of the patients. In any event the condition of such patients can be improved by blood transfusion, for the practical benefits of which we are indebted to Crile. Again, we are told that certain patients cannot be operated on because of high blood pressure; but unless the high blood pressure is due to cardiorenal or thyroid disease, it does not apparently add to the operative risk. We frequently operate on patients of the uncomplicated arteriosclerotic type with blood pressure from 180 to 250 or more, and we have never had a death following the operation which we could attribute to the hypertension.

Uterine myomas are rather frequently associated with goiter. The estimation of the operative risk depends on the condition of the thyroid (goiter heart). Heart lesions of any description lead to a fear of operation. The common type of lesion is mitral, beginning in the young, especially females, as an endocarditis in connection with chorea, or "inflammatory rheumatism," and without hypertension. If well compensated, this type of lesion apparently does not increase the surgical risk. Women with bleeding submucous myomas occasionally develop heart lesions of the same character with marked secondary anemia, probably due to a similar infection, and the condition is an indication for, rather than against, operation.

Hysterectomy has been and still is the operation of choice for all symptom-producing myomas, and it has much to commend it. In patients above 40 years of age, and especially those with degeneration of the tumor, this operation is indicated. Supravaginal hysterectomy has a definite technic which has been so thoroughly and carefully worked out in the past twenty years that it has become the standard operation. Preserving the cervix renders the operation easier and safer, but the cervical remnant has no function and two unfortunate propensities: First, it leaves the patient with a liability to cancer — an average liability, according to our experience, although Winter and others believe that in myomatous disease the liability is increased — and, second, it is the cause of the large majority of those sometimes troublesome vaginal discharges which go by the name of leukorrhea, due to subsequent disease of the mucous glands of the cervix. For this reason, in all cases of erosion, cystic degeneration or other disease of the cervix, we remove the cervix with the body of the uterus, provided it can be done without unduly increasing the risk of the operation.

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[8] Noble, C. P.: Fibroid Tumors of the Uterus: A Study of the Degenerations and Complications in 2,274 Consecutive Cases; Including 337 Cases of the Writers; also a Study of 4,880 Consecutive Cases in Their Relation to Carcinoma and Sarcoma of the Uterus, Jour. Obst. and Gynec., Brit. Emp., 1906, **10**, 436-477; id., The Journal A. M. A., Dec. 8, 1906, p. 1881-1886.

[9] Forssell: Personal communication to the author.

[10] Colwell, H. A., and Russ, S.: The Effects of X-Rays upon Various Organic Substances, Arch. Middlesex Hosp., London, 1911, **27**, 63-70.

There has been a great deal of difference of opinion as to whether or not the ovaries should be saved. It would seem, however, that to remove the normal ovaries merely because we are doing a hysterectomy is an unwarranted mutilation. Norris and Clark's[11] investigations show that saving the ovaries materially reduces the unpleasant physical and nervous effects which often follow hysterectomy. That the ovaries have an internal secretion as well as the function of ovulation is well known, and in the young this internal secretion, even from ovaries in which the function of ovulation never occurs, causes at least development of the feminine characteristics.

The internal secretion of the ovary and testicle also has to do with the closure of the epiphyseal lines in adolescence; and removal of these organs in the young leads to late closure of the epiphyseal lines and increased growth of the long bones which, in connection with a hyperactive pituitary secretion, produce the tall spindle type of giantism. That the function of the ovaries is entirely independent of nerve supply is shown by the experience of Tuffier,[12] who, in operating for pus tubes, removes the ovaries and tubes, sterilizes the ovary either by passing it through an alcohol flame or by dipping it in tincture of iodin, and implants it in the abdominal wound just outside the peritoneum. For a few months after operation the patient shows marked evidence of beginning menopause; in from four to six months these symptoms disappear, and menstruation reappears and continues in a normal manner. Only autografts, however, have this property; in Tuffier's experience homografting and heterografting of ovaries was a failure. Beatson[13] of Glasgow found that in some hopeless cancers of the breast, removal of the ovaries produced an extraordinary effect on the cancer, several patients of this description being apparently cured. Beatson is a most distinguished as well as conservative surgeon, and his results, which have been duplicated by others, well show the remarkable effect of stopping the internal secretion of the ovaries.

We have been able to save one ovary in more than 50 per cent., and both ovaries in more than 25 per cent. of all the hysterectomies we have done for myomatous disease. From the standpoint of conservation of the ovary, hysterectomy is preferable to radium and the Roentgen ray, since when thus effectively treated the ovaries are destroyed. Acknowledging, as we must, the great benefits which have accrued to woman through hysterectomy, we cannot blind ourselves to those physical and nervous changes which sometimes follow, especially in younger women. It would be interesting to know what percentage of divorces have had their origin in this operation. It is not that hysterectomized women become coarse, although they often gain in weight, but certain physical and nervous changes take place which may result in unhappiness. The noblest instinct of woman, that of motherhood, is at hazard. Because of the ease and the surgical certainty of hysterectomy, have we not sometimes too quickly advised and practiced a mutilating operation? I regret to say that we now occasionally see a young woman in whom a condition equivalent to hysterectomy with removal of both ovaries has been brought about by radium or the Roentgen ray. To one who takes a view of the whole situation, myomectomy must present itself as the only truly conservative procedure, and becomes the operation of choice for a large number of patients, provided always it can be done without an increase of risk and with reasonable certainty as to cure.

Myomectomy for myomas of the uterus has not been a popular operation. It has been urged against it, first, that the mortality of the procedure itself is higher than that of hysterectomy, and; second, that more tumors would develop and necessitate hysterectomy later. As to the mortality: From Jan. 1, 1891, to Sept. 1, 1916, we have done 504 consecutive myomectomies with four deaths in the hospital, a mortality of 0.8 per cent. Counting as a death from the operation every patient who died in the hospital following myomectomy, without regard to cause or length of time after operation, certainly this mortality compares favorably with that of hysterectomy. As to the second objection, only five patients required hysterectomy later for any cause.

It must be taken into consideration, however, that the patients whom we subjected to myomectomy were in a way selected cases. Myomectomy was not often done in those over 40, and it was not frequently done after the age of 35 unless the conditions were such as to make it safe. On the contrary, it was done for the majority of patients with myomas who were under 35 years of age, and for practically all under 30 years. As the tumors which require operation are much more frequent after the fortieth year, it can be readily seen that we have been conservative in choosing cases for myomectomy.

Myomectomy is a more difficult operation than hysterectomy, because the technic must be varied according to the character, situation, size and number of tumors. But myomectomy does not present greater difficulties than can be easily mastered by the experienced surgeon. I have previously described[14] the technic of this operation, and have found it necessary to make but little change since.

Fourteen patients were pregnant at the time the myomectomy was performed, and the majority went to term and were delivered of living children. When it is considered that in the latter group the tumors were degenerating with acute symptoms, and that in a large proportion indications of spontaneous emptying of the uterus were present at the time of the operation, it is remarkable that the disturbance so frequently quieted down without premature expulsion of the child. In not a single instance have we been obliged to do hysterectomy on the pregnant myomatous uterus with a nonviable child.

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[11] Clark, J. G., and Norris, C. C.: Conservative Surgery of the Pelvic Organs in Cases of Pelvic Peritonitis and of Uterine Myomata, with the Review of the Immediate and After-Results of 299 Cases, Surg., Gynec. and Obst., 1910, **11**, 398-413.

[12] Tuffier: Personal observation, Mayo, W. J.: A Visit to Some of the Hospitals and Surgical Clinics of France, Northwest. Lancet, 1911, **31**, 405-411.

[13] Beatson, G. T.: On the Treatment of Inoperable Cases of Carcinoma of the Mamma: Suggestions for a New Method of Treatment, with Illustrative Cases, Lancet, London, 1896, **2**, 104-107; 162-165.

[14] Mayo, W. J.: Some Observations on the Operation of Abdominal Myomectomy for Myomata of the Uterus, Surg., Gynec. and Obst., 1911, **12**, 97-102.

Twenty-four of our 504 myomectomized patients have had living children since the operation, and seven have had two or more. Thirty-eight living children to date following myomectomy is a strong argument for the conservative operation. Five others are normally pregnant now.

From this investigation as to actual results covering a period of twenty-five years, it is evident that the operation of myomectomy has not received the attention it merits. We should bend every effort to improve the technic and further the indications for this operation, the only truly conservative procedure for myomas of the uterus, an operation which removes the tumor and leaves the patient as she would have been had she never possessed it.

THE FUNCTIONAL CAPACITY OF THE STOMACH

AS A BASIS FOR JUDGING THE VALUE OF ANY METHOD OF SURGICAL TREATMENT *

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The value of any treatment, especially when it involves surgical methods, is not based at the present day entirely on anatomic results. Anatomic structures, whether conforming to the normal or resultant from new relations produced during operation, are of value only in terms of physiologic function. The nearer the functional result approaches the normal after operation, the better has been the method of treatment; and the more closely the functions are carried out along normal physiologic paths, the less disturbance is manifested in the complaints of the patient until the body economy becomes accustomed to the new physiology.

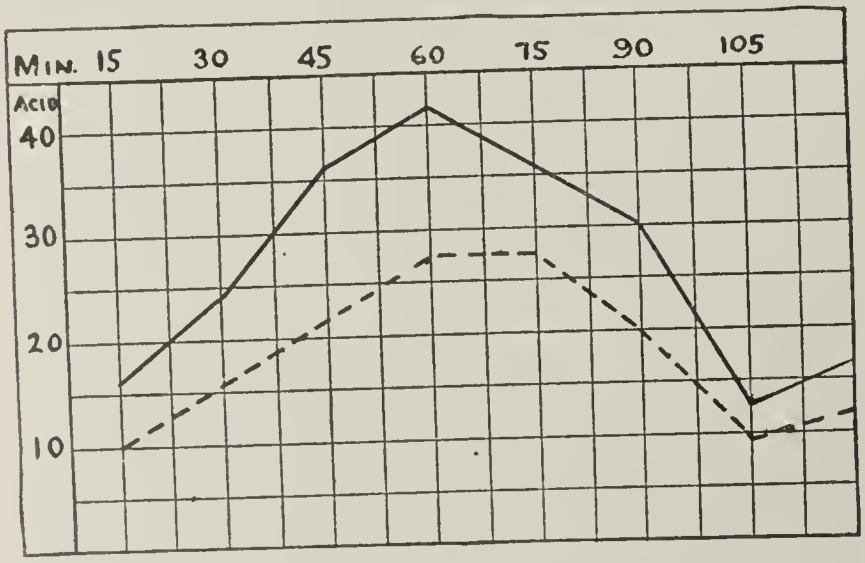

Fig. 1.—Fractional test meal, Case 1: solid line, total acidity; broken line, free acidity.

This paper will outline the methods which we have been using, which are capable of reflecting scientifically and accurately the state of the various functions of the stomach at any given moment. The picture obtained by correlation of the various facts so obtained will in turn reflect the total physiologic effort of the gastric function. It will be shown, also, that these methods are applicable after any operative procedure, and when so employed give reliable data on which the functional result of the operative procedure can be judged.[1] In the latter aspect these methods will find their chief value.

These methods combine some tests in common use for many years, together with several which, although known for many years, have only recently assumed the prominence which they should have. In a general way these have to do with the digestive and motor functions of the stomach.

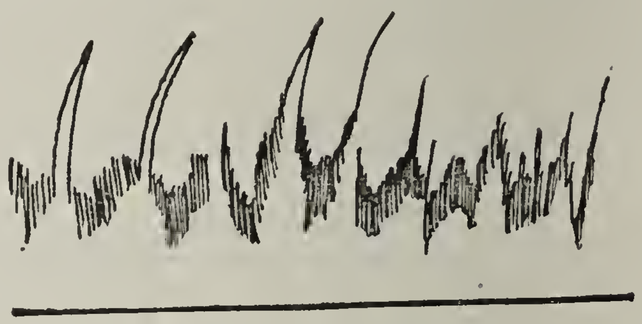

Fig. 2.—Kymographic record, Case 1.

In estimating the digestive activity of the stomach, the knowledge obtained from any one test meal has not satisfied us. On this service there has been developed a routine which is designed to follow the ordinary habits of most normal persons and which furnishes, to our mind, a correct picture of this function.

The cycle is begun in the morning. The content of the stomach found after the night's rest is extracted. Immediately thereafter a test breakfast is given consisting of a cup of tea (6 ounces) and one roll (Ewald test breakfast). The residue remaining at the end of one hour's time is extracted. The midday meal of the same day consists of the Riegel[2] test meal. Six hours later the residue is extracted. At each of these extractions the attempt is made to empty the stomach completely.

The residues obtained are examined grossly, chemically and microscopically, and the facts are tabulated in accordance with the charts shown in the case reports following.

An entire digestive period is then studied in accordance with the fractional method lately emphasized by Rehfuss. This is necessary as the information obtained in the ordinary test meals reflects the conditions in the stomach at any given moment arbitrarily chosen. The fractional method amplifies this by furnishing information continuously over an entire digestive period, regarding the character of the secretions of the stomach and the length of the period of secretion, as compared with digestion and with the emptying capacity of the stomach. Information is also obtainable as to whether or not duodenal or small intestinal contents are regurgitated backward into the stomach at any stage of the digestive period; and, when this does occur, the relative time of its appearance can be noted and any influence which this may have on the digestive activity can be observed.

It can be readily appreciated that, of all these tests, the most important is the study of an entire digestive period by means of the fractional method. The

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*From the surgical service of Dr. A. A. Berg, Mount Sinai Hospital.

[1] Wilensky and Crohn: Tr. Am. Gastro-Enterol. Assn., May, 1916; Am. Jour. Med. Sc., to be published.

[2] We use a modified Riegel test meal consisting of a plate of bouillon, about 200 gm. of white meat of chicken, about 150 gm. of mashed potato, and two slices of white bread.

results of this method can be plotted graphically, and a curve is then obtained giving a visual description of a period with which subsequent examinations can be compared.

The motor function of the stomach is next investigated. For this purpose two methods are available: (a) the Roentgen ray examination of the contrast meal filled stomach, and (b) the kymographic method recently emphasized in purely physiologic work by Cannon and his collaborators[3] and by Carlson and his associates.[4]

In the aspect discussed in this paper, no attempt is made to indicate the relative value of the Roentgen ray as a method of precision in the diagnosis of gastric or duodenal lesions. In this communication only those facts made evident by Roentgen ray study which have a bearing on the function of the musculature of the stomach wall will be indicated.

The smooth muscle planes of the stomach are distributed, first as a churning and propulsive mechanism in the wall of the stomach, and, secondly, as a valve formation at both the entrance to, and the exit from, the stomach—the cardiac and pyloric sphincters. Physiologically the more important of the latter two is the pylorus. The information obtainable by means of the Roentgen ray in regard to these three parts of the motor function can be summarized thus:

1. *The Action of the Cardia.*—No abnormality in function is usually found unless some definite organic lesion is present directly at the sphincter or so closely adjacent as to form a source of irritation.

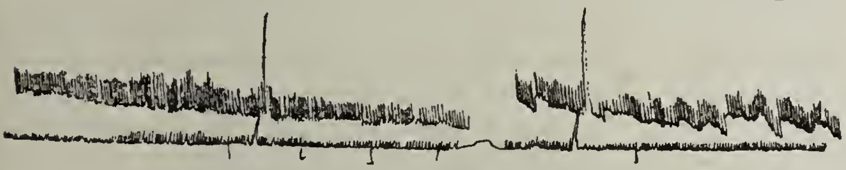

Fig. 3.—Kymographic record, Case 2.

2. *The Action of the Musculature in the Wall of the Stomach.*—This includes the character of the individual contractions and especially the coordination of these in the total muscular effort; the tone of the muscle, that is, the manner in which the stomach contents are grasped; the segmentation of the stomach into fundus and antral portions, and the rapidity with which the food is passed into the pyloric chamber. The time of total emptying of the stomach is also noted.

3. *The Action of the Pylorus.*—A normally acting sphincter at the exit from the stomach is imperative for a normal physiology. This has become evident as a result of some studies which we have made on stomachs subjected to resection with and without retention of the pylorus.

The technic employed in obtaining kymographic observations follows closely that described by Cannon and Carlson. Observations are made on a fasting stomach. In certain cases, however, it may be of advantage to have these tests made on the stomach containing food.

Information from this source can be summarized thus, according as it concerns:

1. The tonus of the musculature.
2. The presence or absence of tonus contractions.
3. The presence or absence of hunger contractions.
4. The muscular coordination.
5. The intragastric pressures and their variations.

Information obtainable by the Roentgen ray is complementary to that obtained by kymographic methods. The two together give adequate conceptions of the action of the stomach musculature.

The practical application of these methods is shown in the accompanying case reports.

REPORT OF CASES

Case 1.—*Record of a case with gastric symptoms in which no gastric lesion was demonstrated at operation.*—Hospital No. 160266. There was a six months' history of epigastric pain occurring after meals with frequent vomiting. There was a loss of 35 pounds in weight. The physical examination was negative except for a slight amount of tenderness in the epigastrium. The facts revealed by the functional study are given in Table 1 and Figures 2 and 3. Roentgenoscopy revealed active peristalsis, good motility, and the stomach empty in four hours.

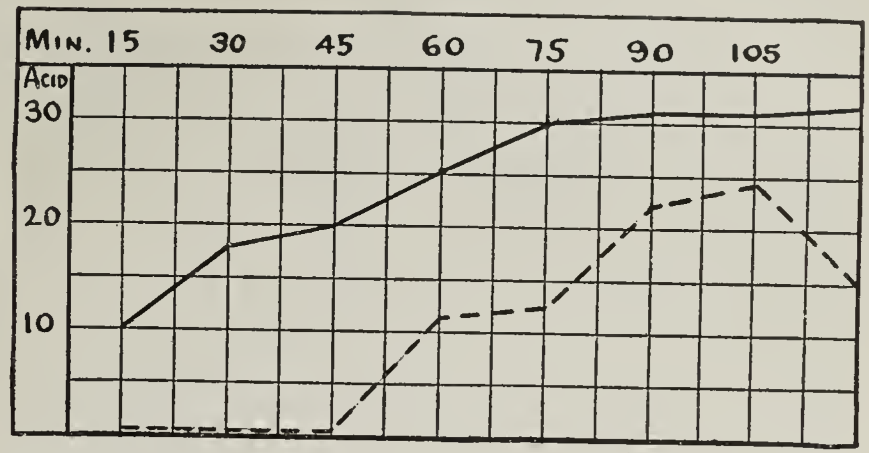

Fig. 4.—Fractional test meal, Case 3: solid line, total acidity; broken line, free acidity.

TABLE 1.—STOMACH ANALYSES IN CASE 1, DECEMBER, 1915

	Fasting Content	Ewald	Riegel
Quantity	None	40 c.c	None
Appearance	....	Brown	
Food residue	....	Slight	
Lactic acid	....	0	
Blood	....	0	
Free acid........	....	35	
Total acid	....	65	
Microscopic	....	Negative	

These examinations showed that the functions of this patient's stomach were within the normal ranges. It was possible to say definitely that there was no functional disturbance, and it was not surprising when the laparotomy showed no anatomic lesion of the stomach or duodenum.

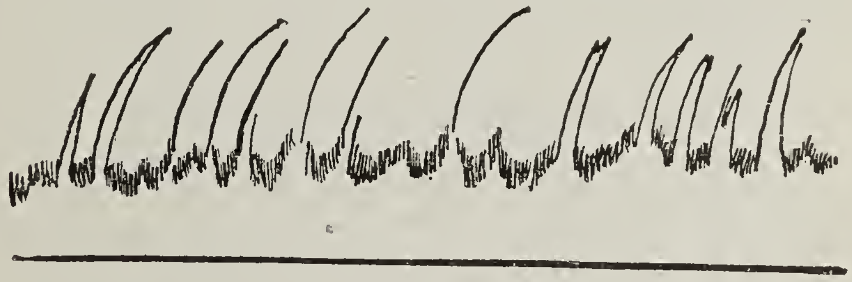

Fig. 5.—Kymographic record, Case 3.

Case 2.—*Case with gastric symptoms and demonstrable lesion at operation.*—A middle aged man for two years had had epigastric pain occurring after meals. The pain was also especially intense during the night. Vomiting had never occurred. There was a loss of 50 pounds in weight. Here, too, the physical examination yielded nothing but a slight amount of epigastric tenderness. The results of the functional studies are given in Table 2 and Figure 3. Roentgenoscopy gave evidence of an incomplete stenosis of the pylorus with marked atony and gastrectasia.

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[3] Cannon, and Cannon and Washburn: Am. Jour. Physiol., 1911 and 1912; Harvey Lecture, Dec. 6, 1911.

[4] Carlson, Carlson and Ginsburg, Patterson, Luckhardt and others: Am. Jour. Physiol., 1912, 1913, 1914 and 1915.

The functions of this man's stomach had been so deranged that it was not possible to perform some of the tests, owing to his immediate vomiting (fractional method and Riegel meal). The clinical diagnosis was incomplete pyloric stenosis with gastrectasia. On several occasions the kymographic tracing demonstrated an atonic condition, and when at operation a large crateriform ulcer was found on the posterior surface and lesser curvature adherent to the underlying pancreas, this was immediately explained. There was no true pyloric stenosis. The true conception was that of a paralytic condition induced by the presence of this large inflammatory lesion in the body of the stomach. This, too, explained why the man had not vomited before he came to the hospital.

TABLE 2.—STOMACH ANALYSES IN CASE 2, MARCH, 1916

	Fasting Content	Ewald	Riegel
Quantity	500-1,000 c.c.	420-1,000 c.c	Not made
Appearance	Yellow	Yellow	
Food residue	Large	Large	
Lactic acid	0	0	
Blood	0	0	
Free acid........	....	22	
Total acid	....	37	
Microscopic	Sarcinae, raisins and old food detritus.		

TABLE 3.—STOMACH ANALYSES IN CASE 3, JULY, 1915

	Fasting Content	Ewald	Riegel
Quantity	27 c.c.	150 c.c.	60 c.c.
Appearance	Clear fluid	Light brown	Brown
Food residue	0	Little	0
Lactic acid	0	0	0
Blood	0	0	0
Free acid........	13	15	0
Total acid	30	43	27
Microscopic	Negative	Negative	Negative

Case 3.—*Functional study after operation with full recovery.*—Hospital No. 155381. A man, aged 34, had been operated on for an ulcer near the pyloric sphincter, a gastro-enterostomy having been made by suture with unilateral pyloric exclusion by the string method. The results of the study of the functions of the stomach made after full convalescence are given in Table 3 and Figures 4 and 5. Roentgenoscopy revealed good peristalsis, the pylorus (exclusion) closed, the stoma patent and efficient, and the stomach empty in four hours.

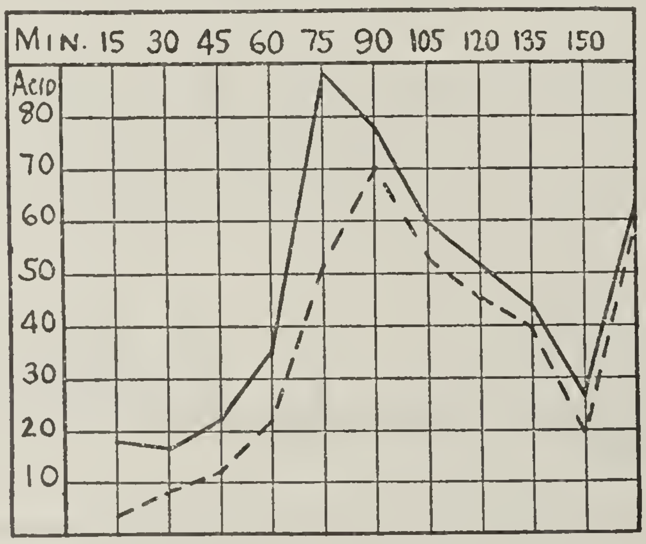

Fig. 6.—Fractional test meal, Case 4: solid line, total acidity; broken line, free acidity.

Symptomatically the patient was cured; physiologically the functions were within the normal ranges; the result, therefore, is excellent from every point of view.

Case 4.—*The functional result after operation with a development of postoperative symptoms.*—Hospital No. 160857.—A man had had an ulcer in the first portion of the duodenum for which the same surgical treatment had been carried out as in Case 3. Some time later the patient developed a recurrence of some of his former symptoms, and when the functions of his stomach were then studied, the results given in Table 4 and Figures 6 and 7 were obtained. Roentgenoscopy revealed fair peristalsis, the pylorus open (exclusion), the stoma patent, and the stomach empty in six hours.

Aside from the symptomatic result, the findings show that the stomach functions are not what they should be. The cause for this patient's postoperative symptoms may not be a recurrence of the original lesion or a reappearance of new similar lesions, but may be due entirely to the disturbed physiology. As pointed out in a former paper[5] these physiologic disturbances are prolific in the production of postoperative symptoms.

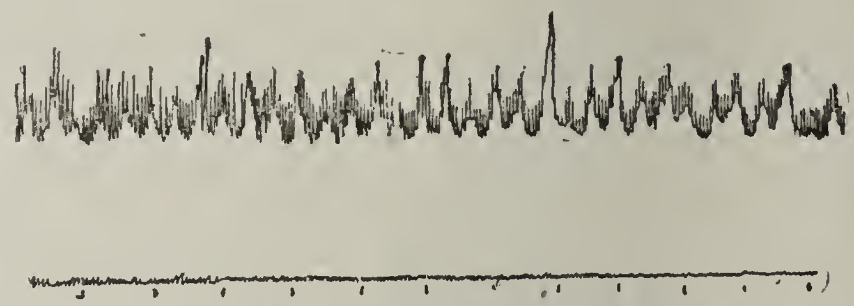

Fig. 7.—Kymographic record, Case 4.

COMMENT

These are the methods used in the study of those cases reported at the meeting of the American Gastro-Enterological Association in May, 1916. The cases cited here are to be considered only as examples, and they demonstrate the value and limitations of these methods in determining the value of any form of treatment. Their application will be most important in those gastric cases treated by surgical methods in which a recurrence of some or all of the anteoperative symptoms occur or in which new postoperative symptoms develop. These determinations then form reliable criteria on which a judgment can be made as to whether the postoperative symptoms originate on a functional or anatomic basis. Finally, when such judgment is made, these methods in the functional cases form reliable guides for the rational treatment of the symptoms, and in turn form trustworthy methods for judging the good or bad effect of the particular treatment used.

TABLE 4.—STOMACH ANALYSES IN CASE 4, NOVEMBER, 1916

	Fasting Content	Ewald	Riegel
Quantity	60 c.c.	200 c.c.	60 c.c.
Appearance	Light brown	Light brown	Light brown
Food residue	None	Moderate	Little
Lactic acid	0	0	0
Blood	0	0	0
Free acid........	0	15	0
Total acid	16	50	16
Microscopic	Negative	Negative	Negative

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[5] Wilensky, A. O.: Am. Jour. Med. Sc., to be published; Tr. Med. Soc. County of New York, Med. Rec., New York, 1916, **90**, 389.

Community Nurses.—The experience in 2,629 communities scattered over the entire nation has been that whenever a public health or community nurse goes into a community she is opposed or unaided by certain physicians. The experience in the same 2,629 communities is that sooner or later the doctors realize that the nurse can do for their communities what they themselves are unable to do. She can carry education into the very souls of people. Education, after all, is the solution of all our public health problems. The physician who opposes or refuses to help the public health nurse is fighting a losing fight against public health. You may not feel that way about it now, but you will.—*Health News,* Illinois.

A HEALTH EXAMINATION AT SCHOOL ENTRANCE *

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In 1876, Dr. Clarence J. Blake of Boston presented a paper before the International Medical Congress at Philadelphia in which he stated clearly and emphatically the need of medical inspection of schoolchildren; but for nearly twenty years this wise recommendation was ignored, the health of schoolchildren was neglected, school diseases were uncontrolled, epidemics played havoc with school attendance, many children died from preventable causes, and many more suffered from physical defects and insanitary conditions. It was not until a series of epidemics had occurred in Boston that, finally, in 1894, Boston established a regular system of medical inspection for the public schools. Slowly other cities followed until now nearly all of the large cities and many of the states require health inspection to a greater or less degree.

During the last seven or eight years the need for health inspection has been specially recognized, school nurses have been employed with excellent results in many cities, the need for caring for the teeth has been recognized and dental clinics established, and the importance of mental hygiene and the hygiene of instruction is now being emphasized. In some places remarkable success has resulted from the methods of health inspection adopted. The excellent results of this movement have been clearly shown in the valuable summary recently published by Drs. Gulick and Ayers,[1] and widespread interest was demonstrated at the International Congress on School Hygiene held in Buffalo in 1913.

The work, however, is still far from being adequate even in the cities in which the best plans are in operation, and the inefficiency of the medical inspection in many places has given critics an opportunity to make serious charges against the whole plan. Many declare that no good has come from it, and that, in many cases, harm has resulted. Careful students of the subject like Dr. Gulick have noticed the serious defects and pointed out the need for more adequate provision for such inspection.

The time has come when if health inspection is to succeed it must be carried farther and be made more adequate. The concrete methods by which this may be done can be devised by those actually engaged in the work; and more thorough-going and satisfactory methods should be adopted so far as local conditions will permit. One general need should be emphasized at the present time: If health inspection is to be fully successful in any community, the support of the general public and the cooperation of teachers and parents is necessary. One cannot expect the best results when teachers do not know that there are medical inspectors, or when parents refuse to permit their children to be inspected. The next step in health inspection may well be an attempt to gain intelligent cooperation from parents and teachers.

The problem of gaining this cooperation is a difficult one, and the process is likely to be slow. Teachers should have a different training, parents must be educated; but the beginning of such education, I believe, may well be made at the present time, and the method I would suggest is that of a thoroughgoing physical and mental examination of each pupil on entering school life. This examination should be conducted by the health inspector with the aid of the teachers and one or both of the child's parents.

[Under the head of "Preschool Life and the School Beginner," the author discussed Dr. Thiele's[3] biologic study of school beginners. Thiele sent a questionnaire to the parents of 5,538 children in the public schools at Chemnitz. He endeavored to determine the influence of family, heredity, disease, etc., on children entering school at the age of 6; 16.81 per cent. of the boys and 23.27 per cent. of the girls were only children; 26.05 per cent. of the boys and 11.21 per cent. of the girls had more than six brothers and sisters. Bohannon and Neter emphasize the significance of being an only child. Thiele finds this condition related to disease. Only children are better protected from contagion and are better nourished. They learn to walk and talk more quickly than others and are more likely to be precocious.

The author then considered the age and development of the child on entering school. The time when the child should enter school depends on its physiologic age and the relation of the home to the school. Beik[4] has shown what is the normal physiologic age for school entrance. The condition of the home may be such that the child may be better off attending school, even if below the proper age. Winch[5] finds that there is little gain in having children enter school before the age of 5 or 6 years. Ayers[6] found that children entering school at advanced ages made slightly more rapid progress than those beginning earlier. Steinhaus[7] holds that the completed sixth year is the best time for entering school. Camerer, Monti, Lange and Gundobin find that the majority of boys at the completion of the sixth year are 110 cm. in height, and that the rate of growth in the sixth year is 5 cm. Girls average 1 cm. smaller. Quirsfeld found the height of children entering school to vary from 12 to 27 kg.; 75.4 per cent. of the children weighed 19.5 kg. Gundobin found the average circumference of the head for boys of 5 years to be 50.1 cm., and for girls the same, while the average for boys of 6 was 50.8 and for girls 49.4. Monti found the average circumference of 51 cm. Steinhaus suggests the following standards: The height of children on entering school should be at least 110 cm., weight 18.20 kg., chest circumference from 52 to 54 cm., and head circumference from 49.5 to 50.5 at the end of the completed sixth year. Selter shows that children entering the gymnasium are from 4 to 6 cm. taller than children entering the people's schools. The consensus of opinion is that children should not attend school before the completed sixth year, and that children who are imperfectly developed, weak or diseased should be excused from entering school at that time. Only those children who have sufficient strength and development to make them capable of standing the confinement and doing their work without injury to health should be admitted. While further study should be made and standards established for different types, the following will serve as minima for children in this country:

1. The height should be at least 115 cm.
2. The weight should be at least 20 kg.
3. The chest circumference should be at least 53 cm.
4. Children on entering school should have all four of the sixth-year molars.
5. Standards should be the same at this age for boys and girls, although for girls a little less may be permitted regarding height and weight. The presence of all four sixth-year molars should be required of both sexes and for all types.]

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* An address delivered on acceptance of the office of president of the Massachusetts Society for Mental Hygiene. On account of lack of space, considerable statistical matter has been omitted which will appear in the reprints, copies of which can be obtained on application to the Massachusetts Society for Mental Hygiene, 313 Ford Building, Boston. A more detailed paper on the same subject can be found also in the Pedagogical Seminary, 1914, **21**, 219.

1. Gulick, L. H., and Ayers, L. P.: Medical Inspection of Schools, New York, Survey Associates, 1913, p. 224.

3. Thiele, A.: Versuch einer Biologie der Schulanfänger, Ztschr. f. Schulgsndhtspflg., 1913, **26**, 377, 827.

4. Beik, A. K.: Physiological Age and School Entrance, Ped. Sem., 1913, **20**, 277.

5. Winch, W. H.: When Should a Child Begin School? Educ. Psy. Monographs, Baltimore, Warwick & York, 1911, p. 98.

6. Ayers, L. P.: The Relation Between Entering Age and Subsequent Progress Among Schoolchildren, Education, 1912, **32**, 325; Medical Inspection of Schools, Monroe's Cyclopedia of Education, New York, the Macmillan Company, 1913, **4**, 182.

7. Steinhaus, F., et al.: Welche Anforderungen sind in körperlicher und geistiger Beziehung an den Schulneuling zu stellen? Ztschr. f. Schulgsndhtspflg., 1913, **26**, 16, supplement.

SCOPE OF THE EXAMINATION

The suggestions of the German physicians in regard to school entrance are excellent, but in my opinion we should go much farther than this. The following things seem desirable:

There should be a physical examination participated in by the teachers and parents as well as by the school physician, and this examination should include the following: (1) a test of physiologic age; (2) a test of psychologic age; (3) a test of the general health conditions, and (4) a history of the morbidity of the individual child.

1. The test of physiologic age may at first be confined to the things already mentioned; but probably in the near future, after further studies of the biology of the school beginner have been made, it will be possible to note other important conditions and determine more accurately the stages of physiologic development. Roentgenograms showing the development of the epiphyses of the bones, and tests of the range of the voice, and of the development of the eye and other organs may probably be included.

Studies at Clark University as well as elsewhere have shown the advantages of physical tests not usually made, such as those for determining the vital index, that is, the lung capacity divided by the weight; and the cardiovascular index, that is, the systolic blood pressure multiplied by the pulse, plus the diastolic blood pressure multiplied by the pulse, to show the total cardiovascular energy expended;[8] tests of the ability to form and break down conditioned reflexes, by methods similar to those of the Russian school of Pawlow; tests of motor ability,[9] and studies of the physical type of the individual,[10] to determine not only whether one is of the carnivorous, herbivorous or neutral type, but also, as far as possible, to show the general type as regards growth, and the like.

2. Especially important is the determination of the child's stage of mental development at the beginning of school life. This is important not merely to determine whether or not the child is fitted to enter school, but also to give a record which may help the teacher and serve for future reference. Most important is observation of the child's behavior, especially on the playground. An attempt should be made to learn something of the child's character and disposition. A helpful plan would be to have a large playroom with many toys and simple pieces of apparatus for physical exercise, and to have all the children left in this room when not passing the special examination. A competent observer placed in this room would make records of the spontaneous behavior of each child.

Something in the way of special tests may be given. These may be along the line of investigations made by President Hall, Binet, Yerkes, and many more recent workers, including a test of the contents of the children's minds, their interests, as they can be roughly determined, their ability in using the knowledge they have, etc.

Something like the Binet-Simon tests for the sixth year can be used: distinguishing right from left; finding obvious omissions in pictures; counting thirteen pennies; some simple tests of comprehension, like answering the question, "What's the thing to do if it is raining when you start to school"; answering the question, "Is it morning or afternoon?" or similar problems.

The results of these tests should be controlled by the direct observation of the children at the time of the examination, especially, as already suggested, observation of their behavior in spontaneous play; and by reports of parents in regard to the behavior of the children at home, their knowledge, their interests, their ability to get on with other children, their moral character and disposition, their faults, their virtues, and the like.

The tests of psychologic age will naturally be supplemented by other tests, especially perhaps of motor ability and the ability to form practical judgments in new situations.

Especially important is the opportunity given by the examination at school entrance to determine the peculiar children — the various classes who are now called psychopathic personalities, defective delinquents, and the like, and the children who are precocious and supernormal, the especially bright children, as well as those who are dull and subnormal. The record of such peculiarities is of the greatest importance for the immediate adjustment of school work and for future diagnosis of the defective and abnormal.

In the tests of psychologic age, also, attention may well be given to habits of observation, of attention, association and the like, calling the attention of both parents and teachers to habits of health as of fundamental importance. This physiologic examination should include the determination as far as possible of the mental type to which the individual belongs.

Probably less can be accomplished in the way of determination of the child's type of imagery than many psychologists have supposed; but still more important than this is probably the determination of the learning type. Although no adequate experimental studies have been made, so far as I am aware, observation seems to show pretty clearly that there are two marked types of learners, one type which learns easily by instruction, by hearing and seeing what others do, and from definite directions and demonstration, that is, a type which learns easily by the usual didactic methods of the school; and, on the other hand, another type which learns chiefly by doing, and this by one's own method. The ordinary methods of the school, however, are usually adapted to the child who learns by hearing, by instruction; and the individual of the doing type is at great disadvantage and often appears dull. It is of the utmost importance that these two types be distinguished as early in school life as possible, and the beginning of diagnosis should be at the entrance of school life.

The test for psychologic age can be carried much farther and be made much more adequate when more careful investigations have been made bearing on this subject; for example, after the promising investigations by Krasnogorski, and others by Pawlow's methods have been perfected, it probably will be desirable to make tests of the conditioned reflexes, memory reflexes and the like. Tests of association, of the various learning types, of voluntary action, inhibition, and of mental attitudes may all be ultimately included.

3. The test of the health should be primarily to determine the general physiologic condition, and also, more concretely, the condition of the teeth, the throat and the nasopharynx, especially noting the condition of the tonsils, the presence or absence of adenoids, the

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[8] Clerk, F. E.: A Study of the Cardiovascular Index in Elementary School Children, Ped. Sem., 1916, **23**, 135.

[9] Douglas, A. A., and Dealey, W. L.: Micromotion Studies Applied to Education, Ped. Sem., 1916, **23**, 241.

[10] Lewis, C. B.: Adolescent Physical Types, Ped. Sem., 1916, **23**, 295.

occlusion of the teeth, and the condition of the eyes, ears, etc. When the full importance of health as a primary aim in early education is understood, then time will be taken in each individual case for every desirable test, whether it be the Wassermann test, the von Pirquet test, or something else, or all together.

4. The morbidity history of all diseases that the child has had should be recorded as far as possible, and it especially should be noted whether or not the child has had rickets, scrofula or any form of tuberculosis, convulsions, measles, scarlet fever, whooping cough, diphtheria, chicken pox, mumps, etc., and such a record for each child should be kept in the school or by the medical inspector or by the board of health.

This morbidity test should include also a very careful noting of bad habits, not only habits obviously detrimental to health, biting the finger nails, sucking the lips, placing the tongue in abnormal positions, and other habits which tend to produce dental defects, but also any bad habits as regards cleanliness, chewing the food, digestion, excretion, and bad habits of attention, association and the like.

By such observations and tests it is possible not only to determine whether children are fitted to do the work of the school, but also to find data in regard to the children that will enable the teachers to adapt in large degree the occupations of the school to the character of the individual pupils. If children cannot pass tests like those mentioned, and if they show considerable mental weakness and inability to do the simple tasks which are likely to be required in the first grade of the school, they should be kept out of school for another year, and placed in kindergartens or the like, according to local conditions.

SIGNIFICANCE OF THE EXAMINATION

The entrance on school life presents an opportunity for hygiene which has been strangely neglected. An examination of school beginners as regards physiologic development and general physical condition has vast possibilities. It gives opportunity not only to determine whether a child is in condition to do the school work without injury to health, but also to educate the parents; and, further, it gives opportunity to have the child put as far as possible into good physical condition. We have already recognized the right of the state in matters pertaining to health. We insist, for example, that a child shall be vaccinated before entering school. We insist that a child shall not come to school with a contagious disease. There is a feeling, however, on the part of many, that to go beyond this is an interference with individual rights and the prerogatives of the home. This is a survival of the old idea that the function of hygiene is negative. With the new view of the positive function of hygiene, there seems to be equally good reason for requiring such a condition of health and development as will enable the pupil to do the work of the school efficiently and without injury to health.

Plenty of time should be given for this examination. It should be in the nature of a consultation of experts. The school physician should be not only a medical expert, but also an expert in school hygiene. The teacher, if with some professional training, is to some extent an expert in school work. The parents, having watched and trained their own children, are in a certain sense experts in regard to them.

Here in this problem of school entrance is to be found, if not the key, at least the strategic point of attack for many of the pressing practical problems of school education today. Such a thoroughgoing examination conducted by the school physician, parents and teacher would be of great value pedagogically as well as hygienically.

For example, it is pointed out by the wise that a better cooperation between the home and the school is necessary. Here is the place to begin cooperation. In a tactful examination such as that mentioned, if made by fairly intelligent school physicians and teachers, cooperation of parents could be gained in a natural way. By consulting the parents in this examination in regard to the peculiarities of their child, the diseases the child has had, and his general condition of health, the expert character of the parent would be recognized and an attitude of cooperation would easily be aroused.

This problem is of fundamental importance, because it is only by cooperation of the home and the school that we can satisfactorily solve the problems of adapting school work to the capacities of the children, of proper care for their health, and of vocational guidance.

The evil of the present lack of cooperation between the home and the school has often been pointed out, and it is illustrated by the attitude of teachers as well as that of parents. When a subject like overpressure, for example, is discussed, we teachers are apt to say that the conditions in the home are responsible; that it is the work children do before coming to school which causes overpressure. The home, not the school, is to blame — as if that settled anything. When there is illness or inefficiency among schoolchildren, again it is the home we blame: conditions are more hygienic in the school than in the home. Such shifting of responsibility is easy; and all this is largely true. But reflect for a moment on a very obvious truth: Most of these parents a few years ago were pupils in the schools. In twenty-five years, children entering school now will be the parents.

Again we say the parents need to be educated. This is the burden of much of the pedagogic literature of today. The common lamentation is that we cannot solve the problems of the school until the parents are better educated. True enough; but how shall we begin to educate them? A better way could hardly be devised than an entrance examination for the children in which the parents could participate. Such an examination would educate the parents not merely because physician and teacher would have opportunity to give advice, but far more because parents would learn by means of it that school work is not an occupation to be taken up lightly and dropped again when something lucrative is offered for the children, but a serious matter, requiring health, and a degree of physical and mental development. Entrance on school life is too easy. Parents would prize the opportunities and privileges of the school more if it were harder to obtain them. Thus the time and inconvenience required for the examination would be a distinct advantage because an important means of educating the parents.

One great cause of the inefficiency in school work and the lack of adaptation of school occupations to individual capacity and health is the fact that we do not begin right. An examination like that described would be a good beginning; it would go far toward developing the right attitude in parents toward the school; it would acquaint the teacher with important facts in regard to the character and home conditions of the pupils; it would give the physician important facts in regard to earlier development and the morbidity history of the pupils; and after more biologic studies of the school beginner have been made, it would enable the physician and teacher to determine both the physiologic type and the learning type to which the individual child belongs. And, finally, it would change the attitude of the teacher toward the parents, in many cases giving them a wholesome respect for the expert character of the parents as regards their own children, and make it far easier for both parents and teachers to cooperate.

Another great problem is that of retardation. Among the causes of retardation recognized by Professor Strayer[11] are "illness extending over a long period, backwardness or mental deficiency, the lack of a school course adjusted to the needs of varying abilities." The difficulties mentioned by Dr. Strayer — illness, mental deficiency and ill adjusted school course — should be attacked at the outset in the light of a thorough study of the raw material when brought to the school. Again the money cost due to the repeaters has often been pointed out. The estimates of this have perhaps been exaggerated, but the cost in any case is enormous, and the waste of time and energy great. A large part of this could be saved by admission tests and by proper grading, and the saving of money would probably more than make up for the added expense of this examination.

One of the reasons for retardation is the fact that children enter school prematurely or in such imperfect physical or mental condition that they cannot do the work of the school. Failure occurs from the first, and the pupil handicapped both physically and mentally is turned back at the close of the year to repeat the same dreary routine. The place to begin the prevention of retardation is at the entrance of school life.

The next great educational problem concerns the elimination of pupils. Why do pupils drop out of school before their course is completed? It is usually because they do not succeed in school work, or because they are more interested in something else, or because the parents do not cooperate with the teacher in trying to keep them in the school. An admission examination of the thoroughgoing kind would not only prevent those who cannot succeed in school work from entering, and make better adjustment possible, thus averting many heartbreaking failures among the pupils, and much futile worry and effort among the teachers; but, as already suggested, if it were harder to enter school, parents would not esteem its privileges so lightly or be so ready to let their children leave it.

Again, take the group of problems included under the word efficiency. During the last few years this has become a word to conjure with. The term is more or less abhorent to the scientist, because, on the one hand, it often stands for a superficial view of the great problems of life and work; on the other, because many of the principles of this new science of business and industry were worked out twenty-five years ago by Mosso and others in the laboratory, and then ignored because business was ignorant of science. But the problems involved are of vital importance; and it is well that they have been put in the terms of the shop and the counting room and thus made to appeal to those who have a business apperception.

What, however, could be more inefficient than our present haphazard methods of beginning school work without determining whether or not pupils are fit for school occupations? Why should public money be spent in trying to teach those who can profit little by instruction or who are likely to be injured by it? The teachers are also handicapped by the presence of such children, and it largely thwarts the purpose of school education. From the point of view of common sense and efficiency, let alone hygiene, is there any good reason, any justification for admitting children to school work in the present haphazard fashion and in neglecting to give such an examination at the beginning of school life? Admission of the deficient should be postponed, or they should be placed in special classes.

Another great problem of the school is the problem of grading. It is obvious that if children were tested at the beginning of school life, if the different working types were distinguished, and if the feebleminded were excluded, it would be far easier later on to solve the problem of grading. Many of the difficulties of this problem would be removed by such an examination, and the right beginning would save a considerable number of repeaters in the early grades.

Most important of all, perhaps, is the problem of obtaining the right attitude between pupil and teacher. A thorough examination of the children at the outset would help much toward insuring this. The teacher would learn the handicaps of defective vision, defective teeth, chronic disease, unfavorable home conditions and the like. Such an examination would be of great advantage to teachers also in another way. The great mistake still found almost everywhere is that of giving attention to the subject to be taught rather than the child to be educated, the subject of culture rather than the object of culture. An examination of this sort would at the outset call the attention of the teachers to the needs of individual pupils, and the advantage to teachers might be as great perhaps as to parents.

Educators now are beginning to recognize that the knowledge acquired in the school amounts to relatively little, but that the habits formed and the attitudes toward life and society and work that are carried away from the school are of vital importance. A circular issued to the state inspectors of schools by the state superintendent in Wisconsin calls attention to this fact, and this is coming to be the keynote of the exhortations to teachers. If, then, this is the aim, what could be more important than to start school work aright and to have the right attitude toward the school developed at the outset in the minds of parents and teachers on the one hand, and the right attitude in the mind of the teacher toward the pupil on the other hand?

Such an examination will seem of course utopian; but practical school hygiene no longer fears this charge. The difficulties connected with such a plan are, of course, great. One objection which will be urged is the fact that so much time and expense would be required to make such examinations. Of course it is all a question of relative values; but if, as is probable, the whole scholastic career of the child is likely to be influenced by the way he begins school work, and if the attitude of parents and teachers is to be determined largely by such an examination, and if the school work for the early years at least will be made far more efficient by having it, and if, finally, the parents are likely to be educated by such an examination to better cooperation and greater interest in the school, how could the time be better spent? It would be an excellent thing in most cases if both parents were required to give up half a day for such an examination, with provision, of course, that in case of special need one parent might be excused. Nothing, probably, would do so much to make the parents interested in the work of the school, to make them prize its opportunities, to make them cooperate with the teachers and to make them give more intelligent attention to the physical welfare and health conditions of their own children.

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[11] Strayer, G. D.: Retardation and Elemination of Pupils, Monroe's Cyclopedia of Education, New York, the Macmillan Company, 1913, 5, 169.

It frequently becomes necessary on account of the ignorance and poverty in many homes for the school to assume functions which do not belong to it. It may well be maintained, for example, that it is not the function of the school to bathe children or to clean their teeth; but it often becomes necessary for the school to assume such duties. In all such cases, however, the principle should be for the school to assume them in such a way that it will not be permanently necessary. The parents should be so educated that after a time they will assume the functions which really belong to the home; and in any case the training should be such that when the pupils who are in the schools today become the parents of the next generation they will be competent and willing to perform the duties which really belong to the home. Education of the parents of today would be greatly furthered by their presence in this admission examination.

Again, it would tend to give teachers the right attitude toward the home and toward children. Teachers should always recognize the authority, the responsibility and the general expert character of the parents in the education of their own children. The numerous exceptions to this can be treated all the better by one who recognizes this general truth. On the whole, perhaps we may say that parents are not much more inefficient than we teachers, and certainly we can learn from a child's parents in regard to the best method for his education.

Again, such a plan not only is likely to make the work of the teacher easier, but also to make it far easier for the medical inspector to do his work without interference from the parents and to make the school nurse a welcome visitor in the homes. Such a plan with a suitable system of medical inspection and with school nurses would also make it far easier to control contagious diseases. The interest of general hygiene as well as of school hygiene would be greatly furthered. The medical inspector in turn will lose nothing by recognizing the general expert character of parents in regard to their own children.

Many things of vital importance in connection with the development of children are likely to be known only by the parents, and would be gladly contributed by them in such an examination. For example, children who are born prematurely are apt to have a precocious development, as might be supposed. The premature stimulation from the external world hastens the medulation of the nerves, and I understand that observation shows that in later years such children are more liable to certain disorders and are less able to do the work of the school. Such a fact is of vital significance for adapting the work of the school to the individual, and parents alone are able to give this information.

The work of medical inspection cannot be carried out satisfactorily without the intelligent cooperation of parents. The difficulties found by the inspectors in performing their duties in health inspection illustrate this concretely. Dr. Arnold[13] of Boston has reported cases in the early years of medical inspection in that city, among them the following:

> Four children were sent home with suspicious-looking throats. With each child was sent a note stating that there had been some cases of diphtheria in the schoolroom, that the child had a sore throat which probably was diphtheria, and that the school inspector advised calling the family physician. The doctor was not called in a single case. The mother of one of the children brought him back herself in the afternoon, and was abusive to the teacher for sending him home. I turned up just in season to get my share. I was informed that I did not know what I was talking about; that his nausea and vomiting and constitutional symptoms two days before were due to indiscretion in eating; that his sore throat was "simply tonsillitis," to which he was subject, and that the patches in the throat were of no importance. The other children might have diphtheria, but her boy didn't "because he wasn't sick enough." She refused to let me take a culture, and was informed that the boy would not be admitted to the school until a negative culture had been obtained by myself, or, if she preferred, by her family physician. She did not go to the family physician until after a week had elapsed, when a culture proved negative. I feel reasonably sure, however, that an earlier culture would have been positive.
>
> The three other children returned next morning. Two brought verbal messages that they were well enough to come to school. The third brought a note from his father, saying that it was absurd to say his boy had diphtheria. Cultures were taken from all three throats, and all proved positive. The mother of one of these was not convinced even then. She called another doctor to prove that the school doctor was wrong, and discharged him when he obtained a positive culture, and she was only partially persuaded there was no trick in it when a third doctor also found a positive reply to his culture.

A HEALTH YEAR FOR BEGINNERS

Health inspection comprises two things: first, limited medical inspection for detecting and controlling contagious diseases, and second, physical and mental examinations to determine the stage of a pupil's development, physical defects, noncontagious diseases and the like. There is a growing consensus of opinion that while the former may be placed under the control of the board of health, the latter should be under the control of the educational authorities, or at least conducted with their full cooperation. In any case there should be concentration of authority and responsibility in the hands of competent experts, and adequate records should be kept.

The latter form of health inspection should be made much more thoroughgoing than is now customary. The results of recent investigations in child hygiene indicate that the aim and character of elementary education should be revolutionized and the emphasis placed especially on health, normal development, spontaneous motor activities, plays, voice drill and the like; that if the work of the school is to be done successfully in later years special care should be taken at this period to put the child's physical organism in the best condition possible for healthful development. This is the time to care for the development of the vital organs of the body, to protect the sense organs, and to develop habits of healthful activity in the widest sense.

If the hygienist could have his way, the first year of school life, or perhaps the first two years, would be a *Vorschule*, in which the teachers would be physicians and hygienists; and the aim for this year would be to determine the child's stage of development, his physical resources, his physical defects, etc., and as far as possible to remedy these defects and to foster normal development by ample opportunity for play and other forms of spontaneous motor activity.

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[13] Arnold, H. D.: Some Results of the Medical Inspection of Schools in Boston, Report of the Commissioner of Education, Washington, 1897-1898, p. 1494.

Note what happens at that great epoch in life when a child enters school. The freedom of the home and of the street must be given up for the restraint of the schoolroom. Customary stimuli are replaced by new ones. Customary reactions must be inhibited and new forms of response acquired. In general, an attempt is made to develop the power of inhibition and of voluntary attention. As a result, the first year is liable to be a trying one. In Germany this has been indicated by several studies. The need of a special examination at school entrance and of special hygienic care during the first year of school life in that country has been strongly emphasized by the results of several investigations which show the work of the first school year correlated with a decrease in the rate of growth and an increase in the amount of disease. Dr. Schmidt-Monnard,[14] for example, as a result of investigations carried on for years in Halle, found that with the beginning of school life there was a decrease in the rate of physical growth. According to his studies carried out on the same children the yearly increase in weight for those who had not yet entered school was, for the years 6 to 7, 2.2 kg. for boys, and 1.9 kg. for the girls. The rate of increase in height was 7.4 cm. for the boys, and 5.4 cm. for the girls. On the other hand, in the case of children of the same age who had already entered school, the yearly increase in weight for the year 6 to 7 was for the boys only 1.5 kg., and for the girls 0.6 kg.; the increase in height for the boys was 4.2 cm., and for the girls, 4.5 cm. Thus the increase both in height and weight was less in the case of both boys and girls who were in the school than in the case of the boys and girls of the same age who were not in school.

Hertel, in Copenhagen, where the children entered school at the age of 7, found a considerable increase in the morbidity of the children in the seventh year of life, that is, in the period after school entrance, and a decidedly marked minimum of disease in the sixth to the seventh year, that is, the year before school entrance. In Halle, on the other hand, where the children entered school a year earlier, this year, 6 to 7, was the time of an increase of the morbidity.

Dr. Quirsfeld[15] also studied the effect of the first school year on 1,014 schoolchildren. According to him, the average increase in growth in the first school year was 2.5 cm., and in each succeeding school year 5 cm. The average increase in weight in the first school year was only from 0.5 to 1 kg., in the second school year from 1 to 2 kg. He found also in the course of the first school year a decrease in weight in cases of 15.87 per cent. of the boys and 24.84 per cent. of the girls; and a standstill in weight in the case of 29.73 per cent. of the boys and 44 per cent. of the girls; he found also in the course of the first school year a decrease in muscular development in the case of 29.59 per cent. of the boys and 49.05 per cent. in the case of the girls.

As Dr. Quirsfeld remarks, it is difficult to give the cause of this; whether the seventh year of life is the period of weakest physical development it is difficult to say. As a control it would be necessary to have a sufficiently large number of children of the same age, who during the seventh year of life were out of school, living a free life as heretofore. Injurious influences, mental overstrain, fatigue, insufficient sleep — in modern schools and with modern methods of instruction — can hardly, except in individual cases, be alleged as possible causes for arrest in physical development. The causes may be exclusively individual constitution and changed conditions of life.

Until we have such a preparatory year devoted to health and development, the problem of what should be done with those children who would be excluded from school by such an entrance examination is an important one. In Bonn and other cities in Germany where an entrance examination of more or less thoroughness is made, the children excluded because of lack of physical development are usually placed in a kindergarten. Such a plan modified to suit local conditions, especially if the kindergarten has largely outdoor occupations, seems an excellent one.

SUMMARY

The reasons for a thoroughgoing health examination like that described above are obvious. Such an examination is desirable:

1. To prevent those children who are in ill health or not sufficiently developed physically and mentally from entering.
2. To provide the necessary physical data to enable teachers so to order the school work that it will not result in injury to health or a check to development, as often happens in the first year of school life.
3. That proper grading and adaptation of school occupations to individual capacity may begin at the outset of school life.
4. To give school physicians the data necessary for safeguarding the health of children against contagious diseases and the like.
5. To give teachers proper knowledge of the new pupils and the right attitude toward them.
6. That children may begin right and be saved from unnecessary failure and retardation or elimination in later grades.
7. To educate parents and foster a right attitude toward the school.
8. To save the money of tax payers, now largely wasted, and so badly needed to provide for absolutely essential hygienic conditions.

Children who should be excluded from the school are:

1. Those who have any infectious disease.
2. Children who have rickets, or the after-effects of rickets to the extent that they are in poor physical condition and liable to develop neuroses or some other defect from the influence of school work.
3. All children who have tuberculosis, unless there are outdoor schools in which they can be placed.
4. Children who are in a serious condition of anemia, unless again there are outdoor schools in which they can be placed.
5. Those who have any chronic disease which is liable to be aggravated by school attendance or would interfere with school work.
6. Those who are in a retarded stage of physiologic development or mental development, where this would be improved probably by keeping them out of school,

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[14] Schmidt-Monnard, in Selter, H.: Handbuch der Schulhygiene, Dresden, Steinkopff, 1914, p. 362.

[15] Quirsfeld, in Selter, H.: Handbuch der Schulhygiene, Dresden, Steinkopff, 1914, p. 363.

and where injury would be done by admission to school, or where it would interfere with school work.

7. Those who have serious sense defects.

8. Those who have any neuroses or the like which would be psychically contagious, epilepsy, chorea, stuttering and the like.

9. Children who have not been vaccinated.

The importance of this entrance examination can hardly be exaggerated; and here is an opportunity where women's clubs, parent-teachers associations, and similar organizations may use their efforts to good effect, to bring about as soon as possible a public sentiment which will not only permit, but also demand, a thoroughgoing examination of this kind.

In order to make the results satisfactory, however, the examination should be thoroughgoing, plenty of time should be taken for it, and both parents and teachers should be present.

The practical man will say that a plan of this kind is admirable, but at present it is quite out of the question because it would never be possible to get parents to attend such examination, and give the necessary cooperation. Of course it might not be possible in all places, but it would be possible in certain communities at least to approximate a plan of this kind; and this is the ideal toward which health inspection should work.

Our present haphazard method of taking in the sick and the well, the developed and the undeveloped, the normal and the feebleminded, the defective and the sound, and of teaching them together at the outset is wasteful and absurd. A grading with the knowledge that we now have would help to a great degree.

The movement for health inspection should be ardently advanced. A health examination at school entrance is the next important step. With the present dissatisfaction with the schools on the one hand, and the great interest in methods of efficiency on the other, the time is favorable for such an improvement. This would ultimately require some new legislation and some readjustment of school plans, but it would be merely carrying farther what is already done in some schools. If the plan were given a fair trial in some one city or state, I am confident that the advantages would be so great that soon the movement would spread.

Thus it is obvious that such a thoroughgoing examination of the physical and mental condition of the children would help in many ways. It would help greatly in the diagnosis of doubtful cases. It would save the expense of a large number of repeaters. It would lighten the burdens of the teachers. It would develop right attitudes in parents, and in many cases save the anguish of discovering later that children are feebleminded or defective. It would be only reasonable justice to the children themselves. It would in some cases save those who are candidates for mental disorder. In a word, such an examination would be distinctly important for mental as well as somatic hygiene.

The Cure for Alcoholism.—The education of public opinion and private habits is at present the only reasonable and promising measure at the service of the public health officer and the private practitioner in the effort to have the general use of alcoholic beverages—and the largest single cause of poverty and sickness—abandoned. Other habits, also, as to housing, eating, personal cleanliness, recreation, etc., are certain to be modified by education, and in no other way.—Haven Emerson, M.D., "Preparedness for Health."

THE CLARIFICATION OF MILK

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Among the important developments which have taken place in recent years in the market milk industry has been the introduction of the milk clarifier. An interesting phase of the subject is the attitude of public health authorities toward the process.

It is well known to every one who is at all acquainted with milk production that under ordinary conditions more or less dirt of an insoluble nature is introduced into the milk. The grosser particles are removed on the farm by strainers of cloth and wire. So long as milk was dispensed from the can and placed in the vessels provided by the housewife, the small amount of sediment which might be deposited was not noticed, since, as a rule, the milk was placed in opaque vessels. With the advent of the milk bottle, amounts of sediment which previously passed unnoticed became evident, and the dealer was forced to demand of the farmer greater care in the production of the milk, and likewise was forced to improve his own processes of straining the milk. The statement has been made that the Babcock method of determining the content of milk in butter fat has done more to make dairymen honest than the ten commandments. It would seem that the use of the glass milk bottle would have had a great effect in inducing cleanliness on the farm if methods had not been found for removing all materials which would settle in the milk. The cream separators were widely used for this purpose. The violent agitation to which the milk was exposed and the removal of the skim milk and cream from the machine through separate outlets made it difficult to get a product which would cream as rapidly and completely in the bottle as the untreated milk. The consumer judges the richness of the milk by the depth of the cream layer, and hence any process which tends to diminish this layer does not receive the full approval of the dealer, no matter what its other advantages may be.

The introduction of the clarifier, a machine in which the cream is not separated from the skim milk and yet in which sufficient centrifugal force is applied to the milk to remove any materials which would settle through force of gravity, caused clarification to be looked on with much greater favor by the milk dealers, since the milk creams in the bottles as well after treatment as before. The clarified milk does not show any sediment, and the consumer can draw no conclusions concerning the conditions under which the milk has been produced, so far as the introduction of dirt is concerned. In other words, insoluble dirt which has been introduced into milk can be removed. The milk can be improved in appearance and thus made more appetizing.

During the last few months some interesting articles have appeared. Dr. J. Arthur McClintock,[1] bacteriologist, published the results of his investigations made in several cities, including Chicago, St. Louis, Cincinnati, Omaha, and Lincoln, Neb. He says:

> It is generally acknowledged that there is no absolutely normal human being; neither is there any absolutely normal dairy cow. In the system of every animal the process of

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[1] McClintock, J. A.: Milk Trade Jour., August, 1916.

repair is constantly going on. In this process waste products are constantly thrown off. By waste products we mean disintegrated tissue cells; worn out leukocytes which have performed their mission and died; shreds of mucus from slightly catarrhal membranes, and the like. No strainer, however fine, will eliminate them; no process of heat will separate them from the milk. So a simple process of elimination was devised, which has, in these days of dairy *sanitation,* taken the name of clarification.

Clarification, then, is a process of *cleansing* milk of udder waste and other such materials by centrifugal force without affecting its butter fat or its other *normal* constituents.

It might well be asked, if there is no normal dairy cow, what basis we have for judging whether any cow is abnormal. It might again be asked, if tissue cells and leukocytes which have performed their mission are to be found in all milk, why they are not *normal* constituents of milk.

The doctor then presents data to show that with the Type A machine the reduction of bacteria as measured by plate counts ranged from 29.7 to 52.8 per cent., and with the Type B machine from 2.7 to 29.8 per cent. In two cases a decrease of 2.6 and 3.5 per cent., respectively, was noted.

In many cases *B. subtilis* was found in the untreated milk. In the tabular data referring to the untreated milk such cases were starred. No stars appear in the data referring to the treated milk. Apparently *B. subtilis* was not there found. A statement in the text tends toward the conclusion that the removal was not perfect, since one machine removed from 95 to 100 per cent. of *B. subtilis,* another from 30 to 31 per cent., and another 30 per cent. Then follows some new information:

> *Bacillus subtilis* is one of the most troublesome organisms with which we have to deal in the milk industry. . . . When present in milk in considerable quantities, it produces what is known as a peptogenic ferment. This ferment, with its by-products, alters the nutritive value of the milk through putrefactive changes, making it indigestible for the child who drinks it. The consequence is a starting of the condition known in household terms as "sour stomach."

Apparently some of the work was done in the laboratories of the Cincinnati Board of Health. It is stated that many cities are using it extensively; that in Cincinnati "Dr. Blume, the dairy commissioner, with his usual wonderful forethought, has enforced clarification absolutely." Dr. McClintock states that he has been told by officials in many cities that they felt the system filled a much needed place in dairy sanitation and would take the place of many of the defects which have existed in our present-day process of handling market milk.

An article by Hinkelmann[2] deals with some experiments with the De Laval clarifier. He found a reduction in the bacterial content of milk ranging from 56 to 98 per cent. Broth cultures of staphylococci, *Bacillus typhosus, Bacillus coli,* streptococci, and diphtheria bacilli showed reductions ranging from 53 to 98 per cent. He draws interesting conclusions from his data regarding the relative weight of different organisms. The streptococcus weighs 96, the pnemococcus 95, the diphtheria bacillus 90, the typhoid organism 64, and saprophytes 57. He says:

> Throughout the experiments I could not help but be convinced of the greater density of the pathogenic organisms. . . Since streptococci, pneumococci, staphylococci, diphtheria and typhoid bacilli constitute largely the group of offending organisms we have to deal with in milk and water, their relatively greater weight makes it very promising of an easy means of eliminating such numbers as contamination would be likely to show.

These are two articles written by apparently disinterested scientific men seeking the truth. Let us notice two articles written by disinterested scientific men connected with public laboratories. Bohlman,[3] the chief chemist of the Cincinnati Department of Health, reports on some trials with a clarifier. He found an increase of bacteria due to clarification, ranging from 9 to 60 per cent., on the average 27 per cent. He says:

> The residue in the clarifier consists very largely of substances normally present in milk. Clean fresh milk from healthy cattle will yield a deposit when passed through a clarifier. It is an exaggeration to consider the material deposited in the machine as consisting entirely of filth. Milk containing pathogenic organisms is practically no cleaner from the health standpoint after clarification than before. . . . We must not consider the clarifier as in any way a remedy for faulty conditions at the source of supply, nor as a substitute for pasteurization.

Hammer[4] made an extended study of clarification. In the case of milks containing less than 100,000 bacteria per cubic centimeter the average increase was 24 per cent. In no case was there an apparent decrease. With milks showing between 100,000 and 500,000 the average increase was 43 per cent. A decrease was noted in nine out of the twenty-seven samples examined. In the case of milk containing more than 500,000 per cubic centimeter, the average increase due to clarification was 29 per cent. In three cases out of fourteen a decrease was noted.

In general, the results of careful workers indicate that the bacterial content of milk is apparently increased by clarification. There is, of course, an actual decrease in case the contamination from the machine does not exceed the number of bacteria present in the slime removed by the process. The increase is an apparent one due to the breaking up of clumps of bacteria in the milk and therefore an increase in the number of colonies on the plate cultures. The important point is that the clarification process has no favorable effect on the keeping quality, and there is no reason to believe that such a proportion of harmful kinds of bacteria is removed that the healthfulness of the milk can be said to be improved.

The advertisements of the various machines contain statements based on the first two papers mentioned. One of the most interesting statements noted was that the process removes the disease-producing bacteria because their toxins make them heavy.

It is evident that the layman may be led by such statements to believe the process a valuable one from his point of view, but how health officials can be influenced by them is beyond one's imagination. I have been informed that the cities of St. Louis, Cincinnati, Gary, Ind., and Tulsa, Okla., have passed ordinances requiring clarification. I am proceeding on the supposition that such ordinances have been given the approval of the respective health departments. In other words, we have presented to us a picture of health officials requiring milk to be subjected to a process which in no way can be said to improve the milk. Frankly stated, it provides a way by which the dealer can handle dirty milk without the knowledge of his customers. The dirt is removed but not the bacteria, pathogenic and otherwise, which were introduced with the dirt. Milk dealers need no ordinances to encourage them to use clarifiers.

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[2] Hinkelmann, A. J.: Micro-Organic Weight, Ill. Med. Jour., March, 1916.

[3] Bohlman: Am. Jour. Pub. Health, 1916, **6**, 854.

[4] Hammer: Research Bull. 28, Iowa State College of Agriculture.

Such actions of health officials would not be worthy of notice did they not illustrate what is constantly going on in health legislation, namely, the passing of ordinances which have no relation to public health under the recommendation of the health officials. When the truth is discovered by the citizen, is he not inclined to regard all regulations as being of a similar nature, that is, something which places a burden, economic or otherwise, on him with no resulting benefit?

The introduction of pasteurization is opposed by health officials because it enables the dealer to handle a poorer grade of milk than he otherwise could. Although this is perfectly true, pasteurization gives to the consumer a product more safe and of better keeping quality than the raw product. The clarification of milk is objectionable from the standpoint of the consumer, and yet health officials are apparently being led to urge its adoption. One is inclined to ask "What next?"

THE OCULOCARDIAC REFLEX IN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

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In the normal individual, pressure on the eyeball causes a slowing of the pulse rate through vagus inhibition. This inhibitory influence is likewise shown through action on various sensory nerves or surfaces. Goltz,[1] in 1863, by his *Klopversuch,* observed "standstill" of the heart following rapid light blows on the abdomen of a frog, which phenomenon was not observed when the vagi were cut. In man this is not infrequently seen in acute dyspepsia, peritonitis, a blow on the testes, etc. The afferent impulse in all these cases, carried to the central nervous system, causes a reflex activity of the inhibitory cells of the vagus. This cardiac inhibitory center may be considered as the bilateral group of cells in the medulla at the level of the nuclei of origin of the vagi, and when the "tonic" action constantly exerted through this center is increased, cardiac inhibition results. When the eyeball is pressed, the afferent impulse is carried through the ophthalmic branch of the fifth nerve to the gasserian ganglion and by way of the larger root to its nucleus of cells lying on a level with the middle of the superior peduncle of the cerebellum, just internal to the margin of the fourth ventricle and external to the nucleus of origin of the motor fibers of the same nerve. The impulse passing downward to the cells of origin of the vagi, situated in the lower part of the floor of the fourth ventricle, excites the inhibitory cells, causing a slowing of the heart rate. In this as in any other reflex, abolition or exaggeration is resultant on destruction or irritation of the reflex arc.

Ashner, who first considered the oculocardiac reflex, regarded an acceleration or retardation of ten beats or more a minute as abnormal. Loeper and Mougeot[2] noted the abolition of the oculocardiac reflex in tabes, and stated that this abolition occurred in general with a diminution in the sensibility of the trigeminal fibers, sometimes with vagus disorders and always with Argyll Robertson pupil. Lesieur, Vernet and Petzetakis,[3] from their observations, concluded that the reflex was sometimes abolished in tabes, even though the Argyll Robertson pupil was not present, in which case it might prove of early diagnostic value in determining the condition of the posterior root fibers of the pons, and consequently show the degree of ascending extension of the tabetic lesion. Guillain and Dubois[4] reported six cases of pseudobulbar palsy in which they found the oculocardiac reflex to be abolished in four cases and accelerated in two, from which they inferred that central lesions have an influence on the determination of this reflex. Loeper, Mougeot and Vahram[5] regarded the abolition of the oculocardiac reflex as an evidence of the affinity of syphilis for the central nervous system and as constituting one of the first evidences of disease of the central nervous system. Roubinovitch and Soudiere[6] stated that "in the dementia due to syphilis of the central nervous system,

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[1] Goltz: Virchows Arch. f. path. Anat., 1863.

[2] Loeper and Mougeot: Bull. et mém. Soc. d. hôp. de Paris, December, 1913.

[3] Lesieur, Vernet and Petzetakis: Soc. méd. d. hôp. de Lyon, March, 1914.

[4] Guillain and Dubois: Bull. et mém. Soc. méd. d. hôp. de Paris, March, 1914.

[5] Loeper, Mougeot and Vahram: Progrès méd., April, 1914.

[6] Roubinovitch and Soudiere: Soc. de psychiat. de Paris, June, 1914.

AVERAGE RESULT OF A STUDY OF THIRTY-SEVEN CASES

	Pupils *						Wassermann				
	R.	AN.	L.	AC.	C.R.	O.R.	Blood	Fluid	Noguchi	Cells	Lange's Test
Primary optic atrophy (paresis)..	—	+	—	—	Yes...	Absent.....	4	4	Positive....	69	5555552000
Third nerve paralysis..............	—	+	—	+	Yes...	Absent.....	4	4	Positive....	31	5554411000
Sixth nerve paralysis..............	—	+	—	+	Yes...	Absent.....	4	4	Positive....	20	5555554100
Seventh nerve paralysis............	+	—	+	+	Yes...	Absent.....	Neg.	3	Positive....	84	1555553000
Millard-Gubler syndrome (left hemianalgesia)	+	—	+	+	†Yes... †No....	Present.... Absent.....	Neg.	3	Positive....	84	1555553000
Pseudobulbar palsy................	—	+	—	—	Yes...	Absent.....	4	4	Positive....	28	Not made
Tabes dorsalis.....................	—	+	—	+	Yes...	Absent.....	2	..	Spinal puncture refused		
Paresis (demented).................	—	+	—	+	Yes...	Absent.....	4	4	Positive....	117	5555555552
Paresis (grandiose)................	—	+	—	+	Yes...	Absent.....	2	4	Positive....	38	5555555321
Paresis (maniacal).................	+	+	—	+	Yes...	Absent.....	4	4	Positive....	85	5555555311
Paresis (paranoid).................	+	—	+	+	Yes...	Absent.....	4	Neg.	Negative....	6	5555543100
J. M. (vitiligo)...................	—	+	+	+	Yes...	Absent.....	2	Neg.	Positive....	4	0055554300
R. W. (vitiligo and transitory hemiplegia)	—	—	+	+	Yes...	Absent.....	2	Neg.	Positive....	5	0155433200
Paresis (combined sclerosis).......	—	+	—	+	......	Absent.....	Neg.	4	Positive....	32	5555543200
Dementia praecox (24 yrs. of age with syphilis)	+	+	+	+	Yes...	Absent.....	4	Neg.	Negative....	8	1455543100

* R., regularity of outline; An., anisocoria; L., reaction of pupil to light; Ac., reaction of pupil to accommodation; C.R., corneal reflex; O.R., oculocardiac reflex.

† L.R.

hereditary or acquired, abolition of the oculocardiac reflex occurs very frequently, and, therefore, in absence of other physical signs of the disease, ought to suggest the etiology of the condition," and concluded that the abolition of the oculocardiac reflex was indicative of an organic lesion of syphilitic disease (hereditary or acquired) of the central nervous system.

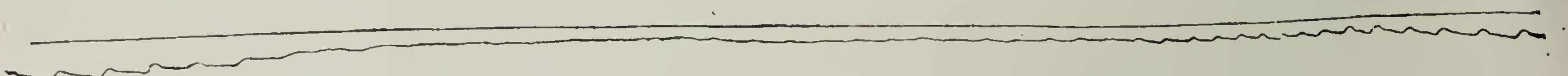
The accompanying table is an average result of a study of thirty-seven cases of syphilis of the central nervous system in which pulse tracings were made.

OBSERVATIONS

1. Abolition of the oculocardiac reflex is among the earliest signs of syphilitic disease of the central nervous system and one of easy diagnostic practicability to the general practitioner.

2. The oculocardiac reflex was abolished on the side exhibiting the hemianalgesia with preserved tactile sensation in the case presenting the Millard-Gubler syndrome.

3. In only one case of well marked tabes with cervical involvement in which pressure on the eyeball and testes was not painful was there evidence of diminished or disturbed superficial sensation other than in the case mentioned above.



Pulse tracing during paroxysm of spasmodic weeping, occurring in pseudobulbar palsy.

4. In 52 per cent. of the cases studied, the pulse rate ranged from 82 to 112, and the increased rate occurred chiefly among the well marked paretics.

5. In third nerve palsy, the ptosis can sometimes be overcome by the patient reinforcing the ptotic lid by forcibly holding the lids of the sound eye closed.

6. During the paroxysms of spasmodic weeping, occurring in pseudobulbar palsy, the radial pulse is practically imperceptible at the wrist, showing a reflex inhibition of the heart beat.

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ACUTE APPENDICITIS

ANALYSIS OF EIGHT HUNDRED AND TWENTY-TWO CASES IN WHICH OPERATION WAS PERFORMED AT THE COOK COUNTY HOSPITAL

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From Nov. 11, 1912, to Feb. 22, 1916, 822 patients with acute appendicitis were operated on in the Cook County Hospital by the surgical staff of this institution. Of these, 766 recovered and fifty-eight died, a mortality of a trifle over 7 per cent. (7.05 +).

This corresponds almost exactly to that noted by Coffey,[1] who found a mortality of 7.4 per cent. in a series of 13,445 operations, collected from the various hospitals of this country.

Table 1, made from the notes recorded at the time of operation, will give an intelligent comprehension of the pathologic conditions encountered.

Of the fifty-eight cases terminating in death, seventeen showed a general peritonitis at the time of operation. These should be considered as cases of general peritonitis, as the complication (general peritonitis) is of far greater importance than the original condition. Deducting these from the fifty-eight cases which terminated fatally, we have a mortality of not quite 5 per cent. (4.98) for what might be called uncomplicated acute appendicitis. Unfortunately many of our patients come from an unintelligent clientele and are not brought to the hospital before the disease is far advanced, and the patient practically in a dying condition.

TABLE 1.—PATHOLOGIC CONDITIONS*

Condition	Number
Acute appendicitis	445
Acute appendicitis with abscess	266
Gangrenous appendicitis	127
Acute appendicitis with diffuse or general peritonitis	26
Normal appendix	1
Total	865

* The discrepancy in the figures (865 and 822) is due to the fact that sometimes two conditions were encountered, as gangrenous appendix and abscess.

TABLE 2.—PATHOLOGIC CONDITIONS ENCOUNTERED IN THE FATAL CASES

Condition	Number
Acute appendicitis and general peritonitis	17
Acute appendicitis and abscess	21
Gangrenous appendicitis	7
Gangrenous appendicitis and abscess	6
Acute appendicitis	5
Gangrenous appendicitis with intestinal obstruction	1
Acute appendicitis and cholelithiasis	1

The importance of operating before this unfortunate complication has set in is so well recognized that it needs no comment and is emphasized by the analysis of Table 1.

Of the 445 patients operated on for simple acute appendicitis, five died, a mortality of a trifle over 1 per cent. Of the 266 patients operated on for acute appendicitis (suppurative, gangrenous, perforating) with abscess, six died, a mortality of 2.2 per cent.

TABLE 3.—OPERATIONS PERFORMED IN THE EIGHT HUNDRED AND TWENTY-TWO CASES

Operation	Number	Per Cent.
Appendectomy	418	50.8
Appendectomy and drainage	313	38
Simple drainage (appendix not removed)	79	9.5
Operation not described	12	1

TABLE 4.—OPERATIONS PERFORMED IN THE FATAL CASES

Operation	Number
Appendectomy	7
Appendectomy and drainage	32
Simple drainage	15
Cholecystostomy, appendectomy and drainage	1
Operation not described	3

TABLE 5.—CAUSES OF DEATH AS NOTED IN THE FIFTY-EIGHT FATAL CASES

Cause	Number
General peritonitis	33
General peritonitis and fecal fistula	5
Fecal fistula and decubitus	1
Fecal fistula	1
Subphrenic and retro canal abscess	1
Paralytic ileus	1
Pulmonary embolism and peritonitis	1
Brain abscess	1
Bronchopneumonia	1
Pneumonia	1
Femoral thrombosis	1
Hemorrhage from abdominal wound	1
Cause of death not stated	10

Of the 127 patients having gangrenous appendicitis without abscess formation, seven died, a mortality of 5.5 per cent. From this it would seem probable that abscess formation should be considered as an indication of resistance on the part of the organism.

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[1] Coffey: New York Med. Jour., August, 1906.

CONCLUSIONS

While acute appendicitis is usually considered as characteristically a disease of young adult life, it is not infrequent in childhood. One hundred and fifty of our 822 cases occurred in children under 15 years of age. Of these children, 138 recovered and twelve died, a mortality of 8 per cent. Riedl[2] gives a mortality of 13 per cent. in a similar class of cases in which operation was performed at the Jena Clinic.

TABLE 6.—COMPLICATIONS WHICH DEVELOPED DURING THE CLINICAL COURSE OF THE EIGHT HUNDRED AND TWENTY-TWO CASES

Complications	Number
General peritonitis	44
Fecal fistula	18
Pregnancy [8 did not abort, 2 aborted]	10
Pneumonia	4
Broncbopneumonia	1
Obstruction to drainage making second operation necessary	3
Appendicitis in hernial sac	2
Bronchitis	1
Pus in bernial sac	1
Pulmonary embolism	1
Subphrenic abscess	1
Ischiorectal abscess	1
Decubitus	1
Brain abscess	1
Femoral thrombosis	1
Hemorrhage from wound	1
Delirium tremens	1

From the data given in the tables, certain conclusions may be drawn as follows:

1. General peritonitis is still the most frequent complication of acute appendicitis. In a small number of instances a critical study of the clinical history reveals that this complication seems to have been dependent on too early removal of the drain in abscess cases. Drainage tubes, gauze, etc., should be removed gradually to avoid inclusions and subsequent spread of infection.
2. Early operation means a low mortality.
3. Abscess formation may be considered as evidence of resisting power on the part of the organism (2.2 per cent. mortality in abscess cases against 5.5 per cent. in gangrenous appendix cases without abscess formation).
4. Fecal fistula, while comparatively frequent and annoying, has little importance in increasing mortality.
5. Abortion is not greatly to be feared if appendicitis occurs during pregnancy. While we had only comparatively few of these cases, it is interesting that in the ten cases there were only two abortions.

910 Dakin Street.

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[2] Riedl: München. med. Wchnschr., Nov. 26, 1907.

Credulous Man.—"Credulity is a monarch upon whose kingdom the sun never sets. The cradle and the grave are its frontiers, the entire human race its subjects."

EXTREME PROLONGATION OF CONDUCTION TIME IN THE BUNDLE OF HIS

AN EXAMPLE RESULTING FROM DIGITALIS THERAPY *

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AND
E. W. BRIDGMAN, M.D.
Instructor in Medicine, Johns Hopkins University, Medical Department
BALTIMORE

History.—A. A., white man, aged 60, married, farmer, was admitted to the private ward of the Johns Hopkins Hospital, Nov. 30, 1915, complaining of "heart trouble," having been referred by his family physician, Dr. Ira J. McCurdy of Frederick, Md., for diagnostic study.

The family history is unimportant. The patient married twenty-seven years ago, and his wife has had good health, though she has never been pregnant. There is no history of syphilis.

Except for measles, mumps and pertussis as a child, the patient gave no history of infections. For many years, he suffered, at times, from dyspnea that he attributed to the "hay-fever," to which he is subject. He stated that for nine years he had had what he considered to be "heart trouble," characterized by shortness of breath accompanying paroxysms of pain over the heart and extending into the left arm and neck. The patient said that with these attacks his "pulse had dropped beats," and, that following them, a soreness persisted over the heart. He had noticed that these attacks were brought on by exertion or by mental excitement. They could be avoided by rest and by the use of nitroglycerin. Subjectively, the attacks were characterized by a sense of impending dissolution.

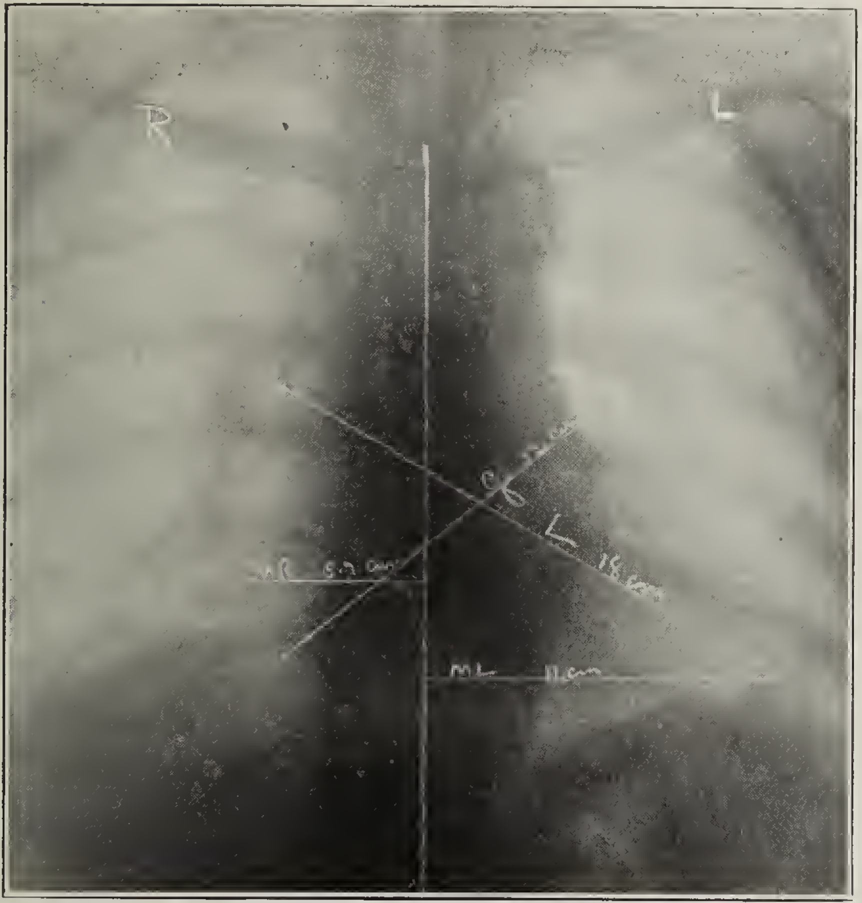

Fig. 1.—Teleroentgenogram of the heart: slight increase in cardiac volume.

The patient's habits have been good. He has always been a hard worker and he has had considerable business worry. In the year preceding admission, he had lost 30 pounds in weight.

The present illness, according to the patient, had been of about one year's duration, having followed and having been accentuated by unusual business cares; these cares, he asserted, had increased the frequency and severity of his "attacks." A month before admission, and again three weeks later, he had suffered from an unusually severe attack of cardiac pain precipitated by physical exertion. Both of these attacks had necessitated rest in bed for a week, during which time the pain continued irregularly to be present.

Physical Examination.—The patient was a rather large, well developed man. There was slight cyanosis, and slight signs of hyperthyroidism were made out. The pupils were active, and there was an arcus senilis in each eye. The ophthalmoscopic examination revealed nothing of importance. Carious teeth were discovered with marked pyorrhea alveolaris and evidences of considerable dental repair. There was no glandular enlargement.

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* From the Medical Clinic of the Johns Hopkins Hospital.

The thorax was symmetrical and showed a slight tendency to funnel chest, with a wide costal angle. The examination of the lungs revealed nothing abnormal.

The pulse rate was 88; the pulse, on palpation, was regular in force and in rhythm. The radial walls were just palpable. Systolic and diastolic blood pressures were 160 and 80 mm. of mercury, respectively. There was a well marked venous pulsation in the neck, apparently of normal type. The apex beat was in the fifth interspace 12 cm. from the median line, and it was medial from the midclavicular line. The deep cardiac dulness extended 4 cm. to the right, and 14 cm. to the left of the median line; retromanubrial dulness, measuring 9 cm. across, was made out in the first interspace. There was a blowing holosystolic murmur at the apex, poorly transmitted toward the axilla. No accentuation of the sounds at the base was noted. During the examination there was an occasional irregularity suggestive of a ventricular extrasystole.

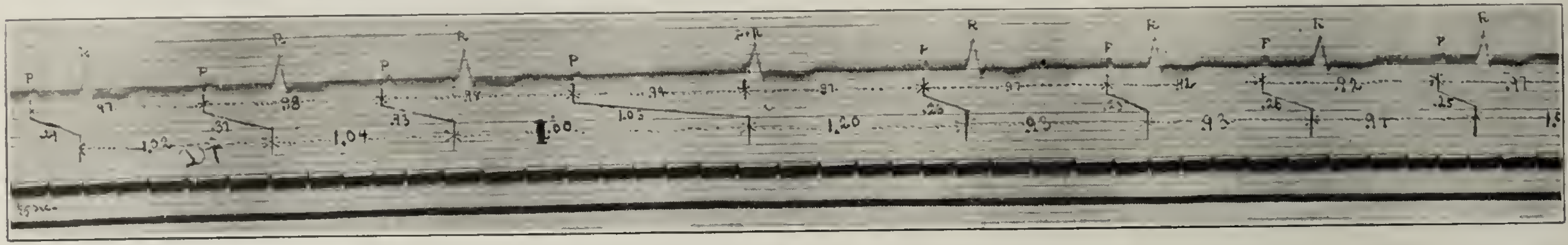


Fig. 2.—Electrocardiogram, D i: This tracing, taken the day of admission, shows variable conduction periods ranging from 0.23 second to time intervals are indicated on the tracing.

The liver dulness extended one finger's breadth below the costal margin.

The examination of the urine revealed nothing abnormal. The Wassermann test was negative. The blood count was normal. The temperature was not elevated.

A teleroentgenogram of the heart (Fig. 1) taken at a distance of 178 cm. revealed a longitudinal diameter of 18 cm., the transverse diameter measuring 12 cm. The right cardiac border was 5.7 cm., the left 11 cm., from the midline. In other words, the heart was only moderately enlarged.

Roentgenograms of the teeth disclosed periapical absorption areas and evidences of focal infection under the bridge work; treatment was at once instituted and these sources of toxemia eradicated.

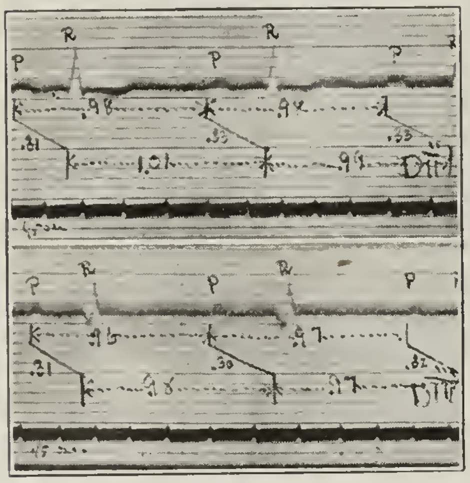


Fig. 3.—Electrocardiogram, D ii and D iii: Tracing taken the day of admission immediately after D i. A fairly constant cardiac activity is ascertained from the measurements recorded.

The studies made in the heart station of the hospital were of considerable interest. Numerous tracings, both electrocardiographic and polygraphic, were taken during the patient's stay in the hospital. On the day after admission, as the patient had been taking a good deal of digitalis, a series of electrocardiograms was taken. The tracing made with the first derivation appears in Figure 2, and merits close attention. The forms of the atrial and ventricular complexes are constant in type, that is, there are no signs of an ectopic origin for any of the excitation waves, and, a point of importance, all of the ventricular excitation waves are supraventricular in origin. It is to be noted that the waves occur at regular intervals, save that there is a slight sinus arrhythmia; these atrial waves are from 0.92 second to 1.09 seconds apart, and no demonstrable relation exists between the longer periods and either the ventricular rate or the conduction time. The *P-R* interval is exceedingly variable (from 0.23 second to 1.03 seconds, or, indeed, to infinity, for an occasional atrial wave is without effect on the ventricle). It is noteworthy that there is a progressive increase in the *P-R* periods to this infinitely long conduction time. Thus, the first four *P-R* periods in Figure 2 are, in sequence, 0.29, 0.37, 0.43 and 1.03 seconds, and the next *P* wave is not followed by a ventricular complex at all. After the long rest thus afforded the His bundle, the conduction time becomes relatively rapid, for the next four ventricular complexes occur from 0.23 to 0.26 second after their controlling atrial excitations; and then, again, a slowing of conduction appears for three cycles (0.28, 0.36 and 0.90 second, respectively), and the next atrial wave is not conducted to the ventricle.

This form of prolongation of conduction time is that which we now know to occur as a result of digitalis therapy when the His bundle is diseased. It should always be borne in mind when administering digitalis or strophanthus; and when signs of it appear, further usage of the drug should be stopped, for if continued a complete heart block may supervene, the transition period to which is associated with well known dangers. The interventriculosystolic periods vary according to the interatriosystolic intervals and the conduction-time — from 0.93 second to 1.56 seconds; there was thus a marked bradycardia.

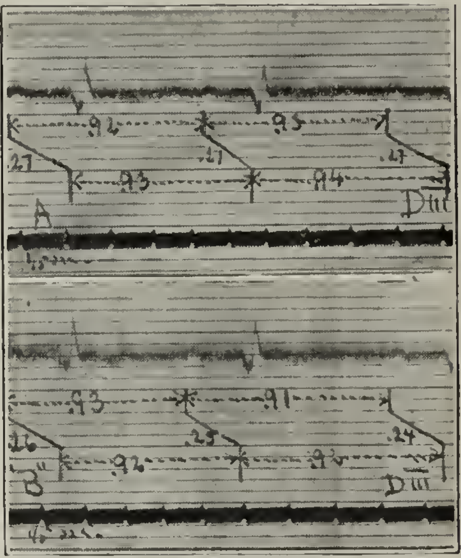
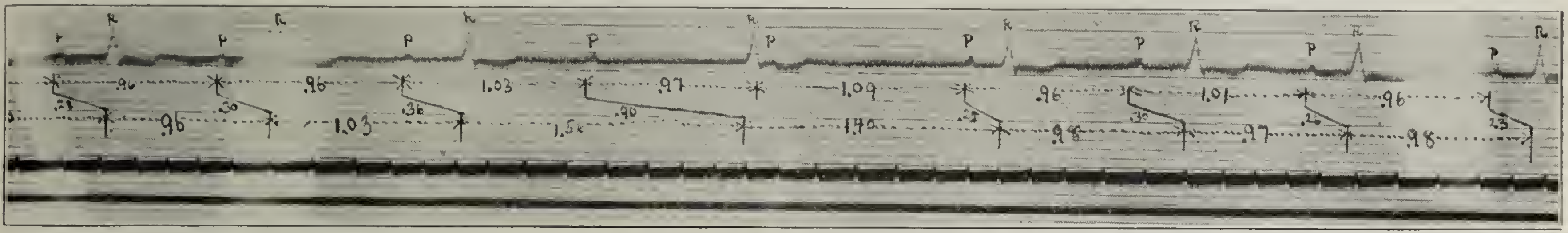


Fig. 4.—Electrocardiogram, D iii, after exercising a moderate degree in *A*, and to a violent degree in *B*: These tracings were taken immediately after the preceding ones, and show a regular cardiac activity with a marked decrease in the conduction period in spite of a more rapid rate, thereby exemplifying the heart's protective mechanism.

Immediately after the tracings were made with the first derivation, the adjustments were made to permit of the recording of tracings made with the second, and then with the third lead. These tracings, of which samples are shown in Figure 3, are quite constant as regards atrial and ventricular rates and also as regards the conduction periods, which, although prolonged, range in length only from 0.30 to 0.33 second. With a view to testing a possible relationship between periods of prolonged conduction and exercise, a tracing by the third derivation was repeated immediately after moderate, and again after strong, exertion. The result, as might have been expected, was to increase the atrial and the ventricular rates; interestingly enough, the *P-R* intervals were shortened from an average of 0.31 to one of 0.25 second. In spite of the use of such measures as rapid breathing, deep pressure on the vagus, and mild exercise, it proved impossible to reproduce the excessive *P-R* intervals.



1.03 seconds. The atrial rate is fairly regular at 65 per minute; the ventricular rate is not so constant, but averages 50 per minute. The

The following day a series of simultaneous tracings was taken. The apex cardiogram, the phlebogram and the electrocardiogram (in short sections) are shown in Figure 5. The *P-R* interval measures 0.18 second, whereas the *a-c* time on the venous tracing is 0.22 second. The actual period of ventricular systole, as shown on the apex tracing (measured from the onset of ventricular rise to the shoulder), was within normal limits — about 0.32 second. The next day some electrophonograms were recorded; a section of a tracing is shown in Figure 6. The venous tracing, which appears in the same figure, shows an *a-c* time of 0.23 second. On the phonogram, second sounds were picked out as having sharp onsets, and from their beginnings the first sounds were ascertained by measuring back 0.32 second, which had been found to be the period of ventricular systole. It is interesting to note that 0.12 second before the onset of the first sound, a well marked presystolic vibration appears, which corresponds in time to the presystolic gallop that had occasionally been noted on auscultation. This interval between the presystolic and the first ventricular sound is definitely longer than the normal where the time interval is about 0.07 second. This tends to confirm the theory that the presystolic sound is the result of atrial activity.

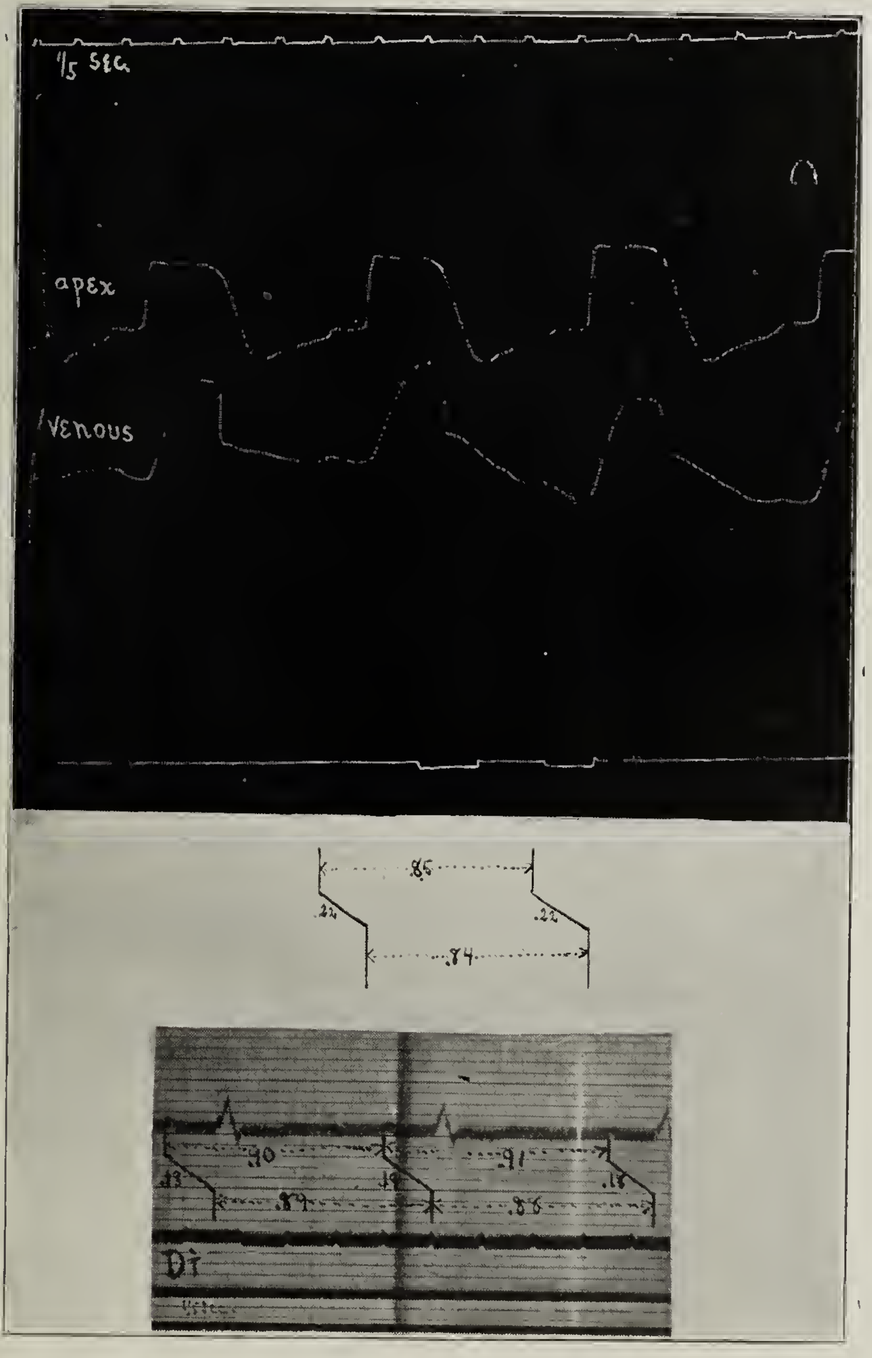


Fig. 5.—Apex, venous and electrocardiographic tracings taken two days after admission, showing slight increase in conduction time.

During the patient's stay in the hospital numerous tracings were taken, of all of which that shown in Figure 7, taken December 16, the day of discharge, is typical. Single left ventricular extrasystoles appeared occasionally, but the conduction times are just above the upper limits of normal, ranging from 0.18 to 0.22 second.

A diagnosis was made of *oral sepsis, arteriosclerosis, angina pectoris, partial heart block,* and a *slight grade of myocardial insufficiency.* As a result of the study, appropriate treatment was instituted. This was directed toward the prevention of further advancement of the arteriosclerosis by personal hygiene and by removing focal areas of infection. The patient was kept at rest in bed, and was given a light diet. Thrice weekly, he received general massage. All digitalis therapy was discontinued and his family physician was given a report of the findings showing the personal idiosyncrasy to digitalis dependent on the injury to the bundle of His.

After a stay of three weeks in the hospital the patient, much improved, was discharged.

Exclusive of its more theoretical interest in relation to cardiac physiology, this case is worthy of the attention of physicians for two reasons: In the first place it exemplifies, rather strikingly, one of the contraindications for the use of digitalis in the treatment of heart disease, and secondly, the accompanying tracings show an extreme prolongation of atrioventricular conduction time — a greater prolongation than in any instance hitherto recorded.

It has for some time been known that digitalis has the property of prolonging the conduction time of the His bundle, "provided the bundle is diseased." Especially is this true in cases in which, before therapy, there has already been some increase in the conduction time. As the dangers of the transition between partial and complete heart block (sudden syncope; ventricular standstill) have become recognized as very real, the risks of digitalis therapy in unselected cardiac cases have come to be understood. Fortunately, the vast majority of patients who are treated with digitalis show no untoward effects, possibly because of the fact that the His bundle is only comparatively rarely functionally impaired. There is, however, one group of patients in whom real harm may result from the use of digitalis. This group comprises persons who suffer from coronary sclerosis of either a moderate or a considerable degree. As a rule, these patients exhibit also a generalized arteriosclerosis, which, in turn, may be characterized by the signs of a primary contraction of the kidneys, by a slight grade of myocardial insufficiency, by cerebral arteriosclerosis or by peripheral vasomotor crises. In such people indiscriminate digitalis therapy may be truly a menace, and digitalis therapy, if employed, should be controlled by tracings — either polygraphic or, preferably, electrocardiographic.

The blood supply of the His bundle is from an end-artery. Many different etiologic factors may lead to impairment of this vascular supply. The consequent deficient nutrition of the area supplied by the end-artery leads to fibrosis of the bundle and accompanying impairment of its function. The degree of involvement of the bundle cannot be discovered by the usual physical examination; it can be determined only by instrumental study of the circulatory function.

What the greatest possible prolongation of the conduction time of the atrial excitation wave to the ventricle may be is problematic; probably, the period may be of any length from the normal time up to one of infinite duration (with no resulting ventricular beat). Very few cases have been reported in which the conduction time, measured as the *a-c* time of the venous tracing, or as the *P-R* time of the electrocardiogram, has been more than 0.6 second. And, of course, in the *a-c* measurements one must take into consideration the presphygmic period, which, although variable, is generally between 0.05 and 0.08 second. Most of the reported cases of prolonged conduction time have been illustrated by polygrams and have not clearly excluded the possibility of impulses arising in the nodal region and causing coincidence of the *a* and *c* waves with the result that the *v* wave may have been regarded as the *a* wave of the succeeding cycle. Again, as in Gibson and Ritchie's case, one may doubt whether the waves have been correctly interpreted, when, for example, the first constantly recurring wave of the double group associated with atrial activity is attributed to a sinus origin, and the second wave is regarded as the true atrial wave. Furthermore, it is always difficult, in polygrams, to be sure of the exact character of the ventricular responses. In other words, it is distinctly advantageous, for the correct interpretation of cardiac activity, to have an electrocardiogram, since through it the supraventricular origin (if it exist) of the ventricular excitation wave can be confirmed, the origin of the atrial impulse can be definitely established to be in a fixed point, and the need for making allowance for a presphygmic period does not exist. But even in electrocardiograms there is a certain danger of mistake, owing to the possibility of coincidence of *P* and *R* waves and of *P* and *T* waves in cases of tachycardia. Much more free from possible error are cases that include simultaneous polygraphic and electrocardiographic tracings; the advantages of both the mechanical and electrical methods of study are thus obtained, and the coincidence of the *P* and *R* waves, and of the *a* and *c* waves at the same period in the same person are manifestly impossible, since *P-R* and *a-c* times are never equal in the same cardiac cycle.

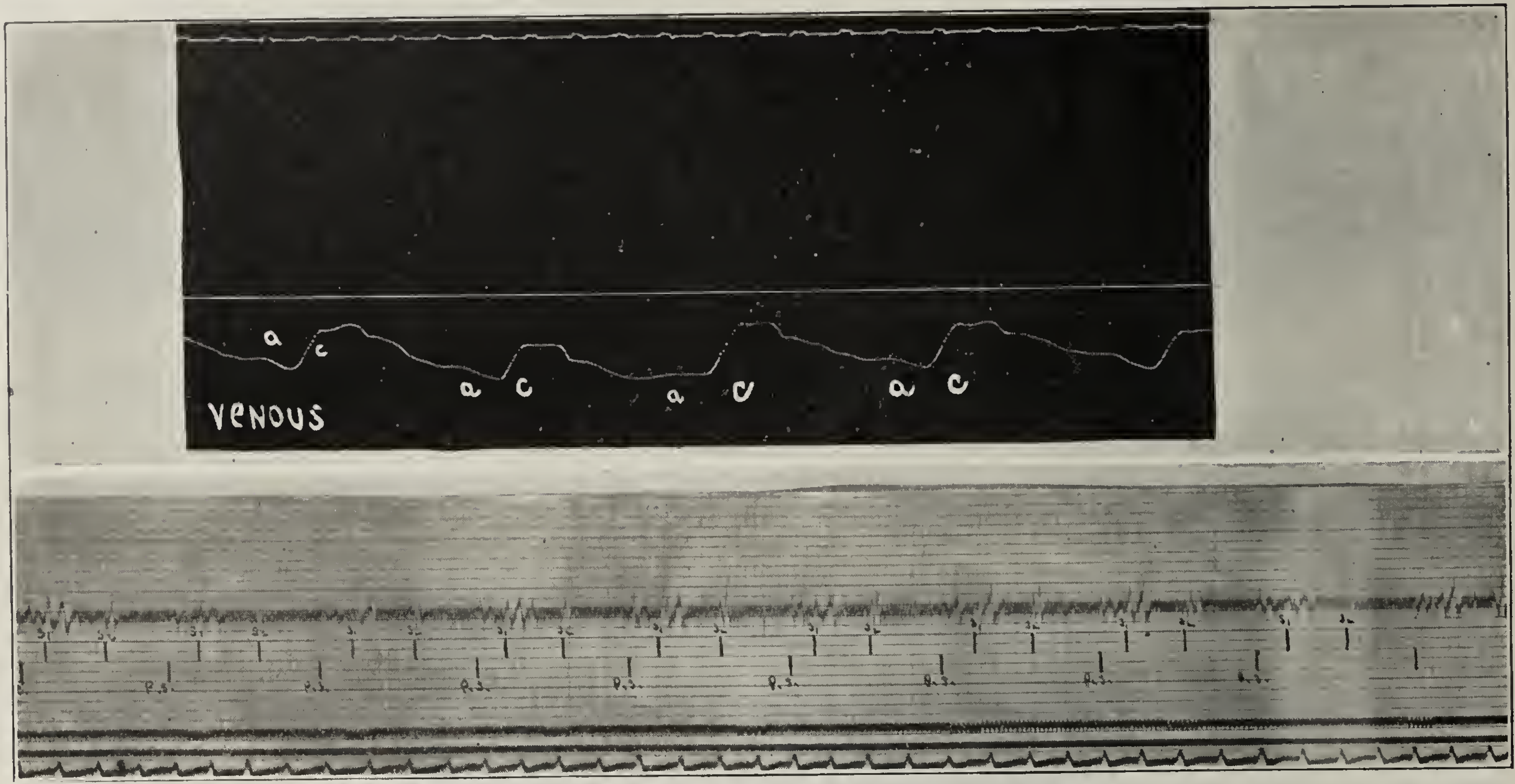


Fig. 6.—Venous and electrophonographic tracings: The time interval between the presystolic and first ventricular sounds is 0.12 second.

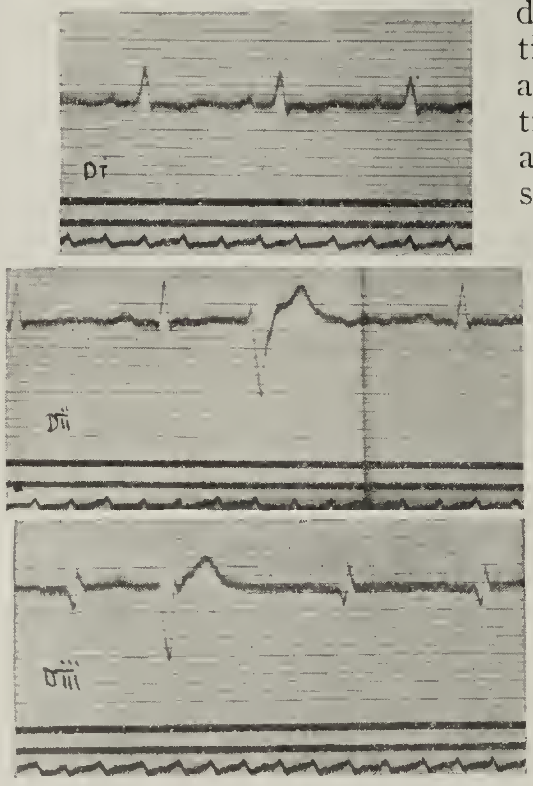


Fig. 7.—Electrocardiogram taken the day of discharge, showing occasional left ventricular extrasystoles. *P-R* time equals 0.22 second.

In a recent article, Prof. William S. Thayer[1] has reported an instructive case of prolonged conduction time that was studied with the aid of both electrocardiograph and the polygraph. The *P-R* interval occupied in one period the unusual time of 0.88 second, and the *a-c* time in one cardiac cycle was no less than 0.97 second. Other cases of remarkable prolongation of conduction time have been reported, notably one by Griffith and Cole, and one by Thayer and Peabody; in both instances *a-c* intervals up to 0.6 second in length were encountered. But nowhere in the bibliography have we found such a lengthening of the atrioventricular conduction time as was discovered in the patient whose history we have recorded.

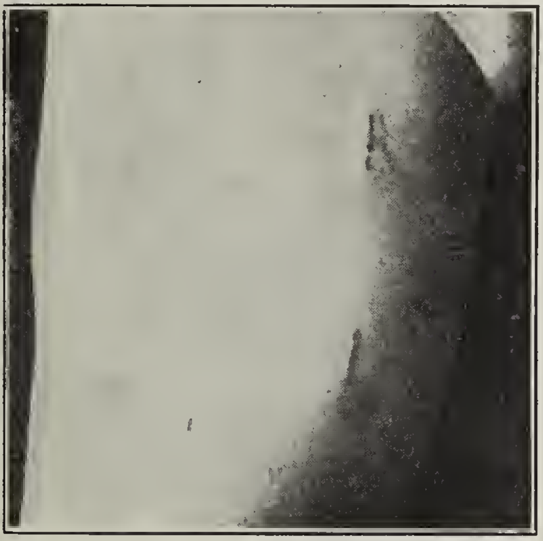
A SKIN REACTION TO QUININ*

FRED BOERNER, Jr., V.M.D.
PHILADELPHIA

Idiosyncrasies of certain persons to such drugs as quinin, strychnin, iodoform and atropin are not at all uncommon, and many cases have been reported in which serious symptoms have resulted from the use of these drugs by such persons.

For a number of years I have been known to be hypersensitive to quinin. The first indication of this sensitiveness was observed after I had taken the drug for an attack of grip, the effects being manifested by a body rash and intense itching of the skin. Several times since, it has been taken in relatively small doses and has invariably caused a reddening of the skin and severe itching.

In some of the noninfectious diseases due to anaphylaxis, skin reactions have been found of practical value, and as idiosyncrasies to drugs are believed to be due to this phenomenon, it was considered of interest to try a skin reaction for sensitiveness to quinin. The method of conducting this test was similar to the cutaneous tuberculin test (von Pirquet), with quinin sulphate as an antigen.



Skin reaction in author fifteen minutes after the application of powdered quinin sulphate in the upper abrasion; the lower abrasion is the control.

The forearm was cleansed with alcohol and dried. Two abrasions were made with a needle, about 3 inches apart. The scarifications were just deep enough to remove the superficial layers of the skin. To one of these abrasions powdered quinin sulphate was applied. The other was left untouched to show the amount of irritation produced by traumatism.

In about five minutes the abrasion to which the quinin was applied began to itch slightly. This was followed by a slight edema along both sides of the pin mark which in ten minutes became very pronounced. At the end of fifteen minutes the reaction was at its height, and at this time was surrounded by a zone of erythema presenting a mottled appearance and extending over an area about 1 inch in diameter.

The next step was to determine whether or not this reaction was due to the irritant action of the drug on the skin, or if it could be produced only in persons susceptible to the drug. The test was applied to six persons who have repeatedly taken quinin without suffering any inconvenience. Two of these were able to take over 6 grains, and the others at least 1 grain doses. In not a single instance was there the slightest degree of reaction, there being no perceptible difference between the abrasion to which quinin had been added and the control scratch on which the drug had been omitted. The results of these tests pointed decisively toward the specificity of the reaction. A number of these tests were seen and verified by Dr. John A. Kolmer of the McManes Laboratory of Pathology of the Medical School of the University of Pennsylvania.

One of my colleagues, Dr. H. C. Campbell, on learning the results of these tests, informed me that he also was unable to take this drug without the appearance of a rash and intense itching of the skin. This statement indicated a hypersensitiveness, and accordingly the skin test was applied. In this case a positive reaction was obtained which was an exact duplication of the reaction obtained in my case, beginning with a slight itching followed by edema and erythema which reached its maximum in about fifteen minutes.

From these results it was obvious that the skin reaction obtained with quinin was of a specific nature, as positive reactions were obtained in both cases in which susceptibility to the drug existed, and entirely negative results in persons who were not sensitive.

It was thought of interest to determine the amount of quinin necessary to produce a reaction, and quinin bisulphate in normal salt solution was employed in dilutions of 1 : 10, 1 : 100, 1 : 200, 1 : 500 and 1 : 1,000. Six abrasions were made on the chest, about 1 inch apart, and to these the various dilutions were applied, one abrasion being left as a control. The best reaction was obtained with the dilution of 1 : 10, it being even more pronounced than those obtained with the powdered sulphate. The dilutions of 1 : 100 and 1 : 200 gave distinct positive reactions, while the dilutions of 1 : 500 and 1 : 1,000 gave only very slight reactions.

The results of the latter test indicate that the best reaction can be obtained by using quinin bisulphate in a dilution of 1 : 10, as in this dilution no reaction occurred in the negative cases.

An effort was made to sensitize guinea-pigs passively by injecting the serum of the two persons who were hypersensitive. Two guinea-pigs were inoculated, one intravenously and one intraperitoneally, with my serum, the dose being 1 c.c. per hundred gm. Two were similarly inoculated with 0.5 c.c. per hundred gm. of body weight with the serum of Dr. Campbell. Forty-eight hours later, they were injected intravenously with 0.5 c.c. of a 1 per cent. solution of quinin bisulphate. The pigs injected with my serum died within half an hour. The pigs injected with the serum from Dr. Campbell remained alive. Two normal guinea-pigs were inoculated with the same dose, one of which died immediately, the other living about half an hour. This indicated that the amount of quinin injected was too near the lethal dose. The necropsy of these animals failed to show any lesions of anaphylaxis, the lungs having collapsed and the other organs appearing perfectly normal.

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[1] Thayer, W. S.: Adams-Stokes Syndrome.—Persistent Bradycardia, Involving Both Auricles and Ventricles, Remarkable Prolongation of the As-Vs Interval, Tr. Assn. Am. Phys., 1915, **63**, 77.

* From the Laboratory of the Pennsylvania State Livestock Sanitary Board.

A second attempt was made to sensitize guinea-pigs with my serum. Two guinea-pigs were injected intravenously with 1 c.c. per hundred gm., and forty-eight hours later received 0.25 c.c. of a 1 per cent. quinin bisulphate solution. Both animals withstood the injection without showing any symptoms of anaphylaxis.

On account of the inability to sensitize guinea-pigs passively with the serum of those giving a positive reaction to the skin test, some question might arise as to the exact nature of these reactions; but as they were obtained only in those persons who were known to be susceptible, and as only a short time was required to produce the local symptoms with extremely small amounts of the drug, it is highly probable that the reaction is of an anaphylactic nature.

CONCLUSION

A skin reaction to quinin has been obtained which may be of practical value to the physician as an aid in determining the existence of an idiosyncrasy to this drug.

Thirty-Ninth Street and Woodland Avenue.

For the Adoption of the Metric System.—The American Association for the Advancement of Science at its 1917 meeting arranged a special conference on the subject of promoting the adoption of the metric system into practical usage in this country. Professor Kennelly of Harvard called attention to the simplicity of the two units of metric measurement, the meter and the gram, as compared with the numerous and confusing old style measures of length, area, volume, dry, liquid, cord, apothecaries, avoirdupois, troy, etc. A flagrant instance of the absurdity of the old measures is the bushel, which is both a measure and a weight, differing widely in different states of the United States. A bushel of rye, for instance, is 56 pounds in most states, 54 in California and 50 in Maine. A bushel of barley is 48 pounds in most states, 45 in Arizona, 46 in Oregon, 47 in Pennsylvania, Kentucky, Georgia and Alabama and 50 in California. A bushel of buckwheat is 40 pounds in California and 56 in Kentucky, a difference of 16 pounds, with many variations from these figures in the other states. Accurate, scientific work is measured by the metric system in all countries, but the United States, Great Britain and Russia still do not employ the system in practical everyday business. Since the beginning of the European war its use has widely extended in manufactures and commerce even in England and Russia, and manufacturers in the United States have been compelled to employ it in filling orders for war materials. The simplicity of the metric system is such that it is believed any intelligent child can learn and carry in his mind in three lessons the whole system, and that any reasonably intelligent adult should be able to master it in an hour or less of serious study. It is being rapidly introduced into medicine, is employed in annoting electrical units, and is in line with our decimal system of money.

New Instruments and Suggestions

A SIMPLE OPERATING FLUOROSCOPE

FOR AID IN REMOVAL OF METAL BODIES*

Ralph Boerne Bettman, M.D., Chicago

Soon after we began work in Vienna, we realized that foreign bodies, such as bullets and metal fragments, were much harder to remove than one would expect, judging from the roentgenograms, various localizations, etc., and also that even those readily attainable required large, free incisions so that the tissues could be easily searched. We had the same experience which many of us have had at home with needles in the hands and feet, repeated so often, however, that we finally attempted to use the fluoroscope in conjunction with the other methods, and thus hit on this inexpensive apparatus, which is simply a light fluoroscope or cryptoscope which can be strapped to the head of the operator.

It is in the form of a hollow truncated pyramid, with a base consisting of a fluorescent screen 13 by 18 cm., the four sides of thin wood, cardboard or papier mâché, about 13 cm. high, and the top left open and so shaped that it fits over the eyes of the surgeon.

The fluorescent screen is on hinges, and under the influence of a small steel spring it flaps open, allowing the operator to see. When the screen is pulled down it is held in place with a catch, and the surgeon is looking into a light-tight box, the floor of which is converted into a fluoroscope as the Roentgen rays strike it. Pressing on a button releases the screen.

The edges fitting over the face of the operator are rimmed with black fur or plush, as are also the edges of the screen, so as to make the whole apparatus light tight.

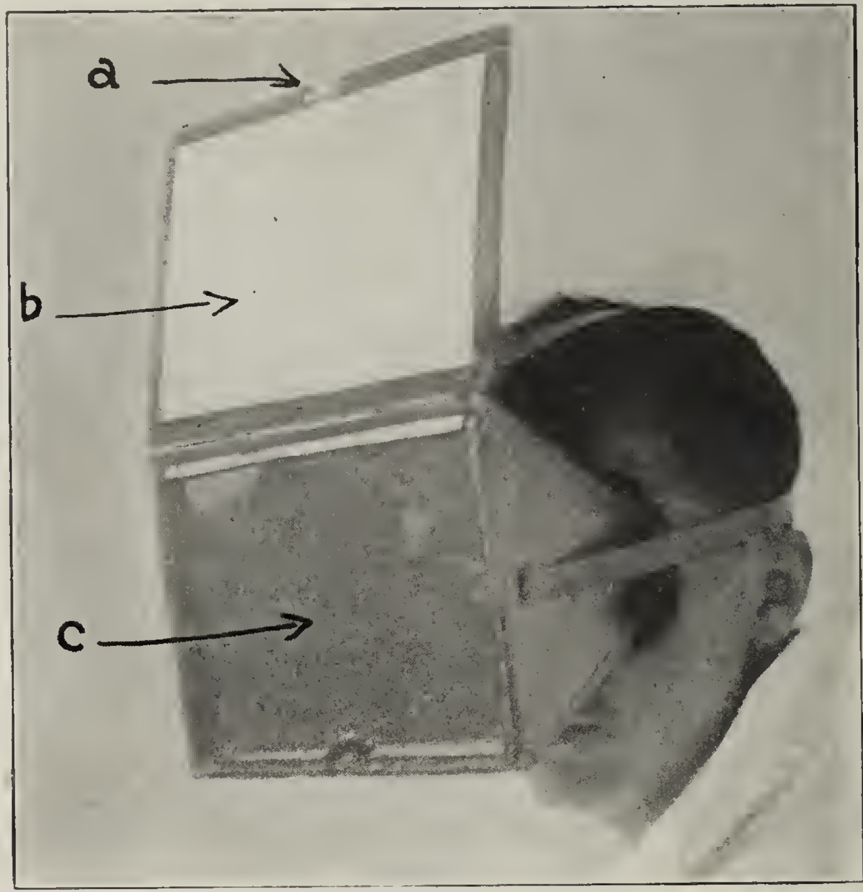

Fig. 1.—Operating fluoroscope: *a*, catch; *b*, fluorescent screen open; *c*, lead glass.

In easy cases, or when there is a dearth of assistants, the surgeon is at once operator and roentgenologist; in other cases an assistant wears the cryptoscope. After the assistant is "scrubbed up," the cryptoscope, which has been covered with a sterile black cloth, is fastened to his head. The foreign body has been localized as nearly as possible with roentgenograms taken in two directions, or with a localization apparatus, and it has been decided where the incision is to be made. The patient has been placed on the Roentgen-ray table and covered with sterile linen, after the usual operating room technic. The assistant now closes the screen, the Roentgen-ray machine is started, and the assistant sees the foreign body as with the usual fluorescent screen and demonstrates its position with some metal instrument. The surgeon, working in ordinary light, makes his incision and cuts down under the guidance of the assistant, who is watching the operation through the fluoroscope. It will often happen that the assistant assures the operator he is on the bullet before the surgeon recognizes that the hard indurated mass which seems to elude his knife is not scar but a firmly encapsulated metal fragment. Most of the Roentgen-ray tubes will not stand long periods of continuous use. We therefore often localize the bullet, turn the current off, allow the surgeon to incise and work down in the direction indicated, and then from time to time switch in the current again, guiding him back in the right direction. When the surgeon is acting at the same time as roentgenologist, the method is practically the same. While he is operating, the screen is flapped open and when orientation is desired the screen is closed. In many cases when operating this way, after the first incision is made, the surgeon can separate the tissues by blunt dissection under the guidance of the Roentgen ray down to the bullet, grasp it and extract it in this manner. This is possible only when the foreign body has not had time to become encapsulated. It is hardly necessary to state that great care must be taken not to catch some important vessel or nerve at the same time. The bullet ought always to be approached with the blades of the clamp closed. The clamp is then carefully opened just far enough to grasp the bullet and carefully closed on it. If there is any difficulty in extracting the bullet, the surgeon must see where the obstruction is, enlarge the wound if necessary, with the screen of course released, and then extract the bullet so as not to do an injury.

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* From the Wisconsin Surgical Unit of the American Physicians Expeditions Committee, K. u. K. Reserve Hospital No. 8, Vienna, Austria (Surgeon in Chief, Dr. Joseph Rilus Eastman, Indianapolis).

We protect ourselves from burns by placing a 1 mm. aluminum filter over the diaphragm of the Roentgen-ray tube, and further by having a piece of lead glass inserted in the cryptoscope.

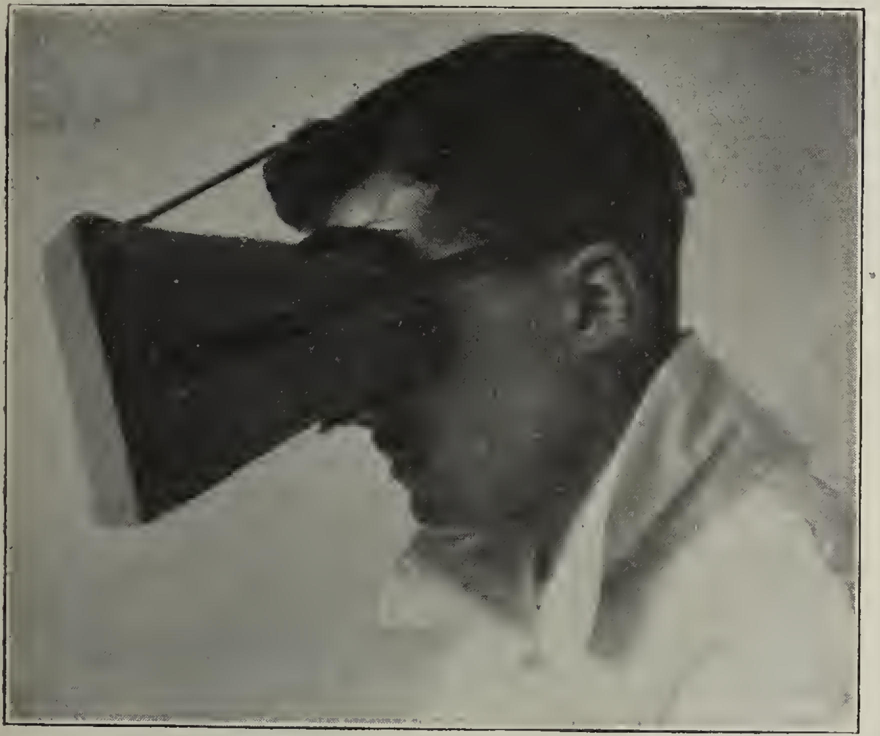


Fig. 2.—Operating fluoroscope with fluorescent screen closed.

We have found that operations with the aid of the operating cryptoscope—the name given the apparatus in Vienna—are performed much more easily and quickly than with any other method of localizing the bullet, that a much smaller incision can be made when a small incision is desired, and that the tissues are not so apt to be mauled as when the surgeon has to search for a small encapsulated body. We have practically discarded all of the customary localizing systems for the reason that bullets change their position to a surprising degree, owing to muscle tone, different position of the patient, gravity, etc., and a small, firmly encapsulated body can be in the wound itself and still elude the most skilled surgeon. We have repeatedly with the aid of our fluoroscope removed bullets in a few minutes for which one or two previous operations had been made in vain.

We claim no originality for this method of operating, but simply wish to emphasize its advantages. Professor Holzknecht has done much to popularize this method. He has constructed a beautiful but complicated and expensive apparatus with which, in conjunction with several Viennese surgeons, especially Professor Eiselsberg, he has obtained gratifying results. It will also be recalled that as long ago as 1904 Dr. Graschey constructed an operating monocular cryptoscope.

THE DODDS-PARKER SUSPENSION APPLIANCE

Wilburt C. Davison, A.B. (Princeton); B.A., B.Sc. (Oxon.), Baltimore
Senior Demy, Magdalen College, Oxford; Rhodes Scholar, Merton College, Oxford, from State of New York

The accompanying illustrations show more or less clearly the mechanism of this apparatus. A large upright at each end of the bed supports a horizontal crossbar from which are suspended the rails or tracks for the overhead trolley. This trolley is a rectangular framework provided on its upper surface with small suspension wheels which fit on the rails and allow the trolley to be moved forward and backward over the bed with little effort. On the under surface the trolley is fitted with numerous screw-eyes to which pulleys may be attached. Figures 1 and 2 show the suspension appliance as used to support a fractured femur which has first been put up in a Thomas or an extension splint. The supporting ropes are attached at the upper and lower ends of the splint, and run first through the pulleys directly overhead and then through pulleys at the end of the trolley, and are there balanced by iron weights. The amounts of these weights of course vary for individual cases, but 6 pounds on each rope is usually sufficient exactly to balance the limb so that the patient can move it with minimum effort.

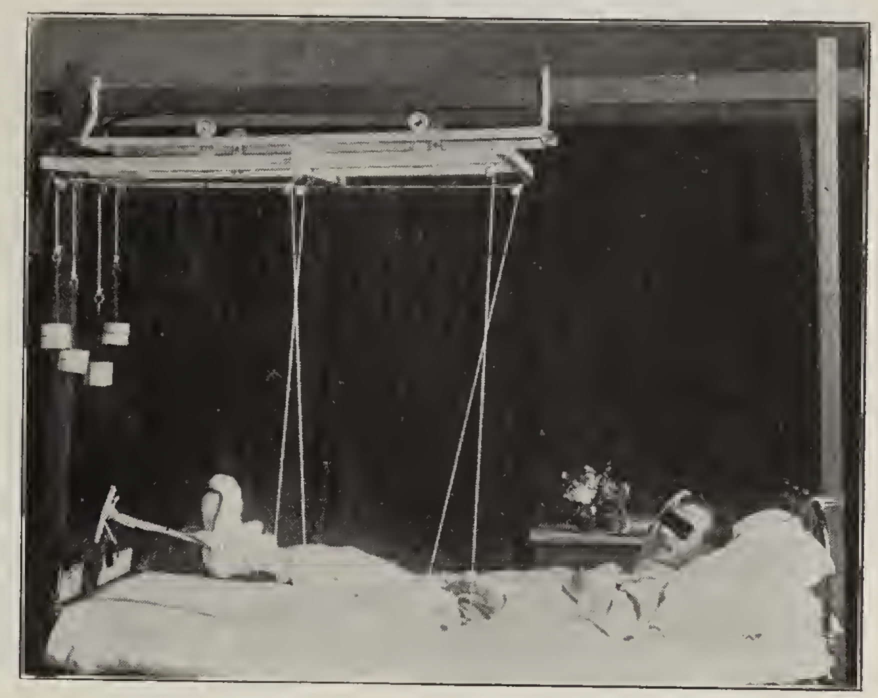


Fig. 1.—Suspension appliance as used for a fractured femur put up in a Thomas splint.

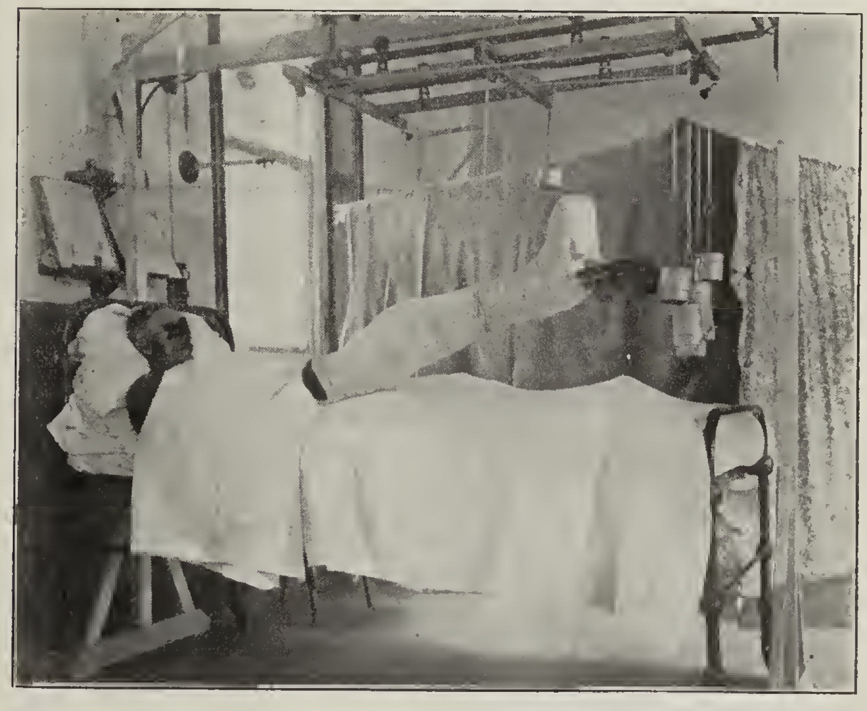


Fig. 2.—Suspension appliance as used for a fractured femur put up in an extension splint.

Figure 3 shows how the use of the appliance may be extended to the more severe cases in which the back as well as the lower limbs are injured. Here a small hammock which goes under and supports the shoulders is suspended from the two upper screw-eyes of the trolley. While it does not actually suspend the patient in midair, yet the hammock under the shoulders and the suspension attached to the splint on the fractured femur bear most of the patient's weight and vastly increase his comfort.

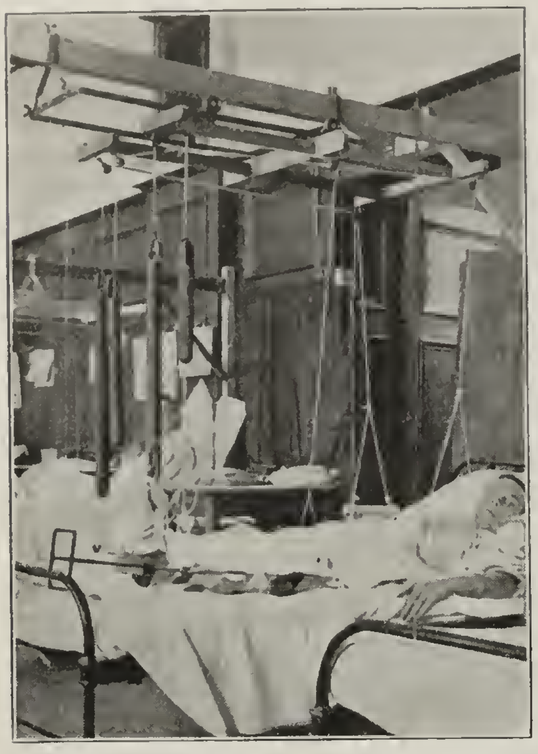


Fig. 3.—Suspension appliance as used for a fractured femur put up in a Thomas splint. The appliance is also used to support the back, which was severely sprained.

The benefits of such an appliance are obvious, and one needs but speak to a patient who is treated in this way to learn of the relief afforded. The patient can move his limb up or down at will, and also by raising himself slightly with his elbows can move up and down the bed.

The nurses or orderlies attending the patient profit immensely, for it is not necessary for them to lift and move the patient while changing dressings, arranging the bed, etc., for the patient shifts his position himself.

The therapeutic gain from the apparatus is not the least of its benefits, for by increasing one or the other of the weights or by changing the supporting pulleys from one set of screw-eyes to another, any desired rotation or abduction may be secured.

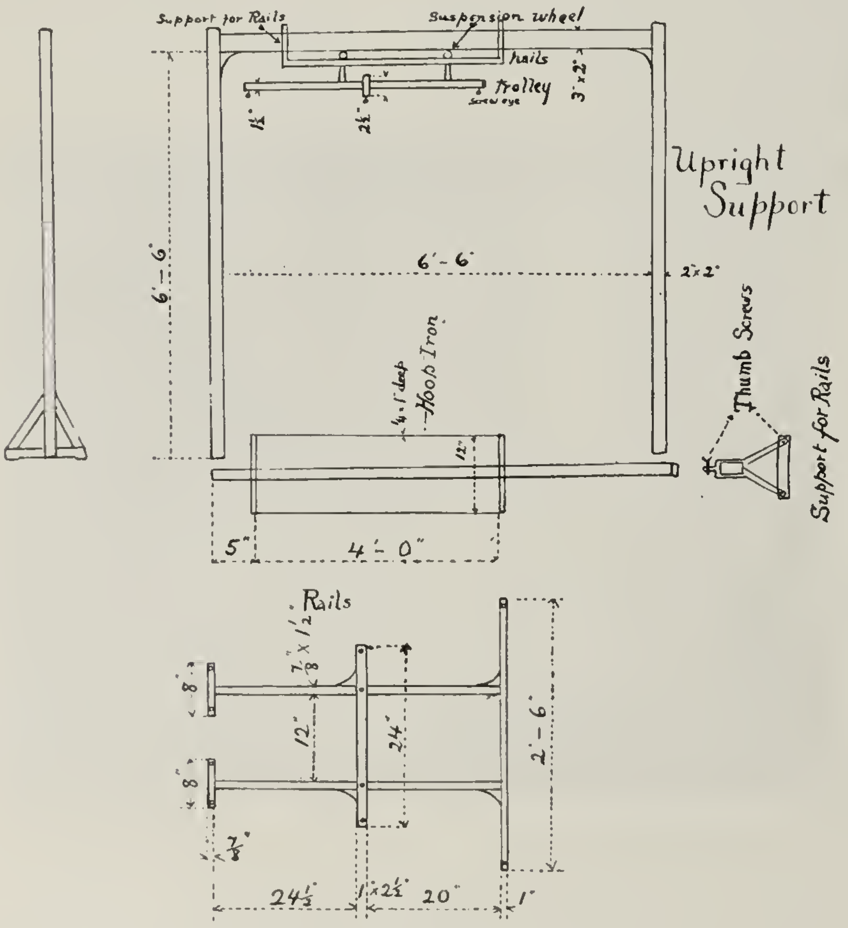


Fig. 4.—Section of apparatus.

The use of the appliance may be extended by attaching a horizontal crossarm half way up the upright at the foot of the bed. Then any pain caused by the pressure of the Thomas or extension splint in the groin may be relieved by elevating the foot of the bed and attaching to the end of the splint an additional rope which runs through a pulley on this crossarm and is balanced by a weight. In this way extension is secured and the patient can also move on the bed.

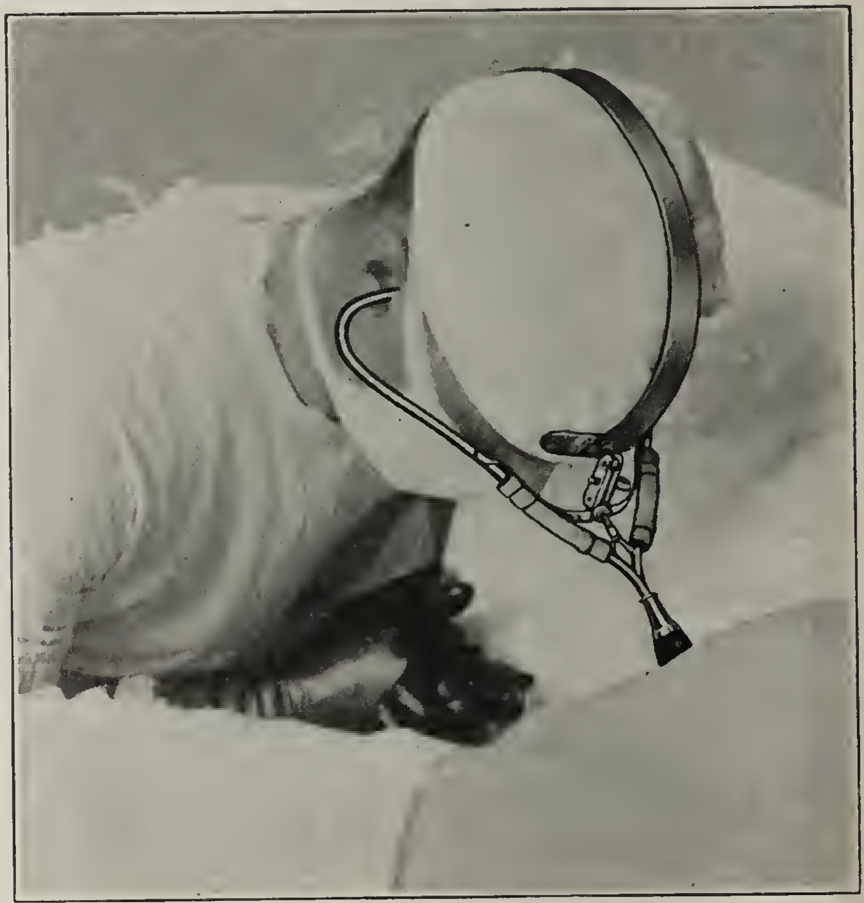
The cost of this apparatus is very slight, and any carpenter can make it, from the diagram (Fig. 4), which gives the various measurements.

923 North Broadway.

ATTACHMENT FOR THE STETHOSCOPE

David S. Hillis, M.D., Chicago
Attending Obstetrician, Cook County and Provident Hospitals; Assistant Obstetrician, Chicago Lying-In Hospital; Instructor in Obstetrics, Northwestern University Medical School

Frequent observation of the fetal heart tones during the last part of the second stage of labor presents certain technical difficulties after the attendant is surgically prepared for the delivery. In breech labors in which the heart tones must be watched very carefully, it is always desirable and often necessary for the operator to observe the heart tones himself.


Attachment for the stethoscope facilitating the observation of heart tones.

In order to make this easily possible, an attachment for the stethoscope was devised which consists of a metal band such as is used on a head mirror, passing from front to back over the top of the head. The Y of the binaural stethoscope is fastened to the front plate of this band by means of a short spiral spring and a universal joint which is capable of being made rigid by a thumb screw. This permits proper adjustment of the ear pieces and holds the stethoscope in a position above the line of sight at right angles to the forehead. The spiral spring gives enough flexibility to the bell of the instrucent to make it easily adaptable to the surface.

An experience of several months with its use at the Chicago Lying-In Hospital indicates that it has the following advantages:

It gives easy and accurate control of heart tones.

After adjustment, no handling is required.

Heart tones are heard better, since there is bone conduction through the metal parts of the instrument, in addition to the air conduction of the ordinary stethoscope.

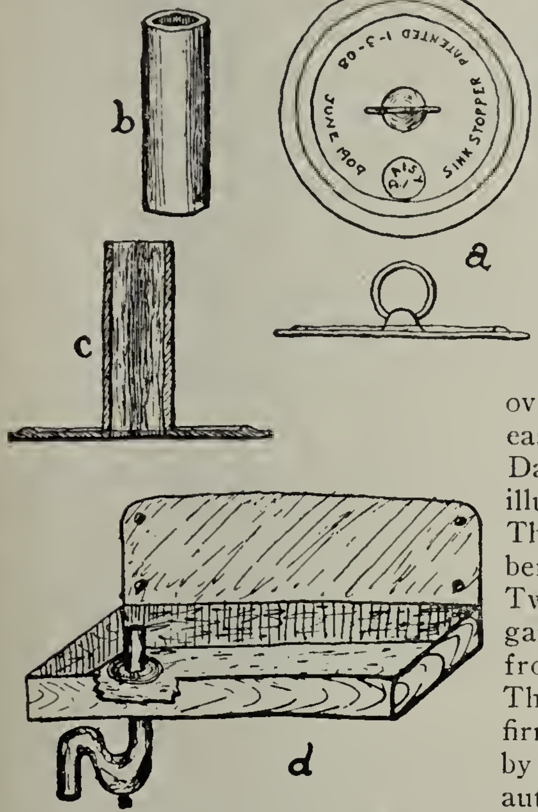
The bell may be pressed firmly against the abdominal wall without interference from muscle sounds.

RUBBER SINK STOPPER AND OVERFLOW DRAIN FOR ROENTGEN-RAY DARK ROOM

JACK WITHERSPOON, M.D., NASHVILLE, TENN.

Physicians who are engaged in Roentgen-ray work, and especially those who develop their own plates and films, will appreciate this contrivance to do away with the pan for washing plates. The ordinary No. 3 sink will accommodate 14 by 17 plates, chest plates, and two or more 8 by 10 or smaller plates, and this size sink should be in the dark room. It should be enameled for purposes of easy cleaning.

The contrivance is a rubber sink stopper and overflow drain cheaply and easily made. A 10 cent Daisy sink stopper, as illustrated, is purchased. This is a flat disk of rubber 4½ inches in diameter. Two inches of stiff rubber garden hose are obtained from the hardware dealer. The tube is vulcanized firmly on the sink stopper by the man who repairs automobile tires. The ring under the tube is cut out. One now has an overflow sink stopper which will adhere to the strainer of the sink by suction, and will keep 2 inches of running water in the sink.



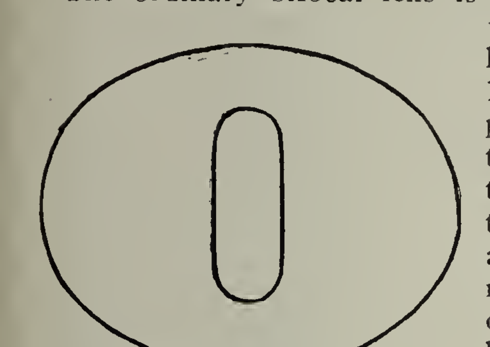
Rubber sink stopper and overflow drain; *a*, stopper; *b*, tube; *c*, tube vulcanized to stopper and ring cut out; *d*, sink with contrivance in position.

216 Doctors' Office Building.

A MODIFIED BIFOCAL LENS

ARTHUR J. HILL, M.D., CANTON, OHIO

The ordinary bifocal lens is of no use to the presbyope who uses a headmirror or headlight. If he will have a 12 by 24 mm. segment of the proper strength cemented vertically on the center of his distance correction (as in illustration), he will have all the advantages of his near correction and be able to see at a distance by simply turning his head to one side or the other and looking in the opposite direction.



Modified bifocal lens.

A SIMPLE INCUBATOR

ARTHUR JULIUS SKEEL, M.D., CLEVELAND

Fellow of the American College of Surgeons; Associate Clinical Professor of Obstetrics, Western Reserve University, School of Medicine; Obstetrician, St. Luke's Hospital

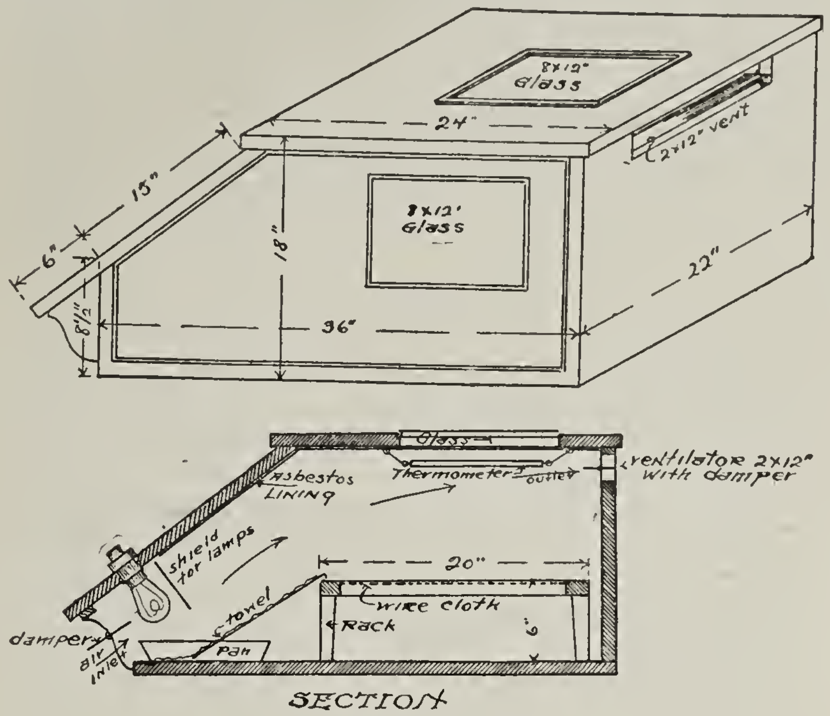
The success which we have had with an inexpensive and simple incubator, whch I devised for our use at St. Luke's, together with a number of requests from physicians, leads me to publish this description. The incubator as presented provides equable safe heat, adequate moisture, and a constant supply of circulating air. With ordinarily intelligent supervision it is absolutely safe.

On two points in its management emphasis must be placed:

1. The electric light bulbs must be shaded to protect the infant's eyes from the light.

2. The incubator must be kept at a higher temperature than that of the room air to insure circulation.

It consists of a large box with an air inlet opening near the base at one end, and a similar air outlet near the top at the other end. The heat is supplied by a row of electric lights (other heat units may be used, but light bulbs are always available) located at the air inlet; the heated air rises, passes over the child, and escapes at the upper or air outlet opening. This provides a constant current of warmed air. The air is moistened before it reaches the baby by means of a towel placed on a slanting rack. The lower end of this towel is in a pan of water on the floor of the incubator, and capillarity keeps the entire towel moist. The rising heated air strikes this wet surface and takes up moisture.



Incubator.

To guard against accident, we lined the wooden box with sheet asbestos. This also renders the box easy to heat. Glass panes in the sides and on the lid expose to view the baby, and a thermometer by which the temperature is regulated. The air inlet and outlet are provided with a slide or damper by means of which the size of the openings may be regulated.

The exact temperature at which the incubator is kept may easily be regulated by the number of lights kept burning.

AN INSTRUMENT TO AID RETROGRADE SOUNDING OF URETHRA

J. L. STEVENS, M.D., MANSFIELD, OHIO

This is an olive-tipped bougie, the curved part of which is a steel spring, which allows it to straighten during passage through a straight cannula. The bladder should contain 150 c.c. or more of fluid. A trocar and cannula are inserted into it above the pubes in the usual way, and the trocar is replaced by the bougie without allowing the fluid to escape. If the full curve is not desired in searching for the urethra, the spring part should not be entirely passed through the cannula. After the entrance to the urethra is found, the flexibility of the spring will allow the tip to follow the urethra.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 849*)

SYMPTOMS IN CHRONIC NEPHRITIS

An acute diffuse nephritis, in which the parenchyma of the kidneys is most seriously affected, produces somewhat different symptoms than a chronic diffuse nephritis in which the interstitial tissue is most involved. As previously stated, it is better to consider the pathology of chronic nephritis than to consider parenchymatous and interstitial nephritis as two different types of kidney disease, as neither type occurs alone.

The general symptoms of chronic nephritis may be thus tabulated:

1. Changes in the urine as to frequency, color, specific gravity and abnormal content.
2. Headache, generally occipital, but often frontal, general or hemicranial.
3. Indigestion, with perhaps nausea and vomiting.
4. Diarrhea attacks preceded and followed by constipation.
5. Mental apathy or great irritability.
6. Insomnia, in a later stage of the disease followed by somnolence.
7. Dyspnea.
8. Edema of the face, hands or feet (not always present).
9. Intermittent eye and ear disturbances.
10. Enlargement of the heart (hypertrophy, dilatation).
11. High blood pressure.
12. Neuralgias.
13. Anemia.
14. Retinal change.
15. Dropsy or marked localized exudate (many patients show no edema or dropsy).
16. Terminal inflammations (pericarditis, etc.).
17. Uremia (convulsions and coma).

The amount of urine passed varies with the different forms of nephritis; in interstitial nephritis, or so-called contracted kidney, with high blood pressure, typical Bright's disease or cardiovascular-renal disease, the amount of urine passed in twenty-four hours may be large, especially the amount passed during the night. A marked diminution in the amount of urine passed, especially if the specific gravity is low and the excretion of solids and toxins is not sufficient, causes headache, restlessness, insomnia, indigestions, myalgias, muscle twitching and, if the excretion is sufficiently diminished, symptoms of uremia. Suppression of urine, however, may last several days without uremia. On the other hand, uremia may occur in chronic contracted kidneys even when a large amount of low specific gravity urine is passed. In the early stages of chronic diffuse nephritis the urine may be very scanty. It may be highly colored and of high specific gravity, loaded with albumin and casts, and frequently contains traces or even tangible amounts of blood. In chronic diffuse (parenchymatous) nephritis, all varieties of casts may be found—hyaline, epithelial, granular, fatty and waxy.

Every type of headache, a feeling of fulness in the head, dizziness, ringing of the ears, irritability, restlessness, insomnia, loss of memory, stupidity or actual somnolence may occur in different stages and in the different types and conditions of chronic nephritis. Head symptoms may be the first indications of this disease, especially of the interstitial variety. The patient may awaken every morning with a headache or headaches may recur as acute attacks, accompanied by vomiting, a diminished amount of urine, and generally an increased blood pressure. Cerebral apoplexy may occur with any type of chronic nephritis, but it is most frequent in the interstitial variety.

Dyspnea is a very frequent symptom in chronic nephritis. It may be due to disturbance of the cerebral circulation, slight acidosis, hypertension or cardiac disability.

Gastric indigestion is usually a symptom of chronic nephritis. This condition is accompanied by anorexia with a special distaste for food in the morning. The patient complains of a bad taste in the mouth, especially noticeable in the morning, and of a bad tasting fluid which collects in the mouth during the night. The tongue is more or less coated, and often typically coated in irregular patches with small regions from which the coating is absent. This condition of the tongue is typical, though not pathognomonic, of advanced chronic nephritis. There is more or less distress after eating, with flatulence, pyrosis, nausea or vomiting, according to the ability of the kidneys to excrete and to the sufficiency of the circulation. Insufficient circulation with damming back of blood in the portal system, combined with liver congestion and impaired kidney function, causes gastro-intestinal indigestion which is hard to combat. Frequently vomiting resulting from this condition is one of Nature's methods of relieving the system of toxins, the kidneys being insufficient.

Irregular attacks of diarrhea, not excused by mistakes in diet or changes of temperature, often occur in chronic nephritis. These attacks usually occur when the amount of urine is scanty or the excretion of solids is diminished, and is another of Nature's methods of eliminating a certain amount of toxic products. This relief of vicarious excretion, however, is only a momentary help to the system. On the other hand, constipation is a menace in chronic nephritis, as congestion of the portal circulation, and consequently of the liver and stomach, may have serious results. However, while constipation should be relieved, profuse purging, except occasionally, is not advisable, particularly if the heart is weak.

Edema is usually first noted in the face, in the form of puffing under the eyes in the morning, which disappears after the patient has been up for a while; sometimes one or both hands are swollen in the morning, and there is perhaps some swelling of the hands or feet in the late afternoon and evening. Backache, perhaps due to edema of the tissues in the lumbar region, may be evident in the morning. In the later stages of the disease edema may be present in any part of the body, located either symmetrically or asymmetrically. It may persist all day, general anasarca may develop, and there may be an exudate into various cavities of the body. On the other hand, when the interstitial type of nephritis is predominant and the heart is sufficient, the disease may progress to uremia and death without evident edema.

The eyes may show numerous symptoms and signs in nephritis. There may be eye-strain headaches, momentary eye blurring, or things may "turn black before the eyes," as the patient describes the condition, such blurring lasting but a moment. There may be neuroretinitis or hemorrhages into the retina, that is, typical nephritic retinitis; and there may even be fatty degeneration of the retina. Albuminuric retinitis, which simply means retinitis associated with albuminuria, is a serious symptom and foreshadows an unfavorable development of the case.

The patient frequently experiences ringing in the ears or partial loss of hearing, probably most frequently due to arterial degenerations or to high blood pressure, and less frequently to central brain disturbances or to some nerve lesion in the internal ear.

If chronic nephritis develops rapidly, the heart may not be much hypertrophied, and cardiac weakness may be evidenced from the beginning. If chronic nephritis develops slowly — unless the heart is degenerated or has been impaired by some lesion — the left ventricle, especially, becomes greatly enlarged in its effort to overcome the increased resistance in the arterial system and the increased blood pressure. This is Nature's method of compensation to compel enough urine to pass through the diseased kidneys to effect sufficient elimination. It can readily be seen that the more slowly chronic nephritis develops, the more circulatory compensation will develop. In cardiac disease, especially in valvular lesions, with long continued sluggish circulation in the veins, particularly of the abdomen, congestion of the kidneys and a slowly developing diffuse nephritis occur. We then have a chronic inflammation of the kidneys superimposed on the heart lesion. This type of kidney disturbance will often greatly improve, even when apparently serious, with treatment aimed to improve the circulation.

A frequent type of chronic nephritis, with the interstitial type predominating, is that which is now recognized as cardiovascular-renal disease, or true Bright's disease. This slowly developing insidious nephritis is preceded by a long period of hypertension and cardiac hypertrophy, and is soon associated with more or less chronic myocarditis. The time to impede the progress of this disease is during the stage of previous hypertension. The manner of its final termination — whether by apoplexy, angina pectoris, cardiac dropsy, or uremia — depends on which of the three organs affected is most diseased. The danger to the heart and to the cerebral arteries through high blood pressure is well understood, and the necessity of generally lowering hypertension, whether or not the kidneys are much involved, is now generally recognized. A systolic pressure of over 150 mm. at any age should cause the patient to be carefully examined to determine whether or not an attempt to reduce this pressure would be wise. A systolic pressure of over 200 mm. has long been supposed to indicate kidney disease. This is not always true, but it is a pretty safe working rule to suspect the kidneys when the pressure is at such a height. The most significant indication of kidney insufficiency is a diastolic pressure of 120 mm., and if that pressure is over 110 mm. there must be serious doubt as to the condition of the kidneys. Any diastolic pressure of 110 or over should be reduced, if possible. If the diastolic pressure is below 100 mm., even if the systolic is 160, there may be no need of attempting to lower the pressure, but a systolic pressure above 170 requires such an attempt to be made. If a previous high pressure becomes suddenly diminished without treatment, myocardial weakness has developed and more or less dilatation will soon be in evidence. If treatment causes too great a drop in blood pressure, especially in the systolic pressure, the treatment is too strenuous, and the patient feels weak and incompetent.

A frequent condition in chronic nephritis is pain in one or more nerves, and an actual neuritis may be experienced. These pains probably are frequently caused by an imperfect elimination of irritants or toxins from the blood, and some particular nerve or nerves subjected to injury, muscle strain or occupation tire is the first nerve or set of nerves to be affected. Before any local treatment is of much avail, the kidneys and blood must be in the best possible condition. If the patient is uremic, neuralgic pains may be so intense as to require hypodermic injections of morphin.

There probably will not be much pain in the region of the kidneys in chronic nephritis, although there may be a backache resulting from some edema in the tissues of the back, which will be especially noticeable on arising in the morning. This kind of backache usually disappears soon after the patient arises. A pain in the kidney itself is probably due to a surgical condition, such as a calculus, tumor, or some distention of the pelvis of the kidney.

The stage in chronic nephritis at which anemia will occur depends on the amount of albumin lost, the oozing of blood from the kidney, and the disarrangement of digestion and assimilation. Besides the direct loss of nutriment from the blood and the direct loss of blood corpuscles, the toxins circulating in the blood probably interfere with the nutrition of the bone-marrow, and the red blood corpuscles are probably not produced in normal numbers, or at the normal rate. In the treatment of chronic Bright's disease, thoughtlessness is frequently displayed in not protecting the blood from deterioration. To relieve the irritation of metabolic substances in the kidneys, and other signs of toxemia, too much purging is resorted to, and a rigid diet (withdrawal of all meats) too long continued. If it is advisable not to allow a patient meat, iron must be given, and he should receive enough vegetable proteins to keep up his normal metabolism; otherwise he will become anemic from the treatment alone.

Terminal inflammations are liable to be associated with uremic conditions. By a terminal inflammation is meant some associated condition which would probably not cause death under ordinary conditions, but which, when associated with chronic nephritis, is dire and fatal. A simple infection like tonsillitis, grip, a slight infection of the bladder, slight prostatic disturbance, and acute infections, such as pneumonia, may rapidly increase the seriousness of chronic nephritis, and the patient may die of uremia or of a combination of the two conditions. Edema of the lungs in these associated conditions is of frequent occurrence. Pleural exudate, pericardial exudate or ascites may rapidly develop with the fever process. The amount of urine excreted may rapidly diminish and uremia develop, whereas if the acute condition had not occurred, the chronic nephritis may have continued slowly advancing for years.

Besides the cerebral symptoms already mentioned, there is occasionally great mental depression verging on melancholia, and frequently excessive irritability and a discouraged and pessimistic frame of mind. There may be loss of mental fixation, poor memory, slight momentary attacks of aphasia, lack of good judgment, and a tendency toward repetition. These patients are often easily fatigued by either physical or mental activity. These symptoms usually occur with the arteriosclerotic or senile kidney.

The relation of acidosis to dyspnea has received considerable study. Some investigators believe it is a prominent cause of dyspnea. Acidosis, however, is not the only cause of dyspnea in cardiorenal disease; nor is this disease necessarily accompanied by dyspnea. Furthermore, the amount of acidosis does not seem to be related to the nonprotein nitrogen retention.

(*To be continued*)

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SATURDAY, MARCH 24, 1917

THE TOXEMIA OF INTESTINAL OBSTRUCTION

The nature of the toxemia of intestinal obstruction has been a subject of interest and debate in the past few years. The clinician has the problem presented to him in practice repeatedly in most acute forms; the laboratory worker is perplexed by the apparently irreconcilable conflicts of experience and experiment. The concentration of the energies of a number of capable American investigators on the questions raised is certain to bring clarity into the matter before long; indeed, the accumulating evidence begins to show that more than one factor undoubtedly is responsible for the death from obstructed intestine. When the great mass of experimental data is once critically evaluated, a rational explanation is likely to be forthcoming.

In the past, individual schools have dwelt too exclusively on a single aspect of the problem. Three classic explanations were early devised for death in obstruction: first, infection; second, nervous reflexes; third, intoxication. The last explanation has been advanced in two forms, intoxication being explained as due to noxious substances of bacterial origin in the obstructed bowel, or as the result of an actual toxic secretion by the glandular structures of the alimentary tract.

Whipple,[1] who has been prominent in the study of this problem, has advanced the theory that the intoxication of intestinal obstruction and closed intestinal loops is due to the absorption from the intestinal mucosa of a definite proteose. He believes that the evidence for the intervention of bacteria in the situation is not at all conclusive, whereas there can be no question that the intestinal mucosa is essential to the production of the poison. Bacteria alone cannot form it.

A recent contribution[2] stimulates interest anew, and is likely to provoke further critical discussion of the question. In confirmation of the results of previous investigators, it has been found that dogs with an isolated closed loop of duodenum or jejunum die in from forty-eight to ninety-six hours, in most cases with perforation of the isolated loop and general peritonitis. But there is usually no excessive vomiting and hence no fatal dehydration of the body tissues. The dehydration factor has been made responsible by some of the investigators for the severe symptoms of intestinal obstruction. When the isolated and closed loop of the jejunum is sterile, complete occlusion of the blood vessels to the isolated loop has no effect on the dog; but if the loop is not sterile, the occlusion of the circulation in the loop causes death in from twenty-four to forty-eight hours with the usual symptoms of complete intestinal obstruction.

An abundant series of experimental observations has seemed to the Chicago physiologists to warrant the following conclusions:

> Closed intestinal loops in which the bacteria are first removed are not incompatible with life. Closed intestinal loops in which bacteria are present but in which tissue necrosis is prevented are not incompatible with life. Closed aseptic intestinal loops in which the blood supply is completely shut off are not incompatible with life. The normal secretions of the duodenum and jejunum are not toxic when allowed to drain into the abdomen cavity.

These results, we are reminded, do not support the theory of Draper of a normal toxic secretion of the duodenal mucosa, neutralized by the jejunal mucosa, or the perverted secretion theory of Whipple. In obstructed loops of bowel, occlusion of the circulation by distention from accumulated secretion may easily arise. Necrosis follows, and bacterial toxemia completes the story. Thus the Chicago investigators conclude that bacterial activity plus the necrotic tissue or the result of the action of bacteria on necrotic tissue are the important factors in the rapid death in simple closed intestinal loops.

THE PANCREAS AND MUSCLES IN SUGAR METABOLISM

In the current of the sciences, just as in the life of man, von Fürth[1] wrote not long ago, there are periods when every good intention and the most honest effort are insufficient to make any decisive and productive progress possible; evil days when ability is compelled to employ a good part of its innate energy to keep from sinking into dejected inefficiency. Then suddenly some new event changes the situation and brushes aside the impediments which have opposed the free development of the long accumulated latent energy. At once a period begins of heightened, feverish activity which endeavors to make up for all that was missed in the dull times of stagnation. The discovery of the relation of the pancreas to diabetes represents one of these unusual events. Since its announcement in 1889 there has been the liveliest discussion as well as a truly enormous amount of investigation directed to the interpretation of the unique relationship which makes carbohydrate metabolism in the body concerned with a gland formerly supposed to be involved solely in the secretion of a digestive juice.

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[1] Whipple, J. H.: Intestinal Obstruction a Proteose Intoxication, The Journal A. M. A., Aug. 7, 1915, p. 476.

[2] Dragstedt, L. R.; Moorhead, J. J., and Burcky, F. W.: The Nature of the Toxemia of Intestinal Obstruction, Proc. Soc. Exper. Biol. and Med., 1916, **14**, 17.

[1] Von Fürth, O.: The Problems of Physiological and Pathological Chemistry of Metabolism, Philadelphia, 1916, p. 247.

Extirpation experiments on animals established the essential facts; histologic studies, particularly in relation to the islands of Langerhans, furnished important contributory evidence; blood transfusion, parabiosis and other physiologic technics have been devised to unravel the underlying factors; the biochemistry of hormones and enzymes and the methods of immunology have furnished analogies for tests in vivo and in vitro — and yet we are still compelled to ask what part the pancreas plays in the utilization of sugar. Does the pancreas furnish an internal secretion; and, if so, how does the latter function? Does it supply an activator to facilitate the disruption or oxidation of the sugar molecule? Or is it merely concerned with a proper mobilization of carbohydrate, working perhaps in harmony with other secretory agencies in the body?

To ask these questions is a confession of the ignorance which we must admit of one of the most fundamental problems of physiology and pathology. When older methods of inquiry are exhausted without furnishing a decisive reply, and when conventional points of view fail to lead to new advantages, every novel experiment or mode of approach is heartily welcomed. As the muscles with their heightened local demand for energy doubtless are the seat of utilization of sugar, it has frequently been suggested that the pancreas furnishes something which facilitates the destruction of the carbohydrate in muscle. The isolated surviving heart has been used by a number of investigators as an appropriate muscular organ for such studies; but there are great discrepancies between the findings of different workers with respect to such questions as the comparative sugar utilization of the heart of the normal and the diabetic subject, or the effect of pancreatic extracts on such muscular metabolism.

The reason for these disagreements, often due to a faulty experimental technic, need not be related here. The latest attempt[2] to solve the difficulties has benefited by the errors and lessons of the past in the attempt to gain some evidence as to the possible interdependence of pancreas and muscles in sugar metabolism. The new experiments conducted in the Hunterian Laboratory of Experimental Pathology at the Johns Hopkins University indicate that the pancreas, when perfused aseptically with Locke's solution containing physiologic concentrations of glucose, does not alter the reducing properties of the solution. This means that the sugar itself is not changed in this organ. The pancreas, however, seems to supply to the perfusing fluid circulating through its arteries something which in some way brings about a utilization of sugar by a typical muscle, such as the heart, to an extent which does not occur with the cardiac musculature unaided. This was ascertained in trials in which the isolated heart and pancreas were simultaneously perfused with the same fluid.

This newly discovered but unisolated and unidentified pancreatic substance possesses some of the characteristics of an enzyme. It is inactivated by heat; it is unstable; it acts in small amounts; it accelerates a reaction which otherwise proceeds at a slower speed. These are not the distinctive properties of a stable hormone. Sugar actually disappears, presumably by oxidation or hydrolysis. The question naturally arises as to whether the hypothetic substance is identical with the long postulated internal secretion of the pancreas so essential to carbohydrate metabolism. Clark says, with appropriate reserve, that though the outcome of his work involves observations on the heart and pancreas isolated from the numerous interrelating factors usually occurring in the body, the evidence suggests at least that the substance or substances obtained experimentally by perfusing the pancreas may be concerned in the normal activity of that organ on sugar metabolism.

THE PRINTED PAGE AND TIRED EYES

Of the varied factors which enter into life and contribute to the fatigue which sets the physiologic limit to continued activity, some seem to be sufficiently emphasized while others are almost always overlooked or underappreciated. The bodily weariness which attends the vigorous use of the skeletal muscles in work or in play is generally so insistent for recognition that we appreciate its significance and promptly give heed to it. In addition to these muscles, however, we are constantly depending on our organs of sense to furnish the data which determine in large measure the entire course of daily life not only in its physical but also in its mental aspects. Without sight, touch and sound — not to mention the lesser senses — most of what is valued in human experience and performance is lost. Nevertheless little attention is usually paid to the possibility of fatigue of the sense organs and the functional structures associated with them.

Perhaps this statement as to the current indifference to possible overwork of our organs of sense should be modified in reference to the eye, for it is not unusual to hear of the existence of eye-strain. It has been well stated that the strain of modern life is sometimes special rather than general, so that strain comes on some organ or muscle. Indeed, industry has become so specialized that the worker may strain one part of the body while other parts are in need of exercise. No one can bring the charge of lethargy to the eye, even in the most phlegmatic person. Whatever may be the condition of the rest of the body during waking hours, the organ of vision is almost continuously "on the job."

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[2] Clark, A. H.: The Interrelation of the Surviving Heart and Pancreas of the Dog in Sugar Metabolism, Jour. Exper. Med., 1916, 24, 621.

A little physiologic reflection will make it evident that the proper use of the eyes depends on a diversity of conditions in part personal and in part environmental. The need of suitable illumination is abundantly recognized; but the adequacy of the light factor is governed in no small measure by the situation. The light of the stars on a clear evening may easily suffice to enable us to avoid large obstacles in our path. In moonlight the problem of orientation becomes much easier. A driver or a farm laborer can comfortably continue his usual activities under conditions of waning light in which a watch maker, a type setter or a copyist has been forced to abandon his assigned task owing to the inadequacy of the illumination. In other words, the use of the eyes is limited to the available light, the requisite intensity of which in turn depends on the size of the objects which engage the attention of the person, the color of these objects, and the speed with which they must be envisaged. In view of the obvious fact that the use of the eyes is fundamental in daily life, it is surprising that the hygiene of the organs of vision, particularly the determination of the most appropriate conditions for their healthy functioning, receives so little popular consideration.

Let us examine the immediate problem somewhat more closely. Both surplus and deficiency of light may lead to harm for the eye; but the dangers from the lack of adequate illumination are apt to be the more frequent. The work of seeing is rendered more difficult, so that a strain ensues. Perfection of vision is promptly impaired by diminished illumination. Under these conditions it becomes necessary to approach nearer to the object in order to see it distinctly. The work of ocular accommodation is greatly increased. The muscles of accommodation are exercised unduly. In young eyes myopia becomes one of the untoward consequences. It is unnecessary to carry the analysis farther to indicate the hygienic import of the question of illumination. A recent book, in discussing the subject, says:

> Eye-strain is to be prevented by scientifically adapted spectacles, by care to secure the right kind of illumination, and in some cases by systematically resting the eyes. . . One should be especially careful not to read in a waning light or, on the other hand, to read in the glare of the sun.[1]

Reading undoubtedly furnishes one of the major occupations for the eyes; yet, as will be seen from the foregoing typical quotation, one will search almost in vain for any consideration of the size of the object concerned in this employment of eyesight. Strangely it has remained for others than the students of hygiene to call attention to the unfortunate make-up of much modern printed matter from the standpoint of acceptability to the eye. It requires little serious reflection to appreciate the fundamental importance, for eye health, of the legibility of type. The librarian of the St. Louis Public Library, Dr. Arthur E. Bostwick,[2] is the latest to bring the seriousness of the situation to public attention. Tired eyes, he says, belong for the most part to those who have worked them hardest; that is, to readers who have entered on middle age or have already passed through it. At this age we become conscious that the eye is a delicate instrument — a fact which, however familiar to us in theory, has previously been regarded with aloofness. Now it comes home to us. The length of a sitting, the quality, quantity and incidence of the light, and, above all, the arrangement of the printed page become matters of vital importance to us. A book with small print, or letters illegibly grouped or of unrecognizable shapes becomes as impossible to us as if it were printed in Chinese.

Legibility is not merely a matter of the size of type. Form, heaviness of face, the width of the margin around the letter, position in the letter group, and the shape and size of adjoining letters also require consideration. For "tired eyes" the size factor would appear of overwhelming importance except where the other elements make the page fantastically illegible. Such, all too few, studies as have been made on this subject, particularly in relation to schoolchildren, for whom alone the need of large type is recognized in relation to the undeveloped eye, indicate, according to Bostwick, that 10-point type is the smallest size fit for any one, however good his sight.[3]

The recommended sizes of type run from 30-point, for 7 year old children, to 10-point or 11-point for persons more than 12 years old. Bostwick remarks that this would bar much of our existing reading matter. In the gathering for "tired eyes" of a decidedly unique collection of books in large type for the St. Louis Library, 14-point was decided on as the standard. Out of nearly 400,000 volumes it was found by diligent search that only 150 would answer this description. The final result of the St. Louis effort has been an accumulation of a few more than 400 volumes, despite the fact that 1,000 publishers in this country are annually issuing 11,000 volumes, to say nothing of the British and continental output.

In view of the omnivorous reading habits of the American public, one other factor deserves notice here. The possible influence of short lines on legibility deserves consideration in the propaganda for sane typography. Quoting Bostwick, we may recognize that the eye must jump from the end of each line back to the beginning of the next, and this jump is shorter and less fatiguing with the shorter line, though it must be performed oftener. The adaptation of the eye to a standard length of line is surely not without moment. New lengths, as one finds them in special magazines or other publications, are not so easily read. Bostwick ventures the opinion that the reason for our continued toleration of the small type used in the daily newspapers is that their columns are narrow, and still more, that these are everywhere of practically uniform width. If books, magazines and reading are to remain as our inheritance, what better conservation movement can we initiate than one to ascertain and introduce rational standards for the printed page?

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[1] Fisher, Irving, and Fisk, E. L.: How to Live, New York, 1915, p. 93.

[2] Bostwick, A. E.: Books for Tired Eyes, Yale Rev., January, 1917, p. 358.

[3] A "point" is the current standard unit of measure for the size of type bodies. It represents about 0.013 inch. The editorials in The Journal are printed in 10-point type with 2-point leads between the lines; this footnote is in 6-point type.

THE HEMOGLOBIN CONTENT OF THE BLOOD IN HEALTH

There is perhaps no fluid or tissue of the living body with which the clinician is more seriously concerned than the blood. On the quantity of certain of the blood constituents found in individual cases some of the most important deductions with respect to diagnosis and prognosis are often based. It will doubtless, therefore, come as a surprise to many who are almost daily concerned with questions involving the concentration of one or the other of the blood constituents, to learn that few adequate analyses are at present available. Thus three of the most recent and representative textbooks on physiology and physiologic chemistry still quote the old data of C. Schmidt published in 1850 in elucidation of the quantitative composition of human blood.

In pointing to the paucity of dependable knowledge, particularly with respect to the content of hemoglobin in human blood, Williamson[1] rightly complains that what facts are possessed on the subject date mostly from the work of Leichtenstern.[2] He says that to the thoughtful clinician it has long been a matter of keen regret that the examination of the blood which is perhaps most frequently made in routine practice, namely, the estimation of the percentage of hemoglobin, is the one from which we generally derive the most unsatisfactory results. Aside from the glaring defects in some of the instruments in common use, this has been due to the fact that we have had few accurate data as to the variations in the amount of hemoglobin at different ages. It is currently stated, in contrasting the two sexes, that the amount of blood corpuscles is somewhat smaller in woman's blood; and the average amount of hemoglobin is given as 133 per thousand, in contrast with 146 per thousand for man's blood. Several investigators have pointed out that fetal and infant blood is richer in erythrocytes and hemoglobin than is the blood of the mother. The highest content of the blood pigment has been described as occurring immediately, or soon after birth. In man the figure for hemoglobin has been said to reach 210 per thousand at this period. The older statistics indicated that it gradually sinks to about 110 per thousand between the fourth and eighth years, with a second maximum of from 137 to 150 per thousand at the twentieth year. After the forty-fifth year, according to Leichtenstern and to Otto, the content slowly decreases. One also finds long cherished and reiterated indefinite statements regarding a gradual increase in the amount of hemoglobin in the blood of man when his diet is "enriched," and the blood of lean persons is reputed to be somewhat richer in hemoglobin than blood of corpulent ones of the same age.

In view of so much that is inadequate and uncertain, based as it is on a limited number of observations made with the older technic and less rigorous methods of analysis, the contributions of Williamson are to be welcomed. His new hemoglobin estimations have been made by the exceptionally accurate method of spectrophotometric analysis. Covering as it does the blood of more than 900 healthy persons of both sexes, at ages ranging from 1 day to over 76 years, this wealth of new statistics overshadows previous compilations.

A detailed examination of these elaborate analyses would be out of place here. Certain generalizations derived from them deserve emphasis, however. The amount of hemoglobin in the blood of normal persons varies greatly at different ages, and follows a well defined curve. These age variations are so great that, in determining whether a given blood contains more or less hemoglobin than normal, it is imperative to consider the age. These variations are greatest from birth to the sixteenth year. Between the ages of 16 and 60 there is a marked difference between the two sexes, this difference growing less after the sixtieth year. In view of these facts, Williamson says it is evident that hemoglobinometers should be standardized in absolute terms, most conveniently in grams of hemoglobin per hundred c.c. of blood. Because of the superior accuracy attained, it is highly desirable that the standardization of the hemoglobinometers should be spectrophotometrically controlled. Whether a given blood contains a greater or less amount of hemoglobin than the normal can be determined only by a comparison of the absolute value obtained by a hemoglobinometer thus standardized, with the normal value for that age and sex as now available from Williamson's statistics.

Potash.—A company making Portland cement at Durham, Ont., according to *Commerce Reports,* March 9, is now turning out as a by-product from the feldspar used from twelve to sixteen tons of potash daily. Both muriates and caustic products are produced, the former being said to be an almost pure product. Even the dust and gases of the plant are trapped, in which there is said to be 5 per cent. of potash, which is used for fertilizer. The chemist of the plant says that every cement plant in Canada should, within the next five years, be producing potash as a by-product. Immense deposits of feldspar are found in Canada, which contains at least 10 per cent. of potash, of which 86 per cent. in a pure form is collected. The cost of manufacture is said to be less than the freight charge per ton on that heretofore coming from Germany.

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[1] Williamson, C. S.: Influence of Age and Sex on Hemoglobin, Arch. Int. Med., October, 1916, p. 505.

[2] Leichtenstern: Untersuchungen über den Haemoglobingehalt des Blutes in gesunden und kranken Zuständen, 1878.

Current Comment

CONSERVE THE MUCOUS MEMBRANES

The mechanical efficiency of the sound skin as a protective agent against the invasion of the body by microorganisms is obvious. Little credit for a similar protection is usually accorded to the mucous membranes. It is true that the latter do not furnish the same degree of resistance or immunity which the external coverings of skin afford. Nevertheless it ought to be realized that many organisms can be implanted with impunity on mucous membranes, especially on those portions which are engaged in the production of mucus or which are provided with a ciliated epithelium as a safeguard. The underestimated usefulness of the mucus secreted by the membranes of the nasal cavities is more easily appreciated when the circumstances to which they are exposed are related. It has been estimated that under normal conditions of life in large cities, from 15,000 to 20,000 bacteria enter the nose in an hour's quiet respiration. Yet under normal anatomic and physiologic conditions few of these organisms ever reach the nasopharynx in a viable condition.[1] To some extent at least the mucus secreted is responsible for this. It is reputed to have an inhibitory if not an actual bactericidal effect on germs;[2] and a liter of mucus per day has been reported as representing the amount of available secretion.[3] The highly specialized epithelium of the trachea and nose is further effective as a protection against unorganized dust. Perhaps if this were more universally recognized and taught, ciliated mucus-secreting membranes would be treated in a less irritating manner. How many physicians realize that when the ciliated cells are destroyed by caustics, operative procedures or disease, they are frequently replaced by squamous cells, and the efficiency of the nose as a protective organ is correspondingly impaired?

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[1] Crowe, S. J.; Watkins, S. S., and Rothholz, Alma S.: Relation of Tonsillar and Nasopharyngeal Infections to General Systemic Disorders, Bull. Johns Hopkins Hosp., 1917, **28**, 1.

[2] Thompson and Hewett: The Fate of Micro-Organisms in the Inspired Air, Lancet, London, 1896, **1**, 86.

[3] Bloch, E.: Physiological Investigations of Nasal Respiration, Arch. Otol., 1888, **17**, 279; 1889, **18**, 1.

WORKMEN'S COMPENSATION LAWS UPHELD

Any question as to the right of the states to enact workmen's compensation laws has been permanently settled by the recent decision of the United States Supreme Court. Not only has the right and power of the state to enact such legislation been affirmed, but the three leading types of workmen's compensation legislation have also been declared legal. In Iowa, the law is elective, both employer and employee being at liberty to elect whether to work under the statute or under the common law principles regulating relations between employer and employee. But inducements are offered to the employer to come under the law by specifically removing the three common law defenses, namely, the fellow servant doctrine, the voluntary assumption of risk on the part of the employee, and contributory negligence on the part of the injured person; while it also offers inducements to the employee in the form of a fixed schedule of compensations for injuries in place of the uncertainty of a jury verdict or a court finding. The New York law is essentially compulsory, but allows the employer to carry his own risk or to insure in either a private insurance company or a state fund; while the Washington law is not only compulsory in its application, but much broader in its provisions, including domestic and farm laborers as well as industrial employees, and requiring all employers to insure in the state fund without admitting private companies in any way. All three of these laws were before the court for review, and they were all sustained so far as constitutionality is concerned. This decision settles the right of the state to enact workmen's compensation laws in any of the three forms which were before the court. The interest of physicians, therefore, will hereafter center in the securing of equitable terms and conditions for medical services.

CONTROL OF INTESTINAL BACTERIA

The use of various kinds of buttermilk and even of tablets containing lactic acid bacilli to prevent excessive intestinal putrefaction is more or less common. The followers of Metchnikoff maintain that by the use of such cultures it is possible to change permanently the intestinal bacterial flora in such a way as to reduce or eliminate the so-called putrefactive types of organisms and to increase the aciduric or lactic acid type, resulting in a decreased production of putrefactive products, such as indol, skatol and oxyacids, with a corresponding betterment of the conditions arising from the action of these substances. Hull and Rettger[1] have recently completed a comprehensive study of the factors involved in the change of the types of intestinal bacteria. They find that the direct feeding of bacterial cultures has almost no influence on the intestinal flora, even when preceded by immunization. The results of the latter procedure are not regarded as conclusive. The significant factor appears to be food. Inhibition of intestinal putrefaction was shown a number of years ago to be obtained by the substitution of carbohydrates for proteins in the diet, and a number of investigators have noted the partial disappearance of organisms of the type of *B. coli* and *B. welchii*, together with the increase of those of the lactic acid type in connection with the continued inclusion in the diet of a large amount of milk; but in some cases the results were attributed to other substances, for example, glucose, introduced with the milk. Milk is now shown to contain the important constituent, but with this food alone, while "a transformation of flora takes place," a "complete simplification" is not attained. Experiments with lactose feeding, however, show striking results leading inevitably to the conclusion that this sugar is essential for a permanent change in the intestinal flora, with the establishment of aciduric or lactic acid organisms, such as *B. acidophilus* or *B. bifidus*. Other carbohydrates have little effect. Milk, therefore, apparently acts through its lactose content. The aciduric type of bacteria finds its most favorable environment when lactose is present, as such, in the intestine. Lactic acid is not a factor. The beneficent action of milk cultures also is dependent on the lactose and not on the bacteria, for organisms of the type of *B. acidophilus* increase in the intestine rather than the bacteria taken with the milk. According to these writers, then, the control of the intestinal bacterial flora lies with the food — a combination of milk and lactose forming "the most practical and effective diet, at least for man."

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[1] Hull, T. G., and Rettger, Leo: The Influence of Milk and Carbohydrate Feeding on the Character of the Intestinal Flora, IV, Diet Versus Bacterial Implantation, Jour. Bacteriol., 1917, **2**, 47.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Addition to Medical School.—Work on the operating amphitheater for the School of Medicine of the University of Alabama, Mobile, began March 1. The money required for the building, $10,000, has been appropriated by the city of Mobile.

State Society Meeting.—The annual meeting of the Medical Association of the State of Alabama will be held in Montgomery, April 17 to 20. Dr. William J. Mayo, Rochester, Minn., is on the program for an address on "The Importance of Septic Infection in the Three Great Plagues."

Officers Installed.—At the annual meeting of the Medical Society of Mobile County the following officers were installed: president, Dr. James J. Peterson; vice president, Dr. Lee W. Roe; secretary, Dr. Willis W. Scales (reelected); treasurer and county physician, Dr. Eugene Thames, and county health officer, Dr. Paul J. M. Acker (reelected), all of Mobile.

Truce in Medical Society.—The Jefferson County Medical Society, at its meeting, February 5, adopted resolutions affirming its confidence in the committee of health of the society, and agreeing that there should be no further discussion in the society about existing public health matters until the supreme court has handed down its decision on the question at issue.

Personal.—Dr. John M. Lowrey has been appointed health officer of Birmingham.——Dr. George A. Hogan, Birmingham, has been appointed coroner of Jefferson County, to succeed Dr. Clarence C. Wiley, Birmingham, resigned.——Under a ruling of Judge Sharp, February 24, Dr. Cecil Gaston, who had been appointed by the city commissioner as health officer, was ousted, the ruling being that the health officer must be appointed by the county board of health.——Dr. Samuel W. Welch, Talladega, has succeeded Dr. William H. Sanders, Montgomery, as state health officer.

CALIFORNIA

Physicians' Building Remodeled.—Plans are being made for remodeling the Physicians' Building, Sacramento, at a cost of from $75,000 to $100,000.

Personal.—Dr. Rose C. McFall, Los Angeles, formerly of Chicago, was seriously injured by being run down by an automobile, February 24.

"Healer" Dies.—August Schroeder, self-styled "divine healer," whose trial for fraudulent use of the mails was interrupted by his illness, died, February 28, at the Los Angeles County Hospital, from pneumonia.

ILLINOIS

Appropriations for Medical School.—A bill introduced into the house by Representative William H. H. Miller, Champaign, and in the senate by Hon. Henry N. Dunlap, proposes expenditures for the medical department of the University of Illinois amounting to $2,000,000 during the next decade.

Typhoid Reported.—Dr. Edward S. Godfrey of the state board of health is said to have discovered that North Chicago sewage is emptied into Lake Michigan within 2,400 feet of the intake pipe supplying water to the town, in which twenty cases of typhoid fever were reported earlier in the week.——March 9, thirteen cases of typhoid fever were reported in Waukegan.

Clinic on Infantile Paralysis.—March 24, Dr. Clarence W. East will give a clinic on infantile paralysis in Kankakee. In the morning and afternoon he will examine patients convalescing from the disease, and in the evening he will give an illustrated talk in the assembly hall of the high school on "Infantile Paralysis." The work is being undertaken with the cooperation of the Kankakee County Medical Society.

Personal.—Dr. C. St. Clair Drake, Springfield, secretary of the state board of health, was one of the speakers at the ninth annual meeting of the American Water Works Association at Urbana, March 13. March 14, Dr. Drake spoke before the Chicago Women's Club on "Midwifery and Infant Blindness."——Dr. Albert R. DeCosta, Bloomington, has been appointed physician to McLane County.——Dr. Eugene Waul, Jr., Edwardsville, was slightly injured when the gasoline tank of his automobile exploded, March 5.

Chicago

Infant Welfare.—The Infant Welfare Society is endeavoring to raise $100,000 for fifty new infant welfare stations. Drs. Sadie Bay Adair and Walter H. Hoffman have charge of the movement.

Bond Issue for Contagious Disease Hospital.—An active campaign is being made to obtain a bond issue aggregating $2,200,000 for health purposes, of which $1,000,000 is for incinerators and other equipment for the disposal of wastes, and $750,000 for the erection of two additional wings at the Contagious Disease Hospital.

Army Lectures to Be Given.—Major William N. Bispham, M. C., U. S. Army, delivered the first lecture in a course on military hygiene and sanitation at Northwestern University Medical School, March 19, at Rush Medical College, March 23, and at Loyola University, March 24. Two lectures each week are to be delivered at each of the medical schools of the city.

Eight-Hour Day for Nurses Impracticable.—The council of the Chicago Medical Society on March 13 adopted a resolution stating that a shift for nurses to eight hours "would be to disrupt the efficiency of their work," and stating furthermore that nursing should not be governed by union labor regulations but "is a special business and cannot be dictated to by laws other than those giving them the right to act as nurses."

Blame for Typhoid Fixed.—The commission appointed by the city council health committee to ascertain whether the typhoid fever epidemic following the storm of January, 1916, was due to inefficiency of the pumping station of the sanitary district has reported that both the city government and the sanitary district are at fault, on account of inadequate equipment. Immediate repairs to the pumping station of the sanitary district, the overhauling of the Thirty-Ninth Street plant and an auxiliary gravity sewerage system are recommended. The commission further urges that passenger steamers should not be permitted to dump refuse in the lake.

KANSAS

Personal.—Drs. George R. Dean, McPherson, and Henry A. Dykes, Lebanon, have been appointed members of the State Board of Registration and Examination.

LOUISIANA

Physicians Organized.—At a meeting held at Lake Charles, February 12, the Seventh District Medical Association was organized. Dr. Thomas H. Watkins was elected president and Dr. George G. Kreeger, secretary-treasurer, both of Lake Charles.

Health Survey of New Orleans.—To determine the number of cases of illness in the city within a given time and the nature of the care of those who are ill, the Metropolitan Life Insurance Company has offered to make a health survey of New Orleans, at the expense of the company, and with the cooperation of the city board of health. The survey began March 16, when the subject of malaria was taken up.

MARYLAND

Building for Doctors.—A medical building will be erected in the near future at Saratoga and Charles Streets. It will be ten stories high, the upper floors exclusively for physicians and dentists, with special equipment and fittings for physicians' offices.

Meetings.—A joint meeting of the Baltimore City Medical Society with the Medical Society of the District of Columbia was held in Osler Hall, Baltimore, March 16, when the subject of medical preparedness was discussed. The principal speakers were: Surg.-Gen. William C. Gorgas, U. S. Army, whose subject was "Modern Methods of Army Sanitation"; Col. Louis A. LaGarde, M. C., U. S. Army (retired), who spoke on "The Surgeon and Medico-Military Preparedness," and Major Robert E. Noble, M. C., U. S. Army, the title of whose paper was "The Medical Needs of the Service."

Personal.—Major J. Harry Ullrich, commander of Field Hospital No. 1, N. G. Md., has been named as president of a board of medical examiners for the Maryland Naval Militia by Secretary Daniels. This board will be a permanent organiation, and is a part of the preparedness program which is being worked out by the federal government. The other members of the board are Passed Assistant Surgeon Flynn and Acting Assistant Surgeon William G. Townsend, U. S. Navy.——Pending the action of the board of managers, Dr. J. J. Roberts has been made acting general superintendent of the Maryland General Hospital, in place of Dr. Elmer Newcomer, deceased.

MASSACHUSETTS

County Sanatorium.—The county commissioners of Plymouth County have decided to establish a tuberculosis hospital for Plymouth County at South Hanson where a site of 33 acres of land is to be purchased. The hospital will cost $75,000.

Amherst Alumni Donate Ambulance.—The alumni of Amherst College have contributed the necessary funds to purchase an ambulance, which has already started for France and will be used in the French service. It is expected that an Amherst graduate will be secured for driver of the ambulance.

Personal.—Dr. Philip W. Place of the Boston City Hospital has been appointed resident physician at the Contagious Group of the Cincinnati General Hospital.——Dr. Howard W. Beal, Worcester, who was on duty for several months in the early part of the European War at the American Women's Hospital, at Paignton, North Devon, England, has declined an offer to take charge of the American Ambulance Hospital at Juilly, France.

Cutter Lectures.—Dr. Martin H. Fischer, professor of physiology in the University of Cincinnati, and Dr. Ludvig Hektoen, head of the department of pathology of the University of Chicago, have been elected Cutter lecturers on medicine and hygiene at Harvard University for the academic year of 1916-1917. Dr. Fischer lectured on "The General Physiology and Pathology of Water Absorption by Protoplasm," March 20, and on "Fats and Fatty Degenerations," March 21.

Harvard Medical Honors.—The annual meeting for the awarding of medical honors at Harvard Medical School was held in the Administration Building, February 26. President Lowell presided. The principal address was delivered by Prof. William S. Thayer of Johns Hopkins Medical School and Dean Bradford presented diplomas to the John Harvard Fellows and other scholars of the first group, and elections to the Alpha Omega Alpha Society were announced.

The Study of Ptomain Poisoning.—The National Canners' Association, March 12, offered $20,000 annually for three years to be used in the investigation of food poisoning. This appropriation has been accepted by Harvard University and researches into the subject of ptomain poisoning with a special reference to canned goods will be made by the Harvard Medical School under the direction of Dr. Milton J. Rosenau, Boston.

Surgical Unit Sails for Europe.—A Harvard surgical unit headed by Dr. Hugh Cabot sailed for Europe on the *Andenia*, February 21, for a British base hospital in France. The medical personnel includes: Drs. Thomas J. Blackshear, Jr., Dublin, Ga.; E. Stanley Bridges, St. John, N. B.; Eldon D. Busby, Ottawa, Ont.; P. Pineo Chase, Hyannis, Mass.; Ernest G. Crabtree, Brookline, Mass.; Thomas D. Cunningham, Brookline, Mass.; Ezra S. Fish, New York; Francis B. Grinnell, Charles River Village, Mass.; Jefferson W. Hawthorne, North Cambridge, Mass.; Don J. Knowlton, Greenwich, Conn.; Fabyan Packard, Allston, Mass.; Albert O. Raymond, Brockton, Mass.; George C. Shattuck, Boston; Oliver H. Stansfield, Worcester, Mass.; William P. Sweeny, New York; Leonard M. Van Stone, Brookline, Mass.; George Watt, East Providence, R. I., and the Worcester City Hospital; Edward S. Welles, Boston; Dr. David E. Wheeler, New York; Harry W. Woodward, Boston, and John S. Young, St. Louis.

NEBRASKA

The Vaccination Question.—The Douglas County Medical Society, March 13, unanimously adopted a resolution upholding the vaccination policy of Health Commissioner Ralph W. Connell.

Hospital Wing to Be Built.—A contract has been awarded for the building of the northeast wing of the Methodist Hospital, Omaha, which will be four stories in height and 40 by 90 feet.

Board of Secretaries to Be Done Away With.—A bill introduced by Senator Fox, reorganizing the state board of health on a broader basis, and doing away with the present board of secretaries except in a strictly advisory capacity, passed the senate, March 6, by unanimous vote.

NEW YORK

Health Clinic Opened.—A health clinic conducted by Miss Pearl N. Hyer, public health nurse of Little Falls, was opened in that city, March 8. Dr. Augustus P. Santry was in charge of the clinic.

Personal.—Dr. John L. Heffron, dean of the Syracuse College of Medicine, who went to Florida on account of his health several weeks ago, is reported to be greatly improved and expects to return to Syracuse next month.

Men Available for Military Service.—Acting Commissioner of Health Dr. Linsly R. Williams, New York, in response to inquiry for Adjutant-General Stotesbury, states that there are about 570,000 men fit for active military service in New York, and about an equal number fit for home defense service. These figures are based on the estimated population of New York for 1917 as being 10,490,680.

Oppose State Institutions in Watershed.—The Merchants' Association has protested before the Senate Finance Committee against retaining the Mohansic State Hospital and the Training School for Boys within the Croton watershed. The Wagner-Bloch bill provides that no state institution shall hereafter be located within the watershed and that the hospital and training school projects be abandoned.——A bill creating an emergency police force to guard the Croton and Ashokan watersheds was signed by Governor Whitman, March 16. The new force will relieve the National Guard contingents at present patrolling the water supply property of New York in counties not within the city.

Health Insurance Commission to Be Appointed.—A bill introduced into the legislature, March 12, provides for a commission to investigate health insurance, the inquiry to cover sickness and accidents of employees and their families not reached by workmen's compensation; the causes; the loss to individuals and to the public; the adequacy of present treatment and of benefits provided through commercial insurance, fraternal orders, etc.; occupational disease, and existing methods of prevention. The commission is to consist of two senators appointed by the president of the senate, three assemblymen appointed by the speaker, and four other persons not legislators appointed by the governor, one of the number to be a representative of wage earners, one of employers, one a physician, one a lawyer, one an economist, and one a woman.

New York City

Class Reunion.—The class of 1892 of the Medical Department of the University of the City of New York will hold its twenty-fifth reunion and banquet at the Hotel McAlpin on the evening of April 11. The committee in charge includes Drs. John F. Hagerty, Newark, N. J.; J. Emmet Tower, Manhattan, and Robert E. Coughlin, Brooklyn.

Unwholesome Food Condemned and Destroyed.—During the week ending March 10, inspectors of the terminal squad of the Bureau of Food and Drugs condemned 314,258 pounds of assorted foodstuffs, consisting of poultry and large quantities of fruits and vegetables. Members of the warehouse squad of inspectors during the same week condemned 18,318 pounds of foodstuffs. Inspectors of the factory squad condemned 14,400 pounds of cocoa damaged by fire.

American Posture League.—March 10 this organization held a meeting at the home of Mrs. James Speyer for the purpose of presenting constructive work in public, personal, school and industrial hygiene which has been developed by the American Posture League. The audience consisted of an invited company, including officials of local medical societies, representatives of state and city boards of health and education, and others especially interested in welfare and efficiency work. Among the speakers were Drs. Henry Ling Taylor, Linnaeus E. LaFetra, Eliza M. Mosher, James Porter Fiske and Stuart H. Rowe, Ph.D.

New Hospital Buildings.—Beth Israel Hospital has recently acquired title to property at 17 Livingston Place, next to a frontage of 150 feet, which it already owned. The trustees announce that a new hospital will be erected on this site at a cost of $1,000,000.——The Bronx Hospital on Crotona Park has filed plans with the building department for a new three-story building which will be begun immediately.——St. Vincent's Hospital has secured control of the entire block on the east side of Seventh Avenue, between Eleventh and Twelfth streets. The main hospital was built around four small houses on Seventh Avenue, all of which have now been acquired.

Free Course in Contagious Diseases.—The department of health announces that its courses in contagious diseases given during the past two years have been so successful that a similar series of lessons will be given this spring. Each course consists of eight lessons, six on clinical bedside instruction and two on laboratory work. Only practicing physicians will be admitted. No fees will be charged, but physicians entering the course are expected to attend regularly. The courses will be given on Tuesdays, Wednesdays, Thursdays and Fridays, at 2 p. m., at the Willard Parker Hospital. The first lecture will be given on March 27 by Dr. Henry W. Berg. Physicians desiring to attend the course may register with the Bureau of Public Health Education, Department of Health, 139 Centre Street.

NORTH CAROLINA

Personal.—Dr. Daniel E. Sevier, Asheville, has been reelected health officer for Buncombe County.——Dr. James A. Speight, Nashville, has succeeded Dr. James C. Braswell as full time health officer of Nash County.

Hospital for Negroes.—A 4-acre lot has been provided and plans are being made for the erection of a greater Lincoln Hospital at Durham for the exclusive use of negroes. Dr. Aaron M. Moore, a well known colored physician of Durham, has associated with him a number of leading citizens of both races, which assures the success of the plan.

PENNSYLVANIA

Imprisonment for Abusing Hospital Staff.—William Kelley is said to have been sentenced to thirty days' imprisonment in the county jail for abusing a physician and an attendant, at St. Vincent's Hospital, Erie, where he was a charity patient.

Enlarge Sanatorium Accommodations.—The plan of Dr. Samuel G. Dixon, state health commissioner, of building twenty cottages on each side of the present sanatorium building at Hamburg, at a cost of $28,000, was tentatively approved by the House of Appropriations Committee, March 6. This will increase the capacity of the institution to 160.

Postgraduate Work.—The committee on medical education of the state society and the Board of Medical Licensure have advised hospitals to become centers for medical postgraduate work. The Abington Hospital, Old York Road, has begun a monthly series of clinics for the benefit of the Bucks County Medical Society and other local physicians.

Meningitis in Fayette City.—The discovery of six cases of cerebrospinal meningitis in Fayette City between March 2 and 7 has resulted in the taking of precautionary measures by the board of health to prevent the spread of the epidemic. The schools were dismissed for an indefinite period on March 7, and the school buildings have been fumigated. A clean-up campaign has been inaugurated in the borough.

Philadelphia

War Medical Corps Unit.—Twenty-two university medical school graduates have enlisted in a University of Pennsylvania Medical Corps unit under the leadership of Dr. Edward Martin. Fifty nurses, numerous orderlies, attendants, Roentgen-ray men, dietitians and laboratory experts have also added their names to the list. Sufficient equipment is on hand to enable the hospital corps to take the field immediately.

Society Prepares to Combat Poliomyelitis.—In view of a recurrence of infantile paralysis in the coming summer, the Visiting Nurses' Society has sent one of its best nurses to Boston to take a course under Dr. Robert W. Lovett at the Children's Hospital. The expense has been assumed by private means. The course, which covers six weeks, consists of an extensive study of anatomy, muscle training and massage, and it is hoped that the nurses will not only be able to take charge of cases but be able to teach others.

Medical Institutions.—Dr. James M. Anders, a member of the board of trustees of the Medico-Chirurgical Hospital and College, recently announced that its buildings will be abandoned about June 1, so that all structures along the line of the Parkway may be razed by June 15. The college will abandon all its buildings, even the new maternity hospital on Eighteenth Street, that will not fall within the lines of the Parkway. Buildings on the campus of the University of Pennsylvania are now being erected which will contain the three institutions in the merger, viz.: the Polyclinic Hospital, the University of Pennsylvania Medical School and the Medico-Chirurgical Hospital and College.

Personal.—Dr. C. Lincoln Furbush, who went to Berlin several months ago as one of the five medical inspectors requested by England, Roumania and Serbia, to investigate the treatment accorded their captured soldiers in German prisons, returned with Ambassador Gerard's party, March 15. ——Dr. Daniel J. McCarthy delivered a lecture on the "Larger Problems of Social Service in European Countries" at Houston Hall, University of Pennsylvania, March 17.——Dr. Judson Daland will deliver an address on "Focal Infection as a Cause of Constitutional Disease" before the Academy of Medicine, Toronto, April 3.——Dr. Albert F. Schreiber, chief meat and cattle inspector to the bureau of health, is under treatment at St. Mary's Hospital for gangrene of the right foot, which may necessitate its amputation.

TENNESSEE

New Hospital for Memphis.—One hundred and seventy-five thousand dollars has been subscribed for the new Methodist Hospital.

Trachoma Hospital Opened.—A hospital has been opened at Tazewell, under the supervision of the United States Public Health Service, for the treatment of trachoma.

Personal.—Dr. William J. Core, Nashville, surgeon of the Cunard steamer *Folia*, was one of the survivors when that ship was sunk by a submarine off Waterford, Ireland, March 10.——Dr. Joseph L. Mackey, Charleston, was thrown from his automobile recently, and received serious injuries.

State Society Meeting.—The Tennessee State Medical Association will hold its eighty-fifth annual meeting, April 3 to 5, under the presidency of Dr. Charles N. Cowden, Nashville. Prominent features of the program are addresses by Dr. Edgar G. Ballenger, Atlanta, Ga., on "Certain Affections of the Bladder and Syphilis," illustrated by moving pictures; by Dr. James S. McLester, Birmingham, Ala., on "Syphilis and Internal Medicine," and by Dr. Frederick R. Green, Chicago, on "State Regulation of the Practice of Medicine as an Educational Problem."

TEXAS

State Association Meeting.—The annual meeting of the State Medical Association of Texas will be held in Dallas, May 8 to 10. Dr. Samuel E. Milliken is chairman of the general committee of arrangements.

Dinner to Dr. Thompson.—About forty physicians of San Antonio gave a luncheon at the Travis Club, March 8, in honor of Dr. Samuel E. Thompson, who recently resigned his position as director of the State Tuberculosis Sanatorium, Carlsbad, to take charge of the Mountain View Sanatorium, Kerrville.

Personal.—Dr. Thomas B. Bass has been reelected superintendent of the State Epileptic Colony, Abilene.——Dr. John Preston has been reelected superintendent of the State Hospital, Austin.——Dr. John W. Bradfield has been elected superintendent of the State Colony for the Feebleminded, Austin, to fill the vacancy caused by the resignation of Dr. Lewis B. Bibb.

Nostrum Bill Introduced.—February 15, Senator Strickland introduced a bill in the senate which makes it unlawful to sell, offer for sale, give away or dispose of compounds or preparations sold or intended to be used as a specific remedy or treatment for any bodily disease or illness containing more than 2 per cent. of common ethyl or alcohol, except on the written prescription of a licensed physician or when such sale is made by a person having a retail liquor license.

WISCONSIN

Personal.—Dr. James R. Barnett, Jr., Neenah, has been appointed supreme medical examiner of the Equitable Fraternal Union, succeeding his father, the late Dr. James R. Barnett.

Hospital News.—The addition to St. Vincent's Hospital, Green Bay, erected at a cost of $75,000, was opened to receive patients, March 8.——The new St. Joseph's Hospital, Portage, will be ready for occupancy this month.

Medical Reserve Corps Organized.—At a meeting recently held in Milwaukee, the Milwaukee County Division of the Medical Reserve Corps, U. S. Army, was organized and Lieut. George V. I. Brown, Milwaukee, was elected president.

Society Revives.—The Oneida-Forest-Vilas County Medical Society, which has been inactive for about six years, has been reorganized, and elected Dr. William C. Bennett, Rhinelander, as president and Dr. Clarence A. Richards, Rhinelander, secretary.

CANADA

Hospital News.—The finest home for convalescent soldiers in all Canada will be the old Loyola College, Montreal. Here will be centered the headquarters of the Canadian Hospital Commission. The alterations have been completed.——The Canadian Military Hospitals Commission will soon establish another hospital, 4 miles from Montreal, with accommodation for about 600 returned soldiers. It will be situated on 80 acres of ground and will be constructed of huts.

Personal.—The following Canadian physicians have recently been decorated with the military cross: Capts. A. A. Dinant, Frederick W. Lees, Eburne, B. C.; George G. Greer, Peterborough, Ont.; R. M. Luton, J. E. McAskile, William F. Nicholson, Hamilton, Ont.; Paul Poisson, Tecumseh, Ont.; W. D. Rorison and L. R. Meech; Lieuts. William N. Gilmour, Brockville, Ont., and Charles S. Wynne, Toronto, Ont.——Dr. Norman H. Sutton, Peterborough, Ont., is commanding officer in Hill House Military Hospital, Kent County, England.——Captain Tague, Belleville, Ont., has been appointed medical officer of the 235th Battalion.——Capt. J. N. MacRae, Galt, Ont., is now acting adjutant of the Central Military Hospital, Shorncliffe, England.——Col. Samuel W. Prowse, M.D., Winnipeg, is commanding officer of the Princess Patricia Convalescent Hospital recently opened at Shorncliffe, England.——Dr. Charles Sheard, Toronto, has returned from an extended trip through the southern states.——Dr. Giles G. Membery, Adolphustown, Ont., formerly surgeon on H. M. S. *Cochrane*, has received promotion and is now fleet surgeon of the Tenth Cruiser Squadron.——Dr. Ludwig S. MacKid, Calgary, Alta., is now a major in the Canadian Army Medical Corps, on service in France.——Militia orders issued from Ottawa, March 14, announce the appointment of Lieut.-Col. George A. S. Ryerson, Toronto, to be honorary surgeon-general, succeeding to the title held by the late Hon. Sir Frederick W. Borden, M.D.——Col. Perry G. Goldsmith, Toronto, has been appointed president of the Officer's Standing Medical Board in England.——Col. George S. Rennie, Hamilton, Ont., has assumed the entire duties of assistant medical director at Shorncliffe.——Major Donald, Vancouver, B. C., has been appointed commandant of the Canadian hospital ship, with Captain McDiarmid as adjutant.——Lieut.-Col. Frank W. E. Wilson, Niagara Falls, Ont., and Lieut.-Col. D. W. McPherson, Toronto, both of whom have been in England for many months, have now gone to France.

GENERAL

Army Notes.—Major Jesse R. Harris, Tacoma Park, D. C., M. C., U. S. Army, was retired from active service, March 2, on account of disability incident to the service.

Health Week for Negroes.—The National Negro Business League has set apart the week of April 22 to 28 as the National Negro Health Week, and has agreed to cooperate with the National Clean-up and Paint-up Campaign Bureau in an endeavor to better the living conditions of negroes throughout the United States.

What the Rockefeller Foundation is Doing.—Dr. George E. Vincent, president-elect of the Rockefeller Foundation, in an address before the Industrial Club of Chicago recently, stated that the Rockefeller Institute for Medical Research had a plant valued at $15,000,000 and has as its object the intensive study of diseases. On the conclusion of the war, the foundation will establish schools and hospitals in China to cost at least $1,000,000.

New Tuberculosis Journal.—The National Association for the Study and Prevention of Tuberculosis announces the appearance of the *American Review of Tuberculosis*, a monthly technical journal. Dr. Allen K. Krause, Baltimore, is managing editor, and the editorial policy is determined by a staff of seven physicians consisting of Dr. Edward R. Baldwin, Saranac Lake, N. Y., editor-in-chief, and Drs. Lawrason Brown, Saranac Lake, N. Y., Henry R. M. Landis, and Paul A. Lewis, Philadelphia, Milton J. Rosenau, Boston, Henry Sewall, Denver, and Borden S. Veeder, St. Louis.

Grayson's Appointment Confirmed. — The nomination of P. A. Surg. Cary T. Grayson to be medical director with the rank of rear admiral has been confirmed by the senate. This gives Dr. Grayson the highest rank in the Medical Corps of the Navy, a rank at present held by only one other officer, Surg.-Gen. William C. Braisted. Dr. Grayson was born in Virginia, Oct. 11, 1878, and received his medical education at the University of the South, Sewanee, Tenn., from which he was graduated in 1903. He immediately entered the navy as acting assistant surgeon, receiving his grade of assistant surgeon, June 28, 1904. He was promoted to passed assistant surgeon three years later, and, at the time of his advancement to rear admiral, had had a little more than three years' sea service and seven years' shore or other duty. He was on duty as personal physician to President Taft, and since President Wilson's accession has continued in the same position to President Wilson. This promotion carries with it a corresponding increase of pay. The pay of passed assistant surgeon is $2,200 at sea, or $2,000 on shore duty; that of rear admiral $8,000.

Occupational Therapy.—At the conference held at Clifton Springs, N. Y., March 15-17, addresses were made by Dr. W. R. Dunton, Jr., of the Sheppard and Enoch Pratt Hospital on the "History of Occupational Therapy"; by Mr. George E. Barton on the "Therapeutic Value of Drawing and Modeling, and Preparation of Patients for Inoculation of 'Bacillus of Work'"; by Mr. Kidner on the "Difficulties and Results of Reeducation of the Crippled Soldier in Canada"; by Mrs. Slagle on the "Work of the Occupational Experiment Station in Chicago"; by Miss Johnson on the "Occupational Work on Blackwell's Island," and by F. B. and L. M. Gilbreth on a "New Occupation for the Crippled Soldier—The Conservation of the World's Teeth," illustrated by photographs of a one-eyed, one-armed, partially deaf, legless man engaged in dental nursing. The conference resulted in the formation of a National Society for the Promotion of Occupational Therapy, with the following officers: president and chairman of committee on research and efficiency, George Edward Barton, Clifton Springs, N. Y.; vice president and chairman of committee on installations and advice, Mrs. Eleanor Clarke Slagle, Chicago; secretary, Miss Isabel G. Newton, Consolation House, Clifton Springs, N. Y., and treasurer and chairman of committee on finance, publicity and publications, Dr. W. R. Dunton, Jr., Towson, Md.

FOREIGN

International Convalescents Interned at Lago di Garda.—Arrangements are now under way to have the health resorts on the Lago di Garda, Italy, utilized for the convalescent wounded from the entente allied nations.

The Tripier Legacies.—Prof. R. Tripier, formerly of the University of Lyons, has bequeathed to the university the sum of $40,000, the income of which is to be used to encourage works on operative medicine and pathologic anatomy. He also left a similar sum to the city of Lyons for the purchase every fifth year of some work of art.

Financial Aid for Parturients.—A recent French decree grants a daily allowance to women of French nationality during the period just preceding and following a childbirth, regardless of whether the woman is a habitual wage-earner or not. The same allowance is also made to refugees from the invaded regions, under the same conditions. The amount of the allowance is that of the rent paid.

Deaths in the Profession Abroad.—**J. Lefour,** professor of obstetrics at the University of Bordeaux, aged 66.——**E. Huet,** chief of the service of electrotherapy at the Salpêtrière, Paris, during and since Charcot's day, president of the Société de Neurologie.——**G. Paladino,** professor of histology and general physiology at the University of Naples, senator of the realm, president of various scientific societies and member of numerous others in various countries, aged 75. His obituary notice in the *Riforma Medica* mentions among the other honors conferred on him that he held an honorary degree from Rush Medical College of Chicago.

The New "Archives Médicales Belges."—The surgeon-general of the Belgian army has taken steps to insure the publication of a medical journal in Belgium, none of the former medical journals having been issued since the invasion of Belgium. The first number has now reached us. It assumes the name of an old Belgian medical journal, the *Archives médicales belges,* so that the new issue appears as No. 1 of Volume 70. The editorial staff includes Depage, Willems and fourteen others. The more active members of the staff are M. Stassen and J. Voncken, who are connected with the Hôpital militaire Cabour, at Adinkerke, in the still uninvaded portion of Belgium. The publishers are J. B. Baillière, 19 rue Hautefeuille, Paris, but the actual work of printing is done at the Institut Militaire Belge de Rééducation Professionelle pour Mutilés de la guerre, at Port-Villez, Vernon, Eure. All the profits of the journal are to be devoted to this institution for the occupational training of crippled soldiers. It is planned to continue the *Archives* monthly, but the editors admit that circumstances may prevent a regular monthly issue, as no one knows what the morrow may bring forth. All exchanges and communications are to be sent to the Comité de Rédaction, Inspection Générale du Service de Santé de l'armée belge en campagne. The first number contains, besides several original articles, an ample abstract department and obituary notices of ten Belgian physicians and ten medical students who have been killed during the war. The Surgeon-General's Catalogue lists three pages of medical or pharmaceutical journals published in Belgium, but only two or three dozen were currently published at the beginning of 1914. This list included the *Gazette médicale de Liége,* the *Presse médicale belge,* the *Journal médical de Bruxelles* besides three international archives for surgery, physiology and pharmacodynamics, and a number of bulletins recording the transactions of various scientific organizations. The *Archives médicales belges* since its foundation seventy years ago has always been the organ of the medical department of the army.

PARIS LETTER

Paris, Feb. 22, 1917.

The War

PICRIC ACID JAUNDICE AND TRUE ICTERUS

Some authors believe that the jaundice induced by the ingestion of picric acid is characterized by the absence of bile and bile pigments from the urine, while others maintain that picric acid jaundice is a true icterus. Malmejac, in a recent communication to the Réunion médicale de la IV-e Armée, throws new light on this subject. He studied 981 cases of true jaundice and picric acid jaundice, making daily examinations of the urine, and found that bile and bile pigments were always present in large quantities in cases of true icterus, while in cases of picric acid jaundice they were excreted in much smaller quantities and more slowly. Sometimes these elements were found only in traces, but they always gave a distinct reaction. In only five cases was Malmejac able to obtain traces of bile pigment on the first day. He is convinced that there is some relation between the size of the dose of picric acid ingested, the physical condition of the individual and the excretion of pigment. The bile elements appear rather slowly. Is it not possible, then, that if the pigmentation of the skin is not due to the picric acid, the pigment or at least some picric acid derivative would be found in the blood? Malmejac has shown that the skin eliminates these two acids, which would explain the skin pigmentation in the great majority of these cases of picric acid jaundice. Furthermore, picric acid imparts to the urine a currant red color. Malmejac has concluded that, in the beginning, picric acid jaundice and its complications comprise a case of slight intoxication of the hepatic cells. The jaundice provoked by the ingestion of the picric acid is therefore a jaundice of a definite type, which differentiates it from ordinary icterus.

Dr. Boidin stated that various interpretations of Malmejac's findings could be made. Some authors have stated that picric acid jaundice is a false icterus in which the yellow color of the skin and mucous membranes plays no part, so that if one can find biliary pigments in the urine one can eliminate at the start the possibility of a picric acid intoxication. More recently Brulé, Javillier and Backeroot have pronounced picric acid icterus a true icterus; that it is identical with all forms of benign icterus, either infectious or toxic. Like Malmejac, Boidin thinks that all these opinions are too positive, and that the picric acid jaundice is always due to the coloring matter in the acid, on which is often superimposed a true biliary icterus. If one wishes to convince himself of this he need but follow the course of the picric acid in the organism. Ordinarily, picric acid, when ingested, is rejected either by emesis or by diarrhea, which are frequent symptoms at the start. Any portion of the acid that is absorbed must first pass the liver barrier, thereby injuring this organ so that the bile pigments can pass into the blood and urine; but before such an icterus can occur or make its appearance, the picric acid has already been diffused throughout the organism. The fact that it is found in the blood serum and even in the cerebrospinal fluid, as was shown by Malmejac, proves that picric acid possesses extreme diffusibility. It is eliminated by the skin and by the urine, imparting to each a special yellow color. Admitting, then, that the product is diffusible, that it possesses tinctorial qualities, why should it not be capable of coloring the skin and mucous membranes? To the picric acid jaundice may be added a true icterus, but it is secondary and unimportant. Clinically, the nature of this picric acid jaundice has been established, but the chemist must be the sole judge of the matter.

Dr. Merklen stated that the term "picric acid icterus" is incorrect because it implies that the ingestion of picric acid is followed by an essential impregnation of the tissues with bile salts; but no convincing proof has been reported by the authors who claim that the yellow discoloration of the skin is of hepatic origin. One can hardly conceive of an icterus that fails to present all the clinical signs of bile retention: rapid pulse, pruritis, etc. Malmejac, in his convincing communication, throws a new light on the late appearance in the urine of these pigments and biliary acids, the urobilin, etc. At the outset the yellow tint of the skin is unique, being due to the diffusion of the picric products in the serum. Picric acid icterus, reduced to a reality, is a tinctorial phenomenon, but picric acid is a liver poison. Taken in sufficient doses it will in time color the skin and leave its mark on the liver cells. The response of these cells to the agents that come in contact with them, picric acid and others, consists in the production of urobilin, biliary acids, and even a small quantity of pigments; these are the bad consequences, even as albuminuria is the common result of kidney disease. Picric acid intoxication corresponds rather to an acute hepatitis. If the skin discoloration is due to a true hepatitis, the urine must contain the liver products mentioned. In all the cirrhoses the urinary findings are definite, and accompany the icterus. Without doubt, after a time, pigment retention may intervene, although this is difficult to determine, if one must rely only on the yellow tinting of the skin; but it goes to show that the biliary impregnation is merely an episode in the picric acid intoxication.

THE SUGAR CARD AND THE SPAS

M. Peyronnet, senator of the department of the Allier (in which lies Vichy), has directed the attention of M. Herriot, minister of the food supply, to the situation created at the spas and the health resorts by the introduction of the sugar card. The senator pointed out to the minister the interest that would attach to a declaration of the government which would not assure persons frequenting these spas and health resorts of a sufficient amount of sugar, such as they would need during their stay. The minister replied that it was the disposition of the authorities to continue to allow a sufficient amount of sugar to these persons. The sugar will be distributed to the hotels, restaurants and boarding houses on the basis of the consumption during the corresponding month for the two previous years, and for commercial and industrial use, according to the demands of the season. All persons frequenting the spas who are not taking their meals at hotels, restaurants or boarding houses will be given a temporary card for the duration of their stay, whether this be more or less than a month. As for the sick, it has been decided that they shall be given a supplementary quantity of sugar on the presentation of a medical certificate.

FIGHT OF MILITARY AUTHORITIES AGAINST ALCOHOLISM

The commanding general of the armies has interdicted, in the zones determined by the general commander-in-chief, the circulation and sale of alcohol and spirituous liquors. To make this mandate sufficiently effective, penalties were heretofore lacking. Therefore a law has been passed sanctioning the prohibition of the sale and distribution of alcohol as decided on by the military authorities. Infractions of the law are punishable the same as in laws made by the administrative authorities. The same penalties will apply, in case of infraction, to the arrangements made to prevent the giving of alcohol and spirituous liquors to the soldiers.

To prevent the danger of alcoholism among foreign-born natives, the military colonial workers on service or passing through the Marseilles region (Senegals, Arabs, Kabyles, Indo-Chinese, etc.), the commanding general of that region has decided that the sale of wine, and in general of all alcoholics, even those of a test less than 23 degrees, was interdicted for men coming under these categories. A very active surveillance will be exercised over the retailers of alcoholics. In cases of infraction they will not be allowed to admit troopers and colonial workers.

Compulsory Notification of Acute Anterior Poliomyelitis

By a recent decree, acute anterior poliomyelitis has been added to the list of transmissible diseases for which notification and disinfection are compulsory. This list includes at present: (1) typhoid, (2) typhus, (3) variola and varioloid, (4) scarlet fever, (5) measles, (6) diphtheria, (7) military fever, (8) cholera and choleriform diseases, (9) ague, (10) yellow fever, (11) dysentery, (12) puerperal infection and ophthalmia of the new-born (unless the confinement is not made public), (13) epidemic cerebrospinal meningitis, and (14) acute anterior poliomyelitis. The same decree modifies the method of designation of maladies of which notification may be made by the substitution of letters for the numbers heretofore given them. These maladies are (A) pulmonary tuberculosis, (B) whooping cough, (C) grip, (D) pneumonia and bronchopneumonia, (E) erysipelas, (F) mumps, (G) leprosy, (H) favus, and (I) purulent conjunctivitis and trachoma.

Books for the Blind

The city of Paris is informing the public, by means of posters, that the Valentin Haüy Association for the Welfare of the Blind has deposited in six municipal libraries a circulating library composed of several books printed in Braille type, to be placed at the disposition of the blind readers of the department of the Seine. Blind readers will be allowed to take these books home under the same conditions and regulations as apply to the ordinary books in municipal libraries. These special books will be renewed periodically by the Valentin Haüy Association.

BERLIN LETTER

(*Received, March 12, 1917*)

Berlin, Jan. 5, 1917.

Personal

Professor von Grützner has resigned as director of the Physiologic Institute because of advanced age.

Professor Ibrahim of Munich has accepted the chair of pediatrics at Jena.

Privy Councilor Professor Schüle, director of the Illenau (Baden) Institute, died at the age of 76. In 1873 he was given an honorary degree of the Freiburg University. He also was an honorary member of many psychiatric societies in this and foreign countries. Since 1877 he was associate editor of the *Allgemeine Zeitschrift für Psychiatrie.*

December 11, Privy Councilor Leser, the editor of a well known textbook on special surgery, died at Frankfort-on-the-Main. He was a pupil of von Volkmann.

Privy Councilor Pelman, director of the Psychiatric Clinic in Bonn, died, December 31, aged 79 years.

On the same day Professor von Zehender, formerly ordinary professor of ophthalmology in the Rostock University, died at the age of 97.

December 29, B. S. Schultze of Jena celebrated his eighty-ninth birthday.

December 31, Privatdozent Prof. A. Pappenheim of Berlin died of typhus. He was 46 years of age. He received distinction because of his work in hematology. His contribution to "the cells in leukemic myelosis," of which the studies of normal and pathologic blood cells are a part, deserves special mention. He was the founder and editor of the *Folia haematologica.*

Congress of Internal Medicine

The German Congress of Internal Medicine will be held in April, 1917, under the chairmanship of Professor Minkowski. The most important subjects for discussion will be: 1. Nutrition during the war, by M. Rubner (Berlin) and F. von Müller (Munich). 2. Constitutional diseases, by F. Kraus (Berlin) and A. Steyrer (Innsbruck). 3. The rare infectious diseases of the war. War experiences in the field of internal medicine will also be discussed.

The Number of Medical Graduates

During the scholastic year 1914-1915, 1,038 candidates for the medical degree received professional approbation (1913-1914, 3,822). There were seventy-two (1913-1914, 148) women. The graduate degree in dentistry was conferred on fifty men (1913-1914, 195) and twelve women (1913-1914, ten). The number of women medical students is continually increasing. During the winter semester 1908-1909 there were 334; in 1915-1916, 1,229, almost a fourfold increase. The number of women students in all the German colleges was much greater than this; in 1908-1909, there were 1,077; in 1915-1916, there were 4,796, almost a fivefold increase. The diminution in the number of medical graduates and licentiates was caused by the war. This was to be expected. In 1912-1913 the official sanction was given to 1,447, and in 1913-1914 there were 3,822 licentiates.

Work of the Central Committee of the German Red Cross.

During the first two years of the war the central committee of all the German Red Cross organizations disposed of 80,000,000 marks ($20,000,000). This does not include the funds handled by the societies of the individual German states, nor the women's societies, nor the central committee of the Prussian State Society. Thirteen and one-half million marks ($3,375,000) were spent for nursing alone, the money having been contributed in various ways. The sale of the so-called *Kaiserin-Kriegsfürsorge* (Empress first-aid) welfare card and several other picture cards realized 750,000 marks ($187,500). The so-called *Kreuz-Pfennig-Marken* (Red Cross stamps) realized 470,000 marks ($117,500). To these sums must be added the collections made for prisoners of war, furnishing of mineral water and food supplies for the injured, for Red Cross work in Turkey, etc., an additional 7,750,000 marks ($1,937,500). Five hospital trains were organized (costing nearly 1,000,000 marks [$250,000]); for the care of prisoners of war 713,000 marks ($178,250) were spent, and for gifts 4,500,000 marks ($1,125,000). More than 1,000,000 marks ($250,000) were spent to furnish mineral water for the troops in the field and for the base hospitals. A total of 17,000,000 marks ($4,250,000) was spent for war nursing during the first two years of the war. Ten million marks ($2,500,000) were collected, and 9,000,000 marks ($2,250,000) of this sum were spent in welfare work, such as aiding and contributing to the support of the war widows and war orphans, of the exiles and of other persons suffering from the war. The central committee distributed books, newspapers, etc., amounting to 7,500,000 marks ($1,875,000). The central committee of the Prussian State Society disposed of 30,000,000 marks ($7,500,000) during the first two years of the war. About 11,500,000 marks ($2,875,000) were spent for nursing (including ten hospital trains, costing 1,500,000 marks [$375,000] each, the equipment of the volunteer nurses 7,500,000 marks [$1,875,000]), and for war welfare work the committee collected 3,250,000 marks ($812,500), of which one half was spent.

Typhus in Poland

Shortly after the occupation of Russian Poland by the German troops, the commander-in-chief ordered the notification of all infectious and contagious diseases. This was done for the express purpose of combating typhus and smallpox. The result has been entirely satisfactory. During the last three months of 1915 there were 704 cases of typhus in Warsaw and thirty-two deaths from this disease. During the first three months of 1916 there were 5,256 cases and 428 deaths; during the second three months there were 6,294 cases and 507 deaths. During the third three months the number of cases fell to 2,309, with only 140 deaths. The incidence and mortality of smallpox was as follows: last three months of 1915, 955 cases and 157 deaths; first three months of 1916, 1,029 cases and 144 deaths; second three months of 1916, 918 cases and 130 deaths; third three months, 195 cases and twenty-three deaths. No case of cholera has been reported in the Warsaw district since October, 1915.

Hospital for Research in Psychiatry

A considerable number of founders, mostly members of the Kaiser Wilhelm Society, have united to erect an institution for research in psychiatry, acting on the suggestion of the German Psychiatric Society. At present the funds collected are not sufficient to finance an independent research institution, but the movement has furnished sufficient stimulus to insure the erection of a state institution in connection with the psychiatric clinic in Munich after the war is over.

Marriages

Malcolm D. B. Kinsella, M.D., North Bay, Ont., to Miss Jean Young of New Zealand, in London, England, recently.

Homer Hollett Oaksford, M.D., Gloversville, N. Y., to Miss Sarah Elizabeth Swinyer of Utica, N. Y., January 25.

Cornelius C. Kepler, M.D., to Miss Florence Howard, both of Jolley, Iowa, at Pocahontas Center, Iowa, January 24.

Dean Henry Jeffers, M.D., to Miss Lucretia Van Zandt, both of West Salem, Wis., recently.

John Miller Breen, M.D., to Wilhelmia Afton Ragland, M.D., both of New York, March 8.

Francis P. Norton, M.D., to Miss Gertrude Carpenter, both of Minto, N. D., February 20.

Benjamin B. Griffith, M.D., to Mrs. Flora K. Moore, both of Vincennes, Ind., March 6.

Elmer S. Bolton, M.D., to Miss Mary Salmen, both of Cleveland, January 4.

Deaths

Raleigh R. White, M.D., Temple, Texas; Tulane University, New Orleans, 1893; a Fellow of the American Medical Association; formerly president of the Central (Twelfth) District Medical Association; chief surgeon of the Gulf, Colorado and Santa Fe Division of the Santa Fe System; local surgeon of the Missouri, Kansas and Texas Railroad; one of the organizers of the Kings Daughters Hospital and Temple Sanitarium, Temple; a director of the City National Bank; died at his home, March 2, from angina pectoris.

Henry Leber Coit, M.D., Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1883; aged 62; a Fellow of the American Medical Association and of the New York Academy of Medicine; a widely known specialist on diseases of children; organizer of the first medical milk commission in the United States; first president of the American Association of Medical Milk Commissions, and president of the International Society of Gouttes de Lait, Budapest; died at his home, March 13.

Eliot Gordon, M.D., Summit, N. J.; Long Island College Hospital, Brooklyn, 1888; aged 53; formerly a Fellow of the American Medical Association; a member of the Medical Society of New Jersey and American Medico-Psychological Association; resident physician at the Fair Oaks Sanatorium, Summit; for fourteen years a member of the staff of the New Jersey State Hospital, Morris Plains; died at his home, March 3, from pneumonia.

William M. Kaull, M.D., Sawtelle, Calif.; New York University, New York, 1855; aged 83; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; for many years a practitioner of Princeton, Ill.; assistant surgeon of the Seventy-Second Ohio Volunteer Infantry and surgeon of the Fortieth U. S. Infantry throughout the Civil War; died at his home, about March 1.

Samuel Mason McCollin, M.D., Philadelphia; Jefferson Medical College, 1878; aged 73; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania, American Roentgen-Ray Society and American Electro-Therapeutic Association; radiographer to the Philadelphia Orthopedic Hospital; died at his home in Llanerch, Pa., February 24.

Joe Vincent Meigs, Jr., M.D., Lowell, Mass.; Jefferson Medical College, 1889; aged 49; a Fellow of the American Medical Association; surgeon to St. John's, Lowell, and Lowell General hospitals; consulting surgeon to the State Infirmary, Tewkesbury; for eight years medical examiner of the Fifth Middlesex District; died in the Yorick Club, Lowell, March 9, from cerebral hemorrhage.

Charles Lambert Thomas, M.D., Crawfordsville, Ind.; Miami Medical College, Cincinnati, 1858; aged 84; surgeon of the Twenty-Fifth Indiana Volunteer Infantry during the Civil War; a member of the Montgomery County Bar; for two years a member of the city council of Crawfordsville and for several years a member of the board of education; died at his home, March 4.

James Aloysius Joseph O'Brien, M.D., New York; Queens University, Dublin, Ireland, 1867; aged 70; who entered the Medical Corps of the British Army in 1868; served during the Ashantee War in West Africa in 1873 and 1874, and was decorated for valor and was retired with the rank of surgeon-major in 1880; physician to the Ludlow Street Jail; died at his home, March 1.

Oscar F. Potter, M.D., St. Louis; Washington University, St. Louis, 1866; aged 87; for many years dean and professor of materia medica and medical botany in the St. Louis College of Pharmacy; editor of the *St. Louis Medical and Surgical Journal;* confidential agent of the United States government during the Civil War; died at his home, February 28, from pneumonia.

James W. Rousseau, M.D., Modesto, Calif.; University of Tennessee, Nashville, 1893; aged 56; formerly local surgeon for the Cincinnati, New Orleans and Texas Railroad at Greenville, Texas, and later surgeon to the Kentucky and Tennesee Railway at Stearnes, Ky.; a member of the school board of Modesto since 1908; died at his home, March 1, from heart disease.

William Henry Silbaugh, M.D., Chillicothe, Ohio; Miami Medical College, Cincinnati, 1895; aged 49; a member of the Ohio State Medical Association; secretary of the Ross County Medical Society; was accidentally killed at his home, March 1, by the discharge of a shotgun which he was placing in his automobile preparatory to a trip to his farm.

Edward Dyer Peters, M.D., Dorchester, Boston; Harvard Medical School, 1877; aged 67; who practiced medicine for a time and afterward specialized in mining engineering; territorial assayer of Colorado in 1872; lecturer and professor of metallurgy in Harvard University since 1904; an authority on copper smelting; died at his home, February 17.

Carl Gehr Parsons, M.D., Denver; Denver and Gross College of Medicine, Denver, 1904; aged 39; formerly a Fellow of the American Medical Association; a member of the American Association of Anesthetists; a specialist in anesthesia and anesthetist to the Denver City and County Hospital for twelve years; died at his home, March 5.

John Sample Long, M.D., Joplin, Mo.; New York University, New York, 1892; aged 61; formerly president of the Jasper County (Mo.) Association of Physicians and Surgeons; lecturer at St. John's Hospital and local surgeon of the Frisco System at Joplin; also a druggist; died in a sanatorium in Boston, March 3, from rheumatism.

Orson Millard, M.D., Flint, Mich.; University of Michigan, Ann Arbor, 1870; aged 71; formerly physician to the State School for the Blind; supreme medical examiner of the Loyal Guard, and formerly president of the Medical Section of the National Fraternal Congress; died in Oak Grove Hospital, Flint, February 26, from nephritis.

Eugene G. Matson, M.D., Pittsburgh; University of Pennsylvania, Philadelphia, 1883; aged 58; a Fellow of the American Medical Association; a specialist in bacteriology; for twenty years bacteriologist in charge of the City of Pittsburgh Laboratory; died in the West Penn Hospital, Pittsburgh, March 10.

Mahlon R. Pritchard, M.D., Westfield, Pa.; College of Physicians and Surgeons, Baltimore, 1880; aged 64; a Fellow of the American Medical Association and formerly president of the Tioga County (Pa.) Medical Society; a specialist on diseases of the eye, ear, nose and throat; died at his home, February 23.

Frank Edward Gessner, M.D., Port Jervis, N. Y.; University and Bellevue Hospital Medical College, New York, 1903; aged 35; a Fellow of the American Medical Association; for four years health officer of Port Jervis; died at the Interpines, Goshen, N. Y., March 6, following a nervous breakdown.

Frederick P. Minton, M.D., Millbury, Ohio; University of Louisville, Ky., 1893; aged 63; a member of the Ohio State Medical Association; who was injured in a collision between his automobile and a New York Central train, in August last, and never regained consciousness; died at his home, March 8.

William Samuel Cherry, M.D., New York; College of Physicians and Surgeons in the City of New York, 1899; aged 44; formerly house surgeon to St. Vincent's Hospital, and major of the Ninth Coast Artillery; died suddenly at the home of his father in Larchmont, N. Y., February 28.

John W. Fooks, M.D., Laurel, Del.; Jefferson Medical College, 1874; aged 64; also a druggist; a member of the state senate in 1910; appointed inspector under the Harrison Narcotic Law in 1915; died at his home, February 22, from acute nephritis, following ptomain poisoning.

William Waugh McCleary, M.D., Bellevue, Pa.; College of Physicians and Surgeons, Baltimore, 1884; aged 56; a member of the Medical Society of the State of Pennsylvania; surgeon to the Suburban General Hospital, Bellevue; died in the Presbyterian Hospital, Pittsburgh, March 5.

William Russell Stephens, M.D., DeLand, Fla.; Marion-Sims College of Medicine, St. Louis, 1892; Barnes Medical College, St. Louis, 1893; aged 46; a member of the Florida Medical Association and Mississippi Valley Medical Association; died at his home, March 5.

Joseph W. Marsh, M.D., Lewes, Del.; Jefferson Medical College, 1861; aged 77; formerly a member of the Delaware State Medical Society; a director in the Sussex Trust Company, Lewes, and representative in the state legislature in 1913; died at his home, March 9.

Emil August Ballmer, M.D., Columbus Grove, Ohio; Eclectic Medical Institute, Cincinnati, 1898; aged 58; a member of the Ohio State Medical Association; died at his home, Dec. 20, 1916, from fatty embolism of the coronary artery due to an injury five weeks before.

Florence Louisa Evans, M.D., East St. Louis, Ill.; Barnes Medical College, St. Louis, 1906; aged 41; a Fellow of the American Medical Association; a specialist in clinical pathology and bacteriology; died in Corpus Christi, Texas, March 7, from erysipelas.

John Williams Dunn, M.D., Turnersville, Tenn.; Vanderbilt University, Nashville, Tenn., 1880; aged 60; who had been prominently identified with the Planters Protective Association since its organization; died at his home, March 6, from heart disease.

Simon Harry Greene, Jr., M.D., New York; University of Pennsylvania, Philadelphia, 1901; aged 38; assistant in surgery in the Dispensary of the Presbyterian Hospital, New York; died at his home, March 1, from pneumonia.

Oscar B. Campbell, M.D., Cleveland; Western Reserve University, Cleveland, 1883; aged 69; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association; died at his home, March 2.

Edmond H. Ames, M.D., Antioch, Ill.; Detroit Homeopathic Medical College, 1874; aged 70; a veteran of the Civil War; formerly a member of the Illinois State Medical Society; died at his home, March 7, from cerebral hemorrhage.

Edward Sutton Chambers, M.D., Annona, Texas; Kentucky School of Medicine, Louisville, 1901; aged 41; formerly a member of the State Medical Association of Texas; died at his home, February 14, from pneumonia.

Sidney O. Smith, M.D., Ellisville, Miss.; Tulane University, New Orleans, 1882; aged 55; formerly a member of the Mississippi State Medical Association; died suddenly at his home, February 26, from heart disease.

LeRoy F. Weaver, M.D., Lansing, Mich.; Michigan College of Medicine, Detroit, 1884; aged 54; a member of the Michigan State Medical Society; also a druggist; died at his home, March 1, from cerebral hemorrhage.

Irene Hardy, M.D., Massillon, Ohio; University of Wooster, Cleveland, 1881; aged 67; formerly a member of the Ohio State Medical Association; died in the City Hospital, Massillon, February 28, from pneumonia.

Charles Stanton, M.D., Rockham, S. D.; College of Physicians and Surgeons, Keokuk, Iowa, 1892; aged 60; a member of the State Medical Society of Wisconsin; died in his office, Dec. 29, 1916, from heart disease.

William L. Crump, M.D., Salisbury, N. C.; Jefferson Medical College, 1879; aged 59; formerly a member of the Medical Society of the State of North Carolina; died at his home, January 17, from tuberculosis.

George H. Beal, M.D., Elsie, Mich.; Detroit College of Medicine and Surgery, 1892; aged 46; village and township health officer for several years; died at his home, January 1, from valvular heart disease.

Henry M. Wilson, M.D., New Berlin, Pa.; Jefferson Medical College, 1877; aged 66; a member of the Medical Society of the State of Pennsylvania; died at his home, Dec. 11, 1916, from cerebral hemorrhage.

E. Thaddeus Barrentine, M.D., Society Hill, S. C.; Louisville (Ky.) Medical College, 1890; aged 45; a member of the South Carolina Medical Association; died at his home, February 26, from pneumonia.

William R. Wall, Jr., M.D., Cleveland; Cleveland Medical College, 1896; Cleveland College of Physicians and Surgeons, 1899; aged 48; was instantly killed in an automobile accident in Cleveland, March 2.

Joseph Taylor, M.D., Manchester, N. H.; Dartmouth Medical School, Hanover, N. H., 1894; aged 56; a Fellow of the American Medical Association; died in his office in Manchester, March 10.

Herbert Jones, M.D., Hamilton, Ont.; University of Toronto, Ont., 1904; aged 45; major, Canadian A. M. C.; a specialist in diseases of children; died recently from pneumonia, while serving overseas.

George Howard Thompson, Jr., M.D., Seattle Wash.; Cooper Medical College, San Francisco, 1894; aged 50; died in the Hahnemann Hospital, San Francisco, February 22, from myocarditis.

Thomas David Miller, M.D., Kansas City, Mo.; St. Louis College of Physicians and Surgeons, 1883; aged 60; died in Grace Hospital, Kansas City, February 26, after a surgical operation.

Theron W. Horton, M.D., Honcut, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1863; for nearly thirty years a practitioner of Honcut; died at Los Angeles, February 28.

John T. McCarthy, M.D., Baltimore; Baltimore Medical College, 1893; aged 53; a member of the board of police surgeons of Baltimore from 1901 to 1905; died at his home, March 7.

Ora Owen Sawyer, M.D., Dell Rapids, S. D.; Rush Medical College, 1879; aged 60; formerly a Fellow of the American Medical Association; died at his home, March 1, from general paresis.

George T. Parks, M.D., Lancaster, Texas; University of Tennessee, Nashville, 1887; aged 55; a member of the State Medical Association of Texas; died at his home, February 24.

Stephen B. Rozier, M.D., Fayetteville, N. C.; Medical College of Virginia, Richmond, 1855; aged 84; for fifty years a practitioner of Robeson County; died at his home, March 4.

Jacob Butler, M.D., East St. Louis, Ill.; Medical College of Evansville, Ind., 1878; aged 66; formerly a member of the Illinois State Medical Society; died at his home, March 2.

Charles S. McLaughlin, M.D., Glens Falls, N. Y.; University of Vermont, Burlington, 1880; aged 60; surgeon to the Park Hospital, Glens Falls; died at his home, March 5.

A. Lee McCormick, M.D., Cincinnati; Pulte Medical College, Cincinnati, 1883; aged 59; while making a professional call, February 26, died suddenly from heart disease.

Frederick Walter Coffin, M.D., Chagrin Falls, Ohio; Rush Medical College, 1868; aged 71; also a pharmacist; died at his home, February 27, from angina pectoris.

Benjamin F. Welch, Soso, Miss. (license, Mississippi, 1882); aged 66; formerly a member of the Mississippi State Medical Association; died at his home, March 2.

Chester Arthur Winn, M.D., Alton, Ill.; Rush Medical College, 1889; aged 57; died, February 21, in Cuba, Mo., where he had gone in hope of bettering his health.

James T. McDonald, M.D., Ellsworth, Me.; Hahnemann Medical College, Philadelphia, 1890; aged 49; died at his home, January 2, from tuberculosis.

Francis M. Metcalf, M.D., Kansas City, Mo.; Beaumont Hospital Medical College, 1893; aged 55; died at the home of his son in Kansas City, March 10.

Walter F. Burton, M.D., Kansas City, Mo.; Kansas City (Mo.) Hospital College of Medicine, 1885; died at his home, February 28, from chronic nephritis.

William J. French, M.D., Frankton, Ind.; Cincinnati College of Medicine and Surgery, 1879; aged 64; died at his home, March 5, from diabetic gangrene.

Thomas F. Betts, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1866; aged 73; died at his home in Oak Lane, Philadelphia, March 8.

William Henry Johnston, M.D., Selma, Ala.; New York University, New York, 1867; died recently at his home.

William Dietrich, M.D., West Hoboken, N. J.; Baltimore University, 1905; died at his home, about February 20.

Louis Joseph Wirtz, M.D., West Hoboken, N. J.; Baltimore University, 1904; aged 35; died recently at his home.

John W. Smith, M.D., Plymouth, Ind.; Jefferson Medical College, 1877; aged 61; died at his home, January 2.

James G. Van de Walker, Hammond, Ind. (license, Indiana, 1897); aged 82; died at his home, January 19.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

THE SARGOL CASE

The Origin, Development and Destruction of a Fraud

The essential facts regarding Sargol, the get-fat-quick nostrum—most of which have already been given in The Journal—are that its exploiters were found guilty of fraud and were fined $30,000 after promising that the business would be discontinued. The fine was paid and on Feb. 27, 1917, the Post-Office Department issued a fraud order against the Sargol Company denying it the use of the mails.

The Sargol business was started in 1908 by Wylie B. Jones and Oliver C. Kingsley at Binghamton, N. Y. In December, 1912, Kingsley dropped out of, and Herbert B. Woodward went into, the business with Jones. Jones, the controlling power in the concern, is an advertising man, and operates the Wylie B. Jones Advertising Agency at Binghamton. He also conducts another "patent medicine" concern, the "Dr. Howard Company," which sells such nostrums as "Palm Vine," "Dr. Howard's Specific," etc.

Sargol was advertised through newspapers and magazines of a certain type and the business, generally, was conducted on the mail-order plan rather than through drug stores, although a certain amount of drug store trade had been developed at the time it was put out of business. The newspaper and magazine advertisements, together with the other advertising matter that was sent out when a prospective victim had been brought in touch with the Sargol Company, represented in brief:

Be Plump and Well Developed—Use
"Sargol"—The Flesh Builder
10-CENT PACKAGE GIVEN FOR TRIAL
SARGOL
The Picture of Health
This Man or Woman Should Miss This Opportunity
Summer Days Are Flesh-Building Days
WE INVITE
EVERY THIN MAN AND WOMAN
What a Handsome Couple

The Sargol Company was able to defraud the public out of millions because newspapers and magazines were willing to act as paid "go-betweens." Here are photographic facsimiles (greatly reduced) of full page advertisements that at one time appeared in such magazines as *McClure's*, the *Illustrated World*, *Cosmopolitan*, etc. There is also in this group a quarter-page advertisement (reduced) from the *National Druggist*.

THE CLAIMS FOR SARGOL

1. That Sargol was a wonderful new discovery which could be depended on permanently to increase the weight of the body ten, fifteen or even thirty pounds.
2. That Sargol was the result of the combined experience of many prominent specialists in dietetics who believed that the usual diet rules more often fail than succeed.
3. That Sargol was in effect the most marvelous body builder which medical science has produced.
4. That Sargol would, in an incredibly short space of time, produce a marvelous increase in weight regardless of the cause of the lack of weight, whether inherited, from overwork or wasting disease or the result of abuse, dissipation, etc.
5. That when the Sargol "treatment" was under way it was possible for the patient to go about his business as usual and still put on flesh at the rate of a pound a day.
6. That Sargol was a marvel in quickly and permanently rounding out the feminine form, filling out the face to a perfect oval, making the neck and bust firm and plump and rounding out the arms and legs to graceful proportions.
7. That Sargol would put flesh just where it was most needed.
8. That Sargol was the missing link in the chain of human health and vitality—that the certainty of a thin person getting fat depended almost entirely on Sargol.

SARGOL MADE BY PARKE, DAVIS & CO.

Such were the claims by which the Sargol concern pilfered from the public an amount that has been estimated at $3,000,000. When the case came to trial it was shown that Sargol instead of being a wonderful new discovery was, in fact, merely a formula devised after a short consultation between Wylie B. Jones and the man who has charge of the "private formula" department of Parke, Davis & Co. Sargol was made by Parke, Davis & Co. and billed to the "Dr. Howard Co." as "Tonic Tabs," at a price of from 53 cents to 78 cents a thousand tablets; they were sold at the rate of $25 a thousand. When the manager of Parke, Davis & Co.'s "private formula" department was on the stand he testified that his firm made other pills, as well as a vaginal tablet, for the "Dr. Howard Co." The "formula" for Sargol—as devised by Parke, Davis & Co.'s agent and Jones—contained:

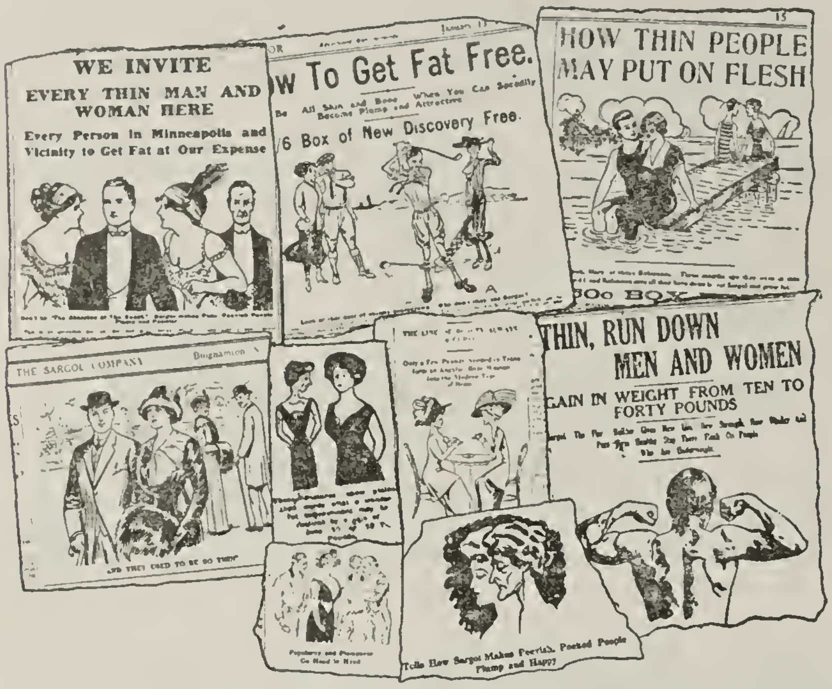
Extract saw palmetto	2	Grains
Hypophosphite calcium	½	Grain
Hypophosphite sodium	¼	Grain
Hypophosphite potassium	¼	Grain
Lecithin	⅛	Grain
Extract nux vomica	1/12	Grain

The trial lasted thirteen weeks. Mr. O. B. Williamson, a post-office inspector, collected the evidence for the government and was assisted by post-office inspectors Frank E. Shea of New York and Samuel J. Killian of Binghamton. The government called, among other experts, Drs. Louis F. O'Neill and J. P. Creveling of Auburn, N. Y., Dr. Harvey W. Wiley of Washington and Dr. Lyman F. Kebler of the Bureau of Chemistry. In addition to his testimony, Dr. Kebler gave Mr. F. J. Cregg, the United States Attorney who had charge of the case, invaluable assistance during the entire course of the long drawn out trial. The medical testimony submitted by the government proved beyond controversy that the pretenses set out by the Sargol concern were absolutely worthless so far as flesh or tissue building is concerned. It was admitted that some of the constituents were in some degree tonic but that none of them, taken singly or in combination, could affect the weight of the thin or emaciated. It was further brought out that even if Sargol were efficacious in increasing weight in a given case, the representations made for it would still have been false and fraudulent because they were so comprehensive as to include increase in weight of those who were thin from any cause. Judge Lamar, solicitor for the Post-Office Department, summed up the matter in his memorandum to the Postmaster-General:

> ". . . it is a well recognized medical fact that in order successfully to overcome this condition it is necessary to individualize the case, determine the cause of the condition, and prescribe for the subject a treatment adapted to his own case; and that no one treatment could by any possibility supply the lack of weight in all individuals regardless of the causes thereof or of the particular conditions present."

The trial also brought out the fact that people suffering from lack of weight due to tuberculosis, diabetes, Bright's disease or chronic diarrhea extending over a long period of years who wrote to the Sargol Company were urged to use Sargol and told that it would overcome the lack of weight. It was also shown that persons who had written to the company stating that they were suffering from nervousness and excitability following the removal of the ovaries, and due to such conditions as long continued dyspepsia, catarrh of the bladder of nine years' standing, abdominal tumor and pernicious anemia, also were told to take Sargol and informed that it would overcome their nervousness and irritability.

Of course, the Sargol Company had no difficulty in producing "experts" to uphold its claims. There never was a medical swindle so preposterous that members of the medical profession could not be hired to defend it. The Sargol case recalls the disgraceful state of affairs that was disclosed at the Wine of Cardui trial when the American Medical Association was put on the defensive because of its activities in attempting to protect the public from medical humbug. In that trial the "patent medicine" interests were able to employ members and fellows of the American Medical Association who not only lent aid and comfort to the enemies of the public health but attempted to discredit the testimony of decent physicians who belonged to the same organization of which these persons were members.


WE INVITE
EVERY THIN MAN AND WOMAN HERE
Every Person in Minneapolis and Vicinity to Get Fat at Our Expense
w To Get Fat Free.
All Skin and Bone When You Can Speedily Become Plump and Attractive
/6 Box of New Discovery Free.
HOW THIN PEOPLE MAY PUT ON FLESH
0o BOX
THE SARGOL COMPANY
Binghamton
AND THEY USED TO BE SO THIN
THIN, RUN DOWN MEN AND WOMEN
GAIN IN WEIGHT FROM TEN TO FORTY POUNDS
Popularity and Plumpness Go Hand in Hand
Tells How Sargol Makes Peevish, Peaked People Plump and Happy

Extensive advertising was done in the newspapers both in the United States and Great Britain. In addition, the Sargol Company sent out large quantities of advertising circulars. Here are greatly reduced facsimiles of some of the advertising from these sources.

SARGOL "EXPERTS"

So in the Sargol case we find appearing in defense of this outrageous fraud physicians who, by virtue of their membership in their county and state societies, were enabled to become Fellows of the American Medical Association. They were:

Ernest Ellsworth Smith, M.D., New York City.—Member of the New York Medical Society, Member of the Medical Society of the State of New York.

Howard L. Davenport, M.D., Auburn, N. Y.—Member of the Cayuga County Medical Society, Member of the Medical Society of the State of New York.

Michael P. Conway, M.D., Auburn, N. Y.—Member of the Cayuga County Medical Society, Member of the Medical Society of the State of New York.

Gibson Benjamin Mack, M.D., Auburn, N. Y.—Member of the Cayuga County Medical Society, Member of the Medical Society of the State of New York.

Ernest Ellsworth Smith, who testified that he devotes himself "especially to the specialty of nutrition," has appeared against the government in a number of cases. In 1910 the government was making a determined effort to break up the traffic in rotten eggs, a business that had reached huge proportions. For three years previously it had tried to put a stop to the business without any great amount of success. Then it prosecuted a man who was said to be the largest dealer in putrid eggs in the "rotten-egg district" of New York. He was charged with shipping a putrid mass of frozen egg product containing mold, blood clots, heads of embryo chicks, etc. After a trial before a jury he was found guilty and fined the maximum penalty for a first offense under the federal law. The "expert" employed by this dealer in rotten eggs in defending himself against the government's charges was Ernest Ellsworth Smith!

In 1912 the United States government proceeded against a concern that sold "specialties" for confectioners. One of the "specialties" the company was charged with selling was a varnish used, it seems, in the trade, for the purpose of coating fudge candy. This varnish, the government charged, contained appreciable quantities of arsenic. The company was found guilty by the jury, although it afterward appealed the case. The company employed an expert in this case whose testimony was to the effect that the amount of arsenic present would not, in his opinion, be injurious to health. This expert was Ernest Ellsworth Smith!

In 1915 the government seized a number of packages of "Dr. Williams' Pink Pills for Pale People." This "patent medicine" was sold as a remedy for locomotor ataxia, partial paralysis, St. Vitus' Dance, rheumatism, leukorrhea, dysmenorrhea, spermatorrhea, impotence, etc. These claims the government charged were false and fraudulent. The Dr. Williams Medicine Company took exceptions to the government's actions and attempted to defend the claims. The jury, however, decided that the government's contention was right and the court ordered the stuff destroyed. The company in this case also appealed. One of the experts to testify to the wondrous virtues of Williams' Pink Pills for Pale People was Ernest Ellsworth Smith. Smith admitted that he had prescribed these pills without a full knowledge of their composition.

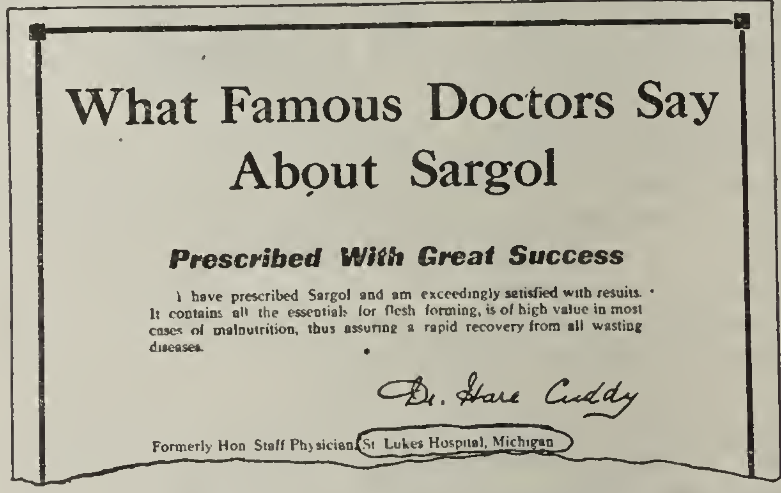
In addition to the medicolegal activities, Smith's articles on behalf of sodium benzoate, which appeared at the time of the controversy on this subject, will be remembered by many. Many physicians have doubtless received a brochure stamped "With Author's Compliments" and dealing with "Protein Diet for the Sick and Convalescent." It is a puff for that preposterously advertised nostrum "Sanatogen"; its author is E. E. Smith!

A "BUST DEVELOPER" ADVERTISEMENT!

Before leaving Dr. Smith, the following extract from the testimony during the Sargol trial is much too interesting to be allowed to remain buried in legal archives. Dr. Smith is testifying as to the effect of saw palmetto on a flat-chested but otherwise normally healthy female:

> "*Question.*—What is the effect, if any, as you have spoken of, of the use of sabal (saw palmetto) on the bust of a female?
>
> "*Dr. Smith.*—In the thin undeveloped condition of the bust the effect is to stimulate the growth and development of the bust to the ideally normal condition."

Of the other physicians who testified for the Sargol concern, Dr. Mack of Auburn was withdrawn from the stand



What Famous Doctors Say About Sargol

Prescribed With Great Success

I have prescribed Sargol and am exceedingly satisfied with results. It contains all the essentials for flesh forming, is of high value in most cases of malnutrition, thus assuring a rapid recovery from all wasting diseases.

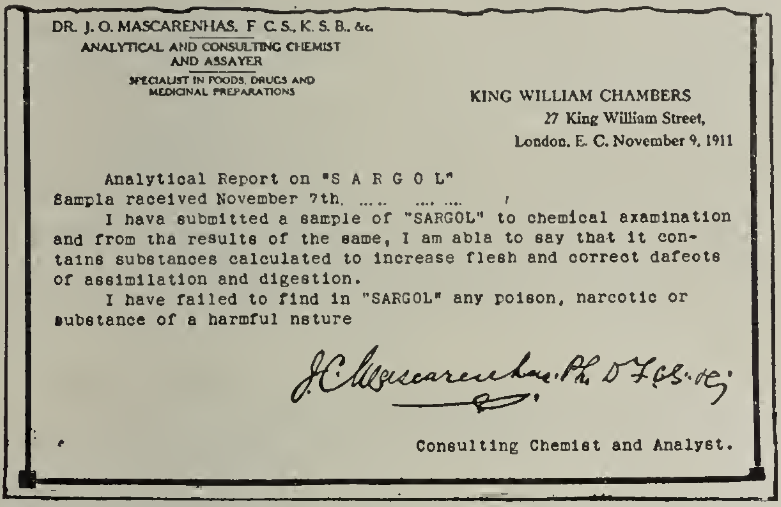
Dr. Hare Cuddy

Formerly Hon Staff Physician, St Lukes Hospital, Michigan

Reports from alleged "famous doctors" were part of the advertising paraphernalia of the Sargol concern. Here is a reduced facsimile of what purported to be a report from "Dr. Hare Cuddy, Formerly Hon. Staff Physician, St. Luke's Hospital, Michigan." If there ever was a Dr. Hare Cuddy, we have been unable to locate him. The "St. Luke's Hospital" was a fraudulent concern that existed only on paper. Quacks all over the country have "certificates of membership" framed in their offices purporting to show that they are on the "staff" of "St. Luke's Hospital."

before his testimony was completed and all of his testimony stricken from the record. This action followed his cross-examination by Attorney Cregg when it was shown that Dr. Mack was the family physician of one of the jurors and before testifying had discussed the probable effect his testimony might have on this juror.

Drs. Conway and Davenport both testified, in effect, that, among other things, taking four Sargol tablets a day for sixty days would increase the weight of a person who was naturally thin or who had become thin following some wasting disease or who was thin through malassimilation of food or from nervous indigestion of long standing. They further testified, in effect, that Sargol would tend to increase the weight of a tuberculous subject and would remove such nervous irritability or excitability as might follow the removal of the ovaries. Dr. Conway testified that in cases of pernicious anemia the "individual's blood would be changed for the better" by taking Sargol and that in cases of catarrh of the bladder Sargol would be of marked benefit because it would tend to increase weight and to cure the local condition. Dr. Davenport expressed the opinion that Sargol would tend to increase the weight of consumptives and of persons suffering from "kidney trouble," chronic diarrhea, catarrh of the bladder and pernicious anemia.



DR. J. O. MASCARENHAS. F. C. S., K. S. B., &c.
ANALYTICAL AND CONSULTING CHEMIST
AND ASSAYER
SPECIALIST IN FOODS, DRUGS AND
MEDICINAL PREPARATIONS

KING WILLIAM CHAMBERS
27 King William Street,
London. E. C. November 9, 1911

Analytical Report on "S A R G O L"
Sample received November 7th. ....

I have submitted a sample of "SARGOL" to chemical examination and from the results of the same, I am able to say that it contains substances calculated to increase flesh and correct defects of assimilation and digestion.

I have failed to find in "SARGOL" any poison, narcotic or substance of a harmful nature

J. C. Mascarenhas, Ph. D. F. C. S. &c

Consulting Chemist and Analyst.

Fake "analytical reports" were also used by the Sargol concern. Here is a reduced facsimile of one of these. Sargol is not the only humbug that Mascarenhas has "reported" on.

THE WORTHLESS "GUARANTY"

In common with most medical mail-order fakers, the Sargol Company published an alleged guarantee promising to return without question the price paid for the treatment if the purchaser did not regard the results as satisfactory. After the purchase had been made this promise was qualified in such a manner as to make it of little, if any, value to the purchaser. The victim was advised that in order to obtain a refund it would be necessary for him to certify that he had taken the treatment faithfully every day and that during the entire period he had not been subject to any attack of sickness. Furthermore, it was necessary that he have two witnesses certify to the same fact. An additional requirement was that all the box covers in which the Sargol came, six in all, must be returned as a prerequisite to the refund.

FAKE ANALYTICAL REPORTS

The Sargol concern, to strengthen its claims for the nostrum, published what purported to be analytical and professional reports from alleged famous physicians and chemists. One of the reports was from a "Dr. J. C. Mascarenhas, F. C. S., K. S. B., &c" of London. Our files show that Mascarenhas has been connected with a fake degree-conferring organization, the "Society of Science, Letters and Art of London." Other American "patent medicine" fakers use his alleged analytical reports as advertising ammunition. Mascarenhas' report says that he failed to find any "poison" in Sargol. This may be due to the fact that the Sargol sold in Great Britain, unlike that sold in this country, had no strychnin in it. The British law would have required the package to be labeled "poison" had it had the composition of the American Sargol.

Another testimonial from an alleged "famous doctor" was from one "Dr. Hare Cuddy, Formerly Hon. Staff Physician, St. Luke's Hospital, Michigan." As many of The Journal readers remember, "St. Luke's Hospital," which existed chiefly on paper, was a scheme conducted from Niles, Mich., by a quack named Probert who peddled certificates of membership in the hospital—price $25. Quacks all over the country have these "diplomas of membership" framed in their offices. In commenting on the alleged noted endorsers of Sargol, the solicitor of the Post-Office Department said: "The investigation developed the fact that in some instances there never had been such physicians *in esse* and that in other instances they were quacks entitled to no credence whatever."

THE PROFESSION'S RESPONSIBILITY

The Sargol case has many points of interest to the profession. For some years the Propaganda department of The Journal has been receiving letters from physicians calling attention to Sargol and asking why it was possible for such an obvious swindle to be perpetrated year after year, and no action be taken. The facts in the Sargol trial answer this question. The postal authorities went to great trouble to collect evidence for the purpose of protecting the public against this fraud. The trial lasted many weeks and is said to have cost the United States more than $100,000. Although the business was palpably fraudulent, although the claims made for the nostrum were patently false, the defendants were able to employ physicians, who held membership in their local societies and, through that membership, fellowship in the American Medical Association, to go on the stand and swear that Sargol was a "flesh builder" and "bust developer"! Is it any wonder when such conditions obtain within the medical profession that officials whose duty it is to protect the public against fraud hesitate to attack humbugs of a medical nature? Medical fraud flourishes not only because of the credulity of the public but also because of the low ideals or the venality of a few members of the medical profession.

Correspondence

Unauthorized Use of Name of Dr. W. W. Keen

To the Editor:—March 2, I received from Dr. S. R. Maxeiner, secretary of the Hennepin County Medical Society in Minneapolis, a letter enclosing a copy of a letter sent out by the Lawrence Sanatorium of Minneapolis. Since then I have received two other identical letters signed personally by W. D. Lawrence, of whom I had never before heard.

These letters disclosed the fact that Lawrence was using my name without authority as a quasi-endorsement of his sanatorium. The three letters are identical in wording. They begin:

> We are pleased to announce that we have recently associated with our Sanatorium staff a very eminent surgeon who until the past year has been surgeon-in-chief of a large European hospital.
>
> Dr. W. W. Keen . . . in a letter of introduction said, "I take pleasure in introducing to you my friend, Dr. Egilsrud, of Norway," etc.

I enclose also two cards, one called an "associate physican's card," in which W. D. Lawrence announces to every doctor to whom these cards have been sent that he is an "associate physician" of the sanatorium and is entitled "to a fair participation in all fees from patients referred by you with introduction to the Lawrence Sanatorium." The other card is one which is to be sent by the associate physician introducing his friend Mr. —— to the Lawrence Sanatorium.

The simple facts are these: I had had some correspondence with Dr. Egilsrud about the middle nineties. In 1899 I saw him very pleasantly in Tromsö, Norway. Somewhat over a year ago Dr. Egilsrud made his second visit to the United States. He had left Norway in consequence of the war, and wanted to establish himself in this country and then bring his family over. Besides this he wished to do some professional writing. I urged him to go to the Northwest, especially to Minnesota, where many Scandinavians were settled. While there he should perfect himself in English, then pass the examination and enter into practice.

I gave him personal letters to a number of physicians by name, but as he was very uncertain where he would settle, I think I gave him an additional letter not addressed to any particular surgeon, or possibly it may have been addressed "To whom it may concern." When one is doing a friendly act like this one does not preserve a copy of such letters. Hence my uncertainty.

The wording of this circular of W. D. Lawrence that Dr. W. W. Keen in a letter of introduction said "I take pleasure in introducing to you my friend, Dr. Egilsrud, of Norway," etc., while it does not so state distinctly, would lead any superficial reader to suppose that I had given a letter introducing Dr. Egilsrud to W. D. Lawrence, and had thus impliedly endorsed the Lawrence Sanatorium and its methods, which I never would do.

My interest in the welfare of Dr. Egilsrud, who is a most excellent surgeon, was the sole motive for my doing what I could to help him as a friend.

I have never yet given a letter knowingly, or in any other way recognized a fee-splitting institution such as this is. I beg to warn any one against accepting the statement made by W. D. Lawrence as to myself. I have written to W. D. Lawrence, forbidding him hereafter to use my name in any manner whatsoever.

I should add that I have received a letter from Dr. Egilsrud, dated March 6, in which he shows that in his ignorance of American customs he has been innocently misled into his association with this sanatorium.

W. W. Keen, M.D., Philadelphia.

Why I Favor Compulsory Health Insurance

To the Editor:—I favor compulsory health insurance:

1. Because I believe that medical science and art, the creation of generations of effort and experience, cannot rightfully be used for the exclusive benefit of the few.

2. Because, having an instinctive desire to see fair play, I cannot be indifferent to a public measure which aims to protect the bodies of children from disease, just as our public school system seeks to protect their minds from premature arrest and decay.

3. Because I have learned from personal contact with thousands of hospital patients, and through investigations carried on in the homes of such patients by district nurses, that free hospital care, without other aid, only partially relieves the distressing situation which arises in the home of a worker whose earning power ceases when he is stricken with disease.

4. Because a large proportion of the industrial workers of the community are without needed medical attendance.

5. Because a still larger proportion, though receiving some medical attention (chiefly gratuitous), do not receive prompt or adequate medical care.

6. Because under existing conditions, workers whose wages are below $1,200 per annum cannot purchase adequate medical care for themselves or their families.

7. Because I believe that a high grade of medical service for the great mass of the wage-earning population is unattainable without organization.

8. Because under voluntary health insurance most of those who need health insurance do not obtain it.

9. Because I believe that the health of the people is the proper concern of the state.

10. Because I believe that the employer has a certain measure of responsibility for, and an economic interest in, the health and welfare of his employees.

11. Because industrial conditions which are inimical to health can be most readily disclosed and most effectively dealt with under a scheme of health administration in which the insured workers are grouped mainly according to occupation.

12. Because an insurance fund to which the state, the employer and the employee contribute should be collected and distributed by the representatives of the three contributing members or groups, for the sole benefit of the insured.

13. Because I believe that medical men should participate actively in the management of any organization which involves the activities and welfare of a large part of the medical profession.

14. Because the measures under consideration in New York and elsewhere (I refer to the so-called "standard" bill) are the result of long study of existing conditions by competent and disinterested persons, and of hundreds of discussions and conferences in which every shade of industrial, social and medical opinion has been represented; and because, after painstaking investigation, state commissions in two states have reported their approval of the principles embodied in the bill.

15. Because the most progressive life insurance companies, while under no legal obligation to do so, have within recent years voluntarily undertaken to provide certain medical benefits for their policy holders, thus tacitly admitting that medical neglect is a common condition among policy holders.

S. S. Goldwater, M.D., New York.
Director, Mount Sinai Hospital.

Temporary Suspension of Activities of the Medical Brotherhood

To the Editor:—In The Journal, July 31, 1915, an appeal to members of the medical profession was published which was signed by a committee composed of about 150 members of the leading medical men of this country. The attention of the profession was called to the facts that no discovery in medical sciences has been utilized by any of the belligerents in the present European war for the purpose of destroying the enemy; that the services of medical men in each of the warring countries consists exclusively in ministering to the sick and to the injured, and finally that in these humanitarian services friends and foes are treated alike. This appeal led to the establishment of the Medical Brotherhood, which contains at present about 16,000 members, all of whom are American citizens with the exception of Sir Wilfred Grenfell. The vast majority of members belong to the American Medical Association. Not a single individual has withdrawn his membership. Many prominent men from other neutral countries asked to be enrolled in our organization. In most of these countries, organizations similar to ours were established.

The purpose of my present communication is to state that on the second of last month, that is, as soon as the last German note on its U-boat policy became known, and before our president delivered his address before Congress, *I suspended sending out our literature.* It seemed quite evident to me that the German note would lead to a serious tension between our country and the central powers and perhaps even to war. A transitional stage of suspense and confusion was bound to come, and it seemed to me to be the duty of every citizen to avoid anything which might be misconstrued. It was conceivable that the activities of the Medical Brotherhood might be interpreted by some as being unpatriotic and not in line with the duties of a citizen to his country and its government.

For this temporary suspension of our activities the president of the brotherhood takes the entire responsibility.

S. J. Meltzer, M.D., New York.
President of the Medical Brotherhood.

"Current Views Regarding the Tonsils and Their Surgical Removal"

To the Editor:—Your editorial on this subject (The Journal, March 17, 1917, p. 851) is at least amusing, if not scientific. Experience is of more value than theory; therefore, if you wish to discuss a subject scientifically, you should place yourself in a position to see clinical results. Consequently come to western Kansas where "inflamed tonsils," are removed daily for the cure of arthritis, nephritis, endocarditis and the prevention and cure of otitis media and its complications, as well as the "tonsillitis." Come out where we treat "diphtheritic tonsillitis" by removing the foci of infection and without administering "antitoxins."

Thomas L. Higginbotham, M.D., Hutchinson, Kan.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BETAIN HYDROCHLORID AND HYDROCHLORIC ACID—ACIDITY OF URINE—ESTIMATION OF SECRETION—ALBUMINOUS FOOD REMNANTS IN STOOL

To the Editor:—Please answer the following questions:

1. How does betain hydrochlorid compare with dilute hydrochloric acid weight for weight? Is it as efficient as the latter in the treatment of anacidity? Can it produce any deleterious effects when taken over a long period of time? Please give references to the literature on the subject.

2. Is the reaction of the urine affected by hyperacidity or hypoacidity of the stomach?

3. Is it logical to make deductions from a single estimation of the hydrochloric acid in the stomach?

4. Is the presence of an abnormal amount of undigested albuminous elements in the stool always presumptive evidence of anacidity?

Please omit my name if these questions are answered in The Journal. X. Y. Z.

Answer.—1. Betain hydrochlorid contains 23.8 per cent. of absolute hydrochloric acid, and the usual dose, 0.5 gm. (8 grains), corresponds to about 1.1 c.c. (18 minims) of dilute hydrochloric acid, U. S. P. Betain hydrochlorid in solution dissociates hydrochloric acid, but it does not dissociate it completely so that it is not quite so efficient in aiding the action of pepsin as an equivalent amount of hydrochloric acid. The use of betain hydrochlorid as a substitute for hydrochloric acid has no obvious advantage over the use of hydrochloric acid itself, and it is far more expensive. The pharmacologic effect of the betain part of the molecule is similar to that of chlorin, but is not so strong. It lowers blood pressure. It is apparently not toxic to rats even in enormous doses, but it is impossible to say whether if administered over a long period of time to human beings it might not produce some effect. Its pharmacology is not very well known. A short statement of its action will be found in New and Nonofficial Remedies, 1917, and in Sollmann's new Manual of Pharmacology, and some references are there given to the literature. Its action in peptic digestion will be found in a paper by J. H. Long, "On the Physiological Activity of Combined Hydrochloric Acid" (Jour. Am. Chem. Soc., 1915, **37,** 1333).

2. The urine normally becomes less acid or even alkaline when hydrochloric acid is secreted in the stomach. There is, however, no known definite relation between hyperacidity, anacidity or hypo-acidity in the stomach and urine reaction. The urine may be reduced in acidity in conditions of anacidity in the stomach instead of being more acid, as one might expect. The reaction of the urine is closely dependent on the food. A protein diet, or the metabolism of the proteins of the body, tends to make the urine acid by the production of sulphuric, phosphoric and some organic acids. The ash of meat is acid whether this burns in or out of the body. A vegetable diet reduces acidity of the urine because vegetables and fruits contain the alkali salts of organic acids which are burned in the body to carbonates, which are alkaline, and these are excreted in the urine. The ash of plants is alkaline.

3. No. Several examinations should be made before safe conclusions can be drawn.

4. No. Much depends on the amount and character of the protein eaten, on the completeness of mastication, on motility of the tract, and on conditions in the intestine. Simon says that muscle fibers are found in every stool whenever meat has been eaten. Under normal conditions, however, they are not numerous, unless particularly large quantities have been ingested. In pathologic conditions it is necessary to determine whether or not albuminous food remnants are present in abnormal amounts, presupposing, of course, that abnormal quantities have not been taken. An increase in such food remnants will be observed in such conditions. Webster says that lack of digestive power of the stomach itself will have little influence on intestinal digestion, provided the pancreatic secretion is sufficiently active, with the exception that raw or smoked connective tissue will be undigested and will appear in the feces. Motor disturbances of the stomach and intestine must also be taken into consideration when food residues greater than normal in amount are found in the feces. Webster again says, lientery is much less frequent in motor disturbances of the stomach than in those of the intestine. In cases of increased intestinal motility, more food residue will be found in the feces than under normal conditions. Marked disturbances of protein and fat digestion, evidenced by intense lientery, will occur if the pancreatic secretion is insufficient. This is even more marked if gastric disturbance coexists. A final factor which influences lientery is the insufficiency of the absorbing power of the intestine. This increases the food residue by retarding digestion. Only in exceptional cases, Webster says, can one judge of the specific factor at the bottom of lientery; a boundary lying between the normal and the abnormal being drawn with difficulty.

THE SCHMIDT DIET

To the Editor:—Please give me a list of the foods and amount of each which make up a Schmidt diet in the treatment of diarrhea, so much spoken of in Cabot's differential diagnosis.

Please omit my name if this is published. W. H.

Answer.—Schmidt's diet consists of 1.5 liters of milk; zwieback, 100 gm.; 2 eggs; butter, 50 gm.; beef, 125 gm., raw weight; boiled potato, 190 gm., and a gruel made of 80 gm. of oatmeal. This is distributed throughout the day as best suits the patient. The diet contains 102 gm. of protein, 111 gm. of fat and 191 gm. of carbohydrates, yielding 2,234 raw calories. In cases which show a diarrhea due to the milk, instead of 0.5 liter of milk, the same amount of cocoa made from 20 gm. of cocoa powder, 10 gm. of sugar, 100 gm. of milk and 400 gm. of water may be used. Small variations in the amount of milk, sugar, butter and even of eggs may be permitted, but the outline as regards meat, zwieback, potato and gruel should be rigidly adhered to.

LITERATURE ON INDUSTRIAL DISEASES

To the Editor:—I would appreciate very much if you can give me a list of textbooks or recent publications dealing with industrial diseases.

Gordon Bates, Toronto.

Answer.—

Oliver: Dangerous Trades, New York, E. P. Dutton, $8; Diseases of Occupation, New York, E. P. Dutton, $3; Lead Poisoning, New York, Paul B. Hoeber, $2.
Greer, W. J.: Industrial Diseases and Accidents, Bristol, J. W. Arrowsmith, 1909, 339 pages.
Rambousek, J.: Industrial Poisoning, New York, Longmans, Green & Co., 1913, 360 pages, $3.50 net.
Thompson, W. G.: Occupational Diseases, New York, D. Appleton Company, 1914, $6.
Kober and Hanson: Diseases of Occupation and Vocational Hygiene, Philadelphia, P. Blakiston's Son & Co., $8.
Ligge: Lead Poisoning, New York, Longmans, Green & Co., $3.50.
Hansen: Dusty Trades, Bulletin 127, U. S. Bureau of Labor Statistics.
Studies in Vocational Diseases, 1, Schereschewsky, J. W.: The Health of Garment Workers; 2, Schereschewsky, J. W., and Tuck, D. H.: Hygienic Conditions of Illumination in Workshops of Women's Garment Industry, Public Health Bulletin 71, Washington Government Printing Office, 1915, 40 cents.

TIME ALLOTTED BY CZERNY TO READING

To the Editor:—The "Hygienic Testament" of the late Professor Czerny (Berlin Letter, The Journal, March 10, 1917, p. 791) is very interesting, but raises the question of accurate translation in several places. The lack of mention of reading is made more conspicuous by the large amount of time given to "art and lectures," namely, two hours. Perhaps the translator thought of the lectures given by the professor himself; but is not the word *Lectüre*, and should it not be translated "reading"?

X. Deutsch.

Answer.—The original word was *Lektüre*, and should, of course, have been translated as "reading."

NASAL OBSTRUCTION WITH RENAL INSUFFICIENCY AND ECLAMPSIA IN PREGNANCY

To the Editor:—Eight cases of nasal obstruction with renal insufficiency and eclampsia in pregnancy have occurred in the practices of myself and of a colleague at this place. All the patients have been mouth breathers. Is it not possible that the poor oxygenation of the blood is largely responsible? The success of the continuous oxygen treatment would suggest that if the system had been freely supplied with oxygen, the eclampsia would not have developed.

T. L. Thomson, M.D., Torrington, Conn.

ACTIVE PRINCIPLE OF LEECH SECRETION

To the Editor:—Please inform me what the active principle is in the secretion of the leech which prevents clotting.

M. G. Atkinson, M.D., Watertown, N. Y

Answer.—The active principle of the buccal secretion of the leech (herudin) appears to be a deutero-albumose. See *Chemisches Centralblatt,* 1903, p. 254.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

California: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

Colorado: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

District of Columbia: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Idaho: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

Minnesota: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt. 741 Lowry Bldg., St. Paul.

Missouri: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

Montana: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

Oklahoma: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

Rhode Island: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

Utah: Salt Lake City, April 2. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

A CHIROPRACTIC DOCTOR FACTORY

The so-called "American University" is an excellent example of the travesties on education which are the direct result of the inexcusable custom in most of our states of granting charters to "educational" or degree-granting institutions without first making inquiry regarding their ability or facilities for furnishing an education. Do the words "school," "academy," "college" and "university" really stand for educational institutions, or do they not?

So far as can be learned, the American University owns no college building, no laboratories, no dispensaries and no hospitals; nevertheless, it brazenly professes to prepare "doctors" to treat all classes of human ailments. Its only habitation thus far discovered is a small suite of rooms on the third floor of an old office building in Chicago. This building bears no sign to indicate that it is a university, and in the directory, high up on the wall, in the entrance to the building only a close search reveals the sign which indicates that the building houses so important a tenant! When the investigator wends his way to the third floor he discovers a door on the glass of which he reads:

"American University, 310-312. American College of Mechano-Therapy. F. S. Tinthoff, S. J. Tinthoff, W. L. LeBoy, M.D., E. Juhl, M.D."

Possibly the American College of Mechano-Therapy is another "department" of the "American University." At any rate, from reports it is quite evident that it is "a bird of the same feather."

Our present concern with the American University is in regard to its "department of chiropractic," which issues a pretentious announcement of sixty-four pages. This announcement sets forth such courses of instruction as it professes to give; contains many testimonials regarding the princely incomes being earned by chiropractors; shows a facsimile of its "beautiful diploma, handsomely lithographed," which is further described as having a "prepossessing appearance which will add to the professional dignity of any office," and contains numerous other catch phrases intended to attract the dollars from the credulous and unwary.

What use, indeed, would this institution have of buildings, laboratories or equipment, since it makes no pretense of giving a resident course? In fact, its announcement does not mention such a course, but lauds its "extension," or home study, course, by which chiropractic can be "more easily acquired than the other forms of healing."

Much stress is laid on the ease with which this home study course may be obtained. In fact, no preliminary education seems essential. Says the announcement: "You do not need a collegiate education to render you fit to study chiropractic. A common school education is all that is required." Even a common school education would not appear to be necessary for the course offered, and it would be a safe guess that no student was ever rejected for the lack of it. Says the catalogue: "It does not require the years of education needed in other lines"; but some "students complete the work in four months." Even then a student need not spend all his time in study, but can "pursue his ordinary occupation while studying the course."

The greatest activity of this "university" is in its mailing department, and it is evidently doing a land office business. Within three months' time one of its "prospects" received five voluminous communications, containing altogether forty-five enclosures, including announcements, testimonials, booklets, varicolored leaflets, etc. Extensive use is made of the system of "follow-up" letters containing the usual catchy subterfuges for separating dollars from the unwary, such as offers of courses costing $100, marked down to $68.75; allowing fees to be paid in instalments of $25, marked down to $12.75, or of $15, marked down to $8; offers of commissions for new students, and certificates offering free the first five lessons, if enrolment is sent in by a certain date.

The announcements abound with statements calling the attention of the reader to the possibilities of "financial success" if he but invests his money with this school; of "the rewards that are awaiting" his command; the possibilities of "successful results" and of "reaping a rich harvest"; the "opportunities for any chiropractor to earn from $1,200 to $12,000 per year"; that "chiropractic may be practiced with profit and success"; that it is "a most pleasant and profitable profession," etc.

There are also the usual lot of comments running down physicians and the practice of medicine; references to "noxious and poisonous drugs"; statements that "physicians are abandoning the old form for chiropractic," etc.

What, indeed, is the use of spending ten or eleven long years in high school, college, medical laboratories, dispensaries and hospitals, with the expense of thousands of dollars, which such a course entails, when in four months of home study, while one is "pursing his regular occupation," and for only "$100, marked down to $68.75," he can secure from this institution a "beautiful diploma, handsomely lithographed," which (he is led to believe) will make him eligible to treat all classes of human ailments and to "reap a rich harvest" by exacting large fees from his credulous patients!

Louisiana December Report

Dr. E. L. Leckert, secretary of the Louisiana State Board of Medical Examiners, reports the written examinatioon held at New Orleans, Nov. 30-Dec. 2, 1916. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, of whom 16 passed and 2 failed. Five candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Medical College of Alabama	(1905)	87.5
Tulane University of Louisiana	(1916)	85.2, 86.9, 87.6, 89.6, 92.3
Johns Hopkins University	(1914)	92.9
Meharry Medical College	(1916)	82.4
Memphis Hospital Medical College	(1911)	81.7
University of Tennessee	(1913) 83.6; (1914)	77
Vanderbilt University	(1914) 89.8; (1916)	88, 89.9, 90.1, 90.1.
FAILED		
Eclectic Medical Institute	(1879)	41.7
Meharry Medical College	(1916)	75.7*

* Conditioned in two subjects.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Atlanta Medical College (1914)	(1916)	Georgia
Tulane University of Louisiana	(1914)	California
University of Michigan Medical School	(1916)	Michigan
Vanderbilt University	(1915)	Arkansas

Ohio Reciprocity Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports that 5 candidates were licensed through reciprocity, Jan. 2, 1917.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of Illinois	(1915)	Illinois
Woman's Medical College of Pennsylvania	(1915)	New York
Meharry Medical College	(1894)	Kansas
Vanderbilt University	(1915)	Michigan
University of Virginia	(1906)	W. Virgini

Social Medicine, Medical Economics and Miscellany

EXPERT TESTIMONY*

J. H. LANDIS, M.D.
President, Cincinnati Academy of Medicine
Cincinnati

Several weeks ago, ex-Judge Littleford of the Court of Common Pleas of Cincinnati tossed a verbal bomb into the medical camp. Its explosion did as much damage to the lawyers as it did to the doctors. Both professions and the general public were interested and, judging from numerous expressions from numerous people, anxious to see treatment of the case carried well beyond the stage of first aid to the injured. It may be well to quote the testimony as reported in the press, testimony which, to the best of my knowledge, has not been repudiated by Judge Littleford. The credibility of medical expert testimony was under question when the following statements are alleged to have been made:

> I knew there was nothing in court so absurd but you could get the best doctors to testify it was all right, provided they got enough money for it. For instance, I know there were doctors in the Thaw case who testified he was insane and some of the same doctors would come back and testify he was perfectly sane if they got money for it . . . That is my experience after thirty-three years of practice. The doctors are the worst to testify. All they want is the money. It is a question of who gets to the doctor first. They would prove anything on either side of the case—that has been my experience with them.

In answer to the question, "Well, you say the thing they are looking for is the fee," Judge Littleford replied:

> It is the only question with a doctor in a community, who gets there first with the money, provided you have the most. If you get there with ten dollars, he probably won't come; but if the other side gets there with fifty dollars, he will go to work and prove anything.

The statements quoted leave nothing to the imagination. The best doctors being for sale at prices ranging from ten to fifty dollars, it necessarily follows that, if the best doctors can be had for these prices, the worst ones will probably be found assembled in bunches marked with a selling price so low as to be a source of mortification to the entire profession.

What follows is not directed toward the legal and medical professions as a whole, but to the minority in both professions who are responsible for the contempt in which expert medical testimony is held. It is applicable to all varieties of expert testimony, for the rule of averages applies not only to medicine and law but to all varieties of business and occupation. If any one outside of these two professions believes that they have a corner on all the crooked experts in the world, all that is necessary to convince him of his error is for him to follow the court proceedings in cases calling for the admission of expert testimony of any kind.

Since the publication of Judge Littleford's testimony, a number of questions have been asked, practically all of them developing some different angle of the problem. The questions would lead one to infer that the professions of medicine and law are reeking with corruption, an inference which does a gross injustice to the great majority of the men in both professions. Charges of corruption are exceedingly easy to make and correspondingly difficult to prove. It is unusual to find a satisfied, unsuccessful litigant, and it is the unsuccessful litigant who is most apt to claim that corrupt testimony has brought about an adverse verdict.

One of the most difficult things to prove is the guilt of a physician charged with a criminal operation, and yet practically every physician believes that this crime is of common occurrence and that the criminals are known.

The sweeping charge that doctors are influenced in the character of the testimony given by the fee paid may or may not be true. Coming from "an officer of the court," a mere layman may be pardoned for wondering why the information on which the charge is based is not presented to a grand jury.

I have no knowledge of corruption in either profession, and by that is meant *legal* proof of corruption. I do know that the value of expert testimony has been seriously questioned and that newspaper articles and the spoken word have all but destroyed public confidence in expert testimony of all kinds.

The answers to the questions are based on what I have heard and read (hearsay evidence), which is not competent testimony. My reasons for bringing the subject to the attention of members of the American Medical Association is a desire to deny that all doctors and lawyers are bad men and a hope that changes in the rules governing the admission of expert testimony of all kinds will remove any temptation which may exist to either buy or sell this commodity.

The question has been asked, "What conduct or lack of ethics causes most criticism of the medical profession and expert medical testimony?"

The entire medical profession is criticized because of a very small minority of members who, if they had not become physicians, would have followed a natural bent for blackmail, counterfeiting, burglary or highway robbery. Having been deflected from this natural tendency, they find expression in more refined and less risky channels of activity. One of these is in furnishing corrupt expert testimony.

Hypothetic questions are constructed for the specific purpose of securing the desired answer. They should bring answers which are in practical agreement with opinions from reputable practitioners of the specialty involved. When the answers are in violent opposition, the public draws one of two conclusions: the doctors in the case know nothing at all concerning the conditions under question, or their answers are influenced by the fee paid. Some people are old-fashioned enough to call this perjury. Either of the foregoing conclusions penalizes the entire profession.

Another question is, "To what do you ascribe the greatest cause for public disrespect for the lawyers?"

The entire legal profession suffers because of its small minority of ambulance chasers, blackmailers and all-round crooks. In some communities the ambulance chaser is looked on as a bird of evil omen, for he carries the first news of death or injury at the same time that he offers his services in a prospective suit for damages. When two or more of these gentlemen are seen boiling into a street in a hot foot race or breaking traffic regulations on bicycles or in automobiles, the supreme contempt with which they look on anything remotely resembling a fee becomes manifest. Their ability to secure advance information speaks volumes for the system employed. Failure to use an aeroplane, thereby cutting off additional precious seconds, can only be ascribed to inability to qualify for a pilot's license.

The browbeating and blackguarding of men and women on the witness stand is the exclusive privilege of the legal profession. As "officers of the court" they are safe in a line of conduct which, if followed on the street, would quickly develop its own antidote. Highway robbery can be carried out with a fair degree of good form, or it can be made vulgar and brutal by unnecessary blackjacking and brass knuckling of the victim. In court the "frisking" of a victim can be done in such a genteel manner that the "friskee" goes away feeling almost as pleased as if he had been the lion at some social function. On the other hand, he may be put through third degree methods that cause him to loathe and hate the whole legal profession. Claude Duval methods are preferred by the victim, who naturally dislikes being beaten to a pulp after having been separated not only from his coat, but from his cloak also.

The careful exclusion of testimony on technical grounds, testimony which appeals to the average layman as furnishing the key to the entire situation, breeds a feeling of contempt for court proceedings. Rational human beings, bound and helpless slaves in the grip of precedent, fail to arouse any enthusiasm on the part of the average man over the proposition that they represent the only exact science.

The failure of the presiding judge to protect a witness from vulgar abuse and vilification causes him to have scant respect for a court that emerges from a trial dripping with the filth of the streets, alleys, gutters and sewers through which it has been dragged by an unscrupulous attorney.

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* Inaugural address, read before the Cincinnati Academy of Medicine, Jan. 15, 1916.

A third question concerns the faith placed in expert testimony by judges and jurymen. As a rule the judge is well educated and has had a wide experience; the combination enables him to place a fair valuation on the testimony. On the other hand, the jurymen are the judges of the facts and the evidence. In order to be eligible to serve on a jury, they must at the same time practically establish eligibility for admission to a home for the feebleminded. The "easy, extemporaneous liar," one whose fabrications have that rare quality, spontaneity, gets their vote.

"Which American professional household needs cleaning the worst, law or medicine?"

Both would be benefited by a thorough course of dry cleaning. Extremists have the impression that doctors and lawyers are bad men, that all bad men are either doctors or lawyers, and that a clean-up of undesirables in both professions would leave society clean and pure and wholesome. This assumption is an error. Business has its pirates; a clergyman is occasionally found deviating from the straight and narrow path; bankers have been known to default; the honest farmer is sometimes found to be a past master in the gold brick industry, and once in a long time—say once in 200 years—the newspaper profession furnishes a 100 per cent. candidate for first honors at a necktie party.

Both professions are at fault. The unscrupulous attorney needs false testimony to make a case; the unscrupulous doctor has it for sale. They enter into an unholy alliance to "bleed the victim white." It is a parallel case with the Adam and Eve scandal in which Eve plays the part of an attorney. (Or would it be fairer to Eve to make the serpent the attorney in that case?) At any rate, the demand for perjured testimony has its origin in the attorney, and the doctor furnishes the supply. The major portion of the responsibility certainly should be charged to the legal profession, because its members are "officers of the court." The court may be compared to the nest, the attorneys, the birds inhabiting it; "it's a dirty bird that fouls its nest."

Medicine and law are great professions. No more elevating spectacle can be conceived than an attorney fighting injustice or a physician freely risking his life in a battle against deadly epidemics. Both professions have made enormous contributions to the progress and happiness of the world. Both of them contain a majority of good men and a minority of bad ones. When the bad men in both begin to hunt in pairs, the good ones suffer in the public esteem. The good men in both professions have high standards of ethics, but they are subjected to unfair competition by men who regard subscribing to any standard of ethics as an evidence of weakness. The majority of both professions are tainted by enforced association with the small minority.

Can anything be done to relieve the conditions which, many people believe, make possible the purchase of perjured testimony?

Both professions have shown a disposition to clean house. Spasmodic attempts, resembling attacks of petit mal, have been made in the past without anything in particular being accomplished. Is it not possible for the overwhelming majority of both professions to transform the spasmodic attempts at reform, resembling petit mal, into attacks of grand mal or, if necessary into one of status epilepticus until reform has actually been accomplished?

Any attempt at reform will arouse violent opposition, for the guilty members of all professions will offer strenuous objections to being separated from their meal tickets. Vivid word pictures of an outraged constitution and Liberty dying in the midst of the most horrible agony will freight the atmosphere, while the flag will be pictured with all of its stars shot away. To this may be added the deep damnation implied when any attempt at reform is denounced as "un-American."

The selection of experts by the presiding judge, their fees to be assessed as a part of the court costs, would place the responsibility of selecting honest experts on the presiding judge. This plan would destroy the market place in which perjured testimony is for sale, permit the honest expert witness to come into his own, and wipe out the intellectual red light district established by unscrupulous members of both professions. Experts would become in fact, as well as in theory, advisors of the court, hired to clarify, not to confuse, issues. Court machinery would cease to be clogged by cases that many believe to be pure blackmail. Justice could discard the bandage now blinding her eyes and look on court proceedings unashamed.

It is suggested that medical societies over the country formally declare their attitude toward this problem by inviting the bar associations to cooperate with them in an effort to bring about changes in the rules governing the admission of expert testimony, which will eliminate, or at least reduce to a minimum, the temptation to sell corrupt expert testimony of any kind.

A BROAD CONCEPTION OF THE DIAGNOSTIC CLINIC

ROBERT POLLOCK, M.D.
San Diego, Calif.

Entrusted with the publicity of the San Diego Diagnostic Group Clinic, which has just opened its doors, I had formulated a brief item for the news columns of The Journal, when it occured to me that the San Diego enterprise possesses enough elements that are still untried to merit its being termed an original movement, and as such it will be of interest to many readers of The Journal. The features that are distinctly new may be briefly summarized thus: It is conducted with hospital facilities sufficient to complete diagnoses and yet with no hospital in which to carry on treatment. It does no charity work, nor does it cater to the man of means. It gives opportunity to every specialist, in the broadest sense of the word, in the community to express himself through its service. It discloses a profession willing to serve freely without pay a class of patients who are in no sense charity patients.

This clinic, which was opened to the public, Saturday, Feb. 17, 1917, is the initial expression of an earnest desire on the part of a local philanthropist to help the man of modest income ($100 per month or less). Mr. E. W. Scripps, the owner of valuable newspaper properties in San Diego and many other American cities, proposes to have this class furnished with careful group diagnosis, at a price within the means of the working man, Mr. Scripps paying all necessary deficits. To do this he has furnished and equipped a substantial building in an easily accessible residence neighborhood, and placed it through a board of five trustees, at the disposal of the local medical profession to plan and work out the details of a diagnostic clinic. The medical men representing the various special lines of work met and entrusted the working out of the details to an executive committee of five of their number. The staff as at present constituted consists of fifty physicians divided among the seventeen special lines of diagnosis recognized, one from each specialty acting at a time and together constituting the diagnostic group serving a month at a time.

Patients are accepted for diagnosis only and must be referred by a registered physician, to whom, after a diagnosis is completed, the patient is referred back. The referring physician is invited to be present at the discussion of his patient's case, and is furnished with the diagnosis and general suggestions for treatment. The referring physician is protected by rules which prohibit any member of the diagnostic staff accepting patients who have been examined by it within ninety days, unless requested to do so by the patient's physician.

The patient is received at the clinic by the nurse-superintendent, his history is taken by a member of the staff, and he is then put to bed and the various specialists on duty called to examine him. It is figured that from two to three days will be required to make a complete examination and discuss the findings in the average case. Each day at noon the group on service lunch at the clinic and discuss their findings, arriving at a consensus of opinion without being handicapped by the ethics of ordinary consultation, the presence of the family of the patient, or any excess courtesy to diagnoses already made. It is a threshing out of the truth as the members of the group see it and the reaching of diagnosis by weighing the various clinical data presented.

San Diego is a city of from 90,000 to 100,000 people, besides a considerable floating population. It is blessed with an ideal climate which draws people from every quarter of the country, and many of these present intricate problems for the diagnostician. The county medical society contains 125 of the total number of registered physicians. From this society have been selected the representative men of each specialty, recognition being given to all who care to serve. A little study of the division of work will suggest that few patients require the services of all members of the group to complete a diagnosis, and yet each is requested at least to consider the history of every case. A few statements are in order in answer to the question, often raised, why medical specialists should serve without pay on a diagnostic clinic to which all patients are asked to pay.

1. The fees are so modest that for a time the relation between receipts and overhead expense is difficult to determine.

2. The patients represent families with a total monthly income not exceeding $100. No others are received.

3. By cutting down the amount paid out for consultations and laboratory work, the patient will be enabled to pay his attending physician more nearly his proper fees.

4. Meanwhile it is not difficult to see that the staff should gain in many ways, through the broadening influence on its members of such scrutiny and comparison of one another's work.

5. Eventually, if the experiment proves a success, the clinic will probably be opened to all social classes.

A list of the charges, as at present arranged, is here appended.

FEES

Members of families having a total monthly income of $90 to $100..	$25
Members of families having a total monthly income of 80 to 90..	20
Members of families having a total monthly income of 70 to 80..	15
Members of families having a total income under $70..............	10
Single patients with monthly incomes of from $70 to $80..........	25
Single patients with monthly incomes of from 60 to 70..........	20
Single patients with monthly incomes under $60....................	15

We have here a diagnostic clinic, affiliated in no way with any of the local hospitals. It is served, broadly speaking, by the specialists drawn from the ranks of the county medical society, although not necessarily restricted to them. It aims to give opportunity for service to any qualified specialist so desiring. It accepts as patients only those of modest means, neither the rich nor the very poor being received. Its staff, for the present at least, serves without pay.

1000 Watts Building.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
American Gastro-Enterological Assn., Atlantic City, April 30-May 1.
American Urological Association, Chicago, April 2-4.
Arizona Medical Association, Douglas, April 17-18.
Arkansas Medical Society, Little Rock, May 1-3.
Association of American Physicians, Atlantic City, May 2-3.
California State Medical Society, San Diego, April 17-19.
Georgia Medical Association, Augusta, April 18-20.
Illinois State Medical Society, Bloomington, May 8-10.
Iowa State Medical Society, Des Moines, May 9-11.
Kansas Medical Society, Salina, May 2-4.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Mississippi State Medical Association, Jackson, May 8-9.
Missouri State Medical Association, Springfield, May 14-16.
Nat. Assn. for Study and Prev. of Tuberculosis, Cincinnati, May 9-11.
Nebraska State Medical Association, Lincoln, May 8-10.
New Hampshire Medical Society, Concord, May 16.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
Ohio State Medical Association, Springfield, May 14-16.
Oklahoma State Medical Assn., Lawton-Medicine Park, May 8-10.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.
Texas State Medical Association, Dallas, May 8-10.

Medicolegal

Difference Between Actions on Contract for Professional and Other Services

(Sturgeon vs. Pioneer Life Ins. Co. (Mo.), 186 S. W. R. 1192)

The Kansas City Court of Appeals reverses a judgment obtained by the plaintiff, a physician who sued to recover damages for breach of an alleged contract of employment, because, while he alleged that he was employed by the defendant as its medical examiner, he was permitted, without amending his petition, to prove and recover on a different cause of action, namely, that he was employed, not as a medical examiner, but as a medical director, the duties of which latter office were purely executive and did not include the performance of professional services, so that it was not necessary that the incumbent should be a licensed physician, in Missouri, to which state the plaintiff had come from another to take the position. The court says that it was not necessary for it to decide in this case whether a Missouri life insurance company may lawfully employ a layman to perform the duties of medical director. It was enough here that, confronted with the charge of breaching a contract for professional services, the defendant could not properly interpose a plea of mitigation of damages, but such a plea would have been a defense to the action in the form of one for nonprofessional services, which plea, under the circumstances, the defendant was not allowed to make. An action on a contract for professional services differs from one on a contract for nonprofessional services, especially in rules pertaining to the measure of damages. If, as the plaintiff insisted, and as his proof tended to show, he was hired, not as a physician, but to perform the functions of an executive officer of an insurance company, the trial court erred in instructing the jury that his recovery could not be diminished by his earnings in other employments; but if he was hired, as he alleged in his petition, to render professional services, he could invoke the rule, followed in the instructions, that "there can be no mitigation where the plaintiff is a professional man and is to be paid a fixed price for certain work."

Student Practice Provision Versus Students of Osteopathy — "Eyelet Dilation"

(State vs. Collins (Ia.), 159 N. W. R. 604)

The Supreme Court of Iowa affirms a judgment of conviction of the defendant of practicing osteopathy without first having obtained and filed with the county recorder a certificate of the state board of medical examiners authorizing him to practice. The court says that it agrees with the defendant that statutes regulating the practice of medicine, and providing penalties for failure to comply with conditions imposed on such practice, include all who practice the art of healing, whatever the therapeutic agency employed, and that, therefore, one practicing osteopathy is, at least for the purposes of such statutes, practicing medicine. The court also agrees, for the sake of the argument, with the contention that statutes for the purpose of enforcing conditions on the right to practice medicine are held by a number of Iowa cases cited to include almost any profession to heal, or action for the purpose of healing. But there was an attempt to present a point which it might be conceded that mentioned cases from different jurisdictions have not dealt with. The argument was this: Practicing osteopathy is practicing medicine. Section 2579, Iowa Code of 1897, exempts from the penalties of the statute on which the indictment in this case rested "students of medicine" who have stated qualifications (which the defendant had), if they prescribe "under the supervision of preceptors," or give gratuitous services "in case of emergency." It was said that if the defendant was denied this exemption, there was an arbitrary and, therefore, void discrimination between osteopaths whom the law regards as practicing medicine, and others who are also practicing medicine. Axiomatic law refutes this contention. Courts avoid invalidating statutes unless the question whether they are valid arises for, and demands, decision. In the instant case the defendant insisted throughout that the treatments given by him were not an application of the science of osteopathy, but were the application of a distinct system which he called "eyelet dilation." The statute exempts neither students nor practitioners of "eyelet dilation," and none but "students of medicine, surgery or obstetrics," and there was no claim that said dilation was either of these three. It will be time enough for the court to pass on whether a statute unduly discriminates against practitioners of osteopathy when some one presents the point who does not deny that he practices osteopathy. Again, while the defendant may have given gratuitous treatments, it did not appear that they involved a "case of emergency." And if that be passed, it was still undisputed that he gave many treatments in consideration of $2 per treatment. Finally, he was not a student at all, but a practitioner. If, for the sake of argument, he be treated as a student, the evidence showed clearly that he was not "a student, . . . prescribing under the supervision of a preceptor," although certain evidence presented the relation of consultants on occasion and occasional advice and direction. It was true that the defendant testified he claimed osteopaths would not treat a certain patient as the evidence showed he had treated her; that he claimed osteopaths did not use a pressure on the nerves to cure disease; that he was using "eyelet dilation" and not osteopathy; that his system termed "eyelet dilation" was entirely separate and distinct from "orthodox osteopathy." But the jury had before it what the defendant's treatments in fact were, and could find from that description alone that, though the treatments may not have been "orthodox osteopathy," yet it was an application of osteopathic science. The defendant himself described osteopathic treatment to be the doing of things which the evidence showed his treatments consisted of, and that both his treatments and osteopathy aimed to induce a flow of blood to the affected part. The court thinks that, while the jury might have found that the treatments were not osteopathic, it cannot disturb the findings of the jury that they were an application of the science of osteopathy.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

March XIII, No. 3

1 *Acidosis in Children, with Reference to Pathologic Anatomy. E. Lackner and H. Gauss, Chicago.—p. 209.
2 *Acidosis with Severe Diarrhea. O. M. Schloss and R. E. Stetson, New York.—p. 218.
3 *Familial Icterus of Newborn Infants. I. A. Abt, Chicago.—p. 231.
4 *Calcium Metabolism in Case of Hemophilia. C. H. Laws and D. M. Cowie, Ann Arbor, Mich.—p. 236.
5 Cerebrospinal Fluid in Poliomyelitis. P. C. Jeans and M. R. Johnston, St. Louis.—p. 239.
6 *Schick Test in Poliomyelitis, Scarlet Fever, Measles and in Normal Children. A. Zingher, New York.—p. 247.
7 Case of Diaphragmatic Hernia in an Infant. T. C. McCleave, Oakland, Calif.—p. 252.
8 Résumé of Work on Tuberculosis in Children for 1916. M. Michael, Chicago.—p. 256.

1. **Acidosis in Children.**—Lackner and Gauss record the clinical course and necropsy in a case which they believe to be one of acidosis, and an attempt is made to correlate the anatomic alterations with the clinical diagnosis. The anatomic diagnosis was: Lipemia; lipuria; anasarca; marked fatty changes in the liver; marked fatty degeneration of the kidneys; cloudy swelling of the myocardium; passive congestion of the lungs and small accessory spleen. The authors conclude as follows: There occurs in acidosis, lipemia from the failure of the body tissues to utilize the fats in the blood. Lipuria, an outward expression of lipemia, also resulting from the excretion of fat in the waste products of the kidneys as fatty casts. Fatty infiltration of the liver, which is a physiologic accumulation of fat from the blood. Fatty degeneration of the kidneys resulting from acid intoxication. Anasarca resulting from impaired internal and external respiration.

2. **Acidosis with Diarrhea.**—Investigations were made by Schloss and Stetson on more than 200 infants. These consisted in the determination of the carbon dioxid in the blood, the carbon dioxid in the alveolar air, the carbon dioxid combining power of blood plasma, the tolerance to sodium bicarbonate, the presence of acetone bodies in the urine and the ammonia coefficient of the urine. Infants suffering from severe diarrhea with toxic symptoms often show the following signs of acidosis: 1, decrease of the carbon dioxid of the blood and alveolar air; 2, decreased carbon dioxid combining power of the blood plasma; 3, high ammonia coefficient in the urine; 4, increased tolerance to sodium bicarbonate; 5, improvement of the symptoms after administration of sodium bicarbonate. These signs are evident in some cases of diarrhea before the typical symptoms of intoxication have developed, and serve as a warning and therapeutic indication. If an infant suffering from severe diarrhea has hyperpnea, the diagnosis of acidosis is almost certain. If hyperpnea is not observed the diagnosis of acidosis must rest on laboratory evidence. Thorough and carefully controlled treatment by sodium bicarbonate usually causes disappearance of the acidosis, but despite this, the infants frequently die from a severe form of malnutrition.

3. **Familial Icterus in Infants.**—Abt relates the occurrence of a rare disease in new-born children, characterized by progressive icterus occurring in successive pregnancies and of unknown origin. The disease nearly always terminates fatally, though one of his patients recovered after a most serious attack and with the most alarming symptoms.

4. **Calcium Metabolism in Case of Hemophilia.**—The calcium content of the blood in the case of hemophilia studied by Laws and Cowie is the same as that obtained under normal conditions. The calcium content of the blood increased perceptibly during the calcium feeding period. The coagulation time of the blood was lengthened during the calcium feeding period. The calcium content of the food (milk) was slightly greater in their series than in the usually reported analyses.

6. **Schick Test in Normal Children.**—Zingher holds that the Schick test is positive between 1 and 4 years of age in about 32 per cent. of normal children, in a slightly larger proportion of cases of measles, in twice as many cases of scarlet fever and nearly three times as many cases of poliomyelitis. Susceptibility to one of the less contagious diseases, like poliomyelitis, indicates that the child is more apt to be susceptible to other contagious and infectious diseases. Natural immunity reveals interesting problems, which can be partly solved by a study with the Schick test in diphtheria immunity. A uniform technic of making the test, standard solutions of toxin, a uniform interpretation of the test, and a large series of cases are essential in any attempt at making important deductions from the results obtained with the Schick reaction.

American Journal of Medical Sciences, Philadelphia

March, CLIII, No. 3

9 *Rôle of Fat in Diabetes. F. M. Allen, New York.—p. 313.
10 *Endothelioma of Right Bronchus Removed by Peroral Bronchoscopy. C. Jackson, Pittsburgh.—p. 371.
11 *Spelter Chills. D. Riesman and R. S. Boles, Philadelphia.—p. 376.
12 Unilateral Renal Hypoplasia and Dysplasia Due to Defective Arteriogenesis; Relation to So-Called Hypogenetic Nephritis. W. M. L. Coplin, Philadelphia.—p. 381.
13 *Rarity of Conjugal Phthisis. M. Fishberg, New York.—p. 395.
14 *Status of Diphtheroids with Special Reference to Hodgkin's Disease. W. F. Cunningham, New York.—p. 406.
15 Some Physiologic Effects of Various Atmospheric Conditions. J. A. Miller, New York.—p. 412.
16 Case of Extreme Acidosis Occurring in Man with Bilateral Cystic Kidneys. J. H. Means and O. F. Rogers, Jr., Boston.—p. 420.
17 Invasive Quality of Streptococci in Living Animal. W. L. Holman, Pittsburgh.—p. 427.

9. **Rôle of Fat in Diabetes.**—The most important fact shown by Allen's experiments is that the appearance of spontaneous downward progress observed in human patients can be exactly imitated in dogs. It is possible that further factors, notably occasional infections, may be operative in at least some human cases. It is not positive that the undernourished dogs will be able to live indefinitely, but it is conclusively demonstrated that the attempt at high nutrition, even with fat, produces in these dogs an appearance of spontaneous aggravation of conditions as striking as anything witnessed in human

patients, and that this result can be prevented at least for periods of years by limiting the total caloric intake and the body mass to correspond to the assimilative function. The experience with diabetic dogs warns unmistakably against efforts to maintain patients on a luxus level of diet or weight. The standard should approach that of Chittenden rather than that of Voit. Restriction of single foods, as carbohydrate or protein, suppresses symptoms temporarily, but lightening the total load on the weakened assimilative function is the only present means by which it may be hoped actually to halt the diabetic process.

10. **Endothelioma of Bronchus.**—Jackson claims that diagnostic bronchoscopy is indicated in cases of monolateral "asthma," bronchitis, bronchial obstruction, and in cases of tuberculosis in which persistent search fails to show tubercle bacilli. His case proved to be one of endobronchial tumor. The tumor was removed under local anesthesia. Jackson says that this is the only recorded case of apparent cure of an endothelial endobronchial tumor by peroral bronchoscopy, and only the second endoscopic removal of any form of malignant growth from a bronchus.

11. **Spelter Chills.**—"Spelter chills" is the name given by Riesman and Boles to a condition heretofore described under such varying terms as brass-founders' ague, brass chills, zinc chills, smelter shakes, "Giesfieber" or "Staubfieber," and "fièvre des fondeurs." The authors believe the condition results from the inhalation and ingestion of the fumes and flakes of zinc oxid arising from the melting and volatilizing of spelter, which is the commercial name for zinc in its impure state. The first thing complained of is a creepy, chilly sensation up and down the spine which gradually extends throughout the entire body. It may continue as a mere chilliness, but more often develops into a genuine rigor which lasts for from one-half hour to an hour or even from two to three hours. At its height, cramps and pains in the limbs are apt to occur; abdominal pain is infrequent, except as it may follow the ingestion of cold drinks. The pulse is increased in frequency and there is a slight elevation of temperature. Preceding the chill there is a dry, scratchy sensation in the throat, a sticking, pricking feeling in the tongue, oppression in the chest, and an irritating cough, usually unproductive. Actual dyspnea is rare. There is a feeling of prostration and of nausea which frequently eventuates in severe vomiting. Diarrhea is common. As the attack subsides the patient, quite exhausted, breaks out into copious perspiration and soon falls into a deep sleep. A temporary loathing for food and an unpleasant metallic taste in the mouth are present on awakening and last a little while. The attacks do not often incapacitate the workers. The authors discuss this condition fully.

13. **Rarity of Conjugal Phthisis.**—In an examination of 170 married couples in which one of the consorts was tuberculous, and who lived under conditions favoring transmission of the disease, in poverty and want and under deleterious hygienic and sanitary surroundings, Fishberg found only five, or 2.9 per cent., in which both the husband and wife were affected with the disease.

14. **Diphtheroids and Hodgkin's Disease.**—Tuberculous glands, glands from cases of subleukemic lymphadenosis, Hodgkin's disease, a supraclavicular gland from a case of large round cell sarcoma, and primary mediastinal glands were examined by Cunningham and organisms were found which, he says, may be placed in the diphtheroid group, and only on morphologic grounds was he able to say that many of them are of different strains. The organisms which were isolated from glands of Hodgkin's disease, however, are very similar if not identical with those from the tuberculous glands. In some instances the diphtheroids were primarily associated with cocci which later overgrew them. Cunningham points out that it is reasonable to suppose that glands draining such places as the mouth, throat and tonsils should harbor such organisms as are commonly found in these portals. With the evidence at hand, however, the occurrence of them in the laboratory, in blood cultures (appearing rather late), in the heart's blood at the morgue, in ascitic fluid, and in a series of gland cultures of questionable technic, and not in a series where technic is definitely controlled, leads him to believe that we are dealing with organisms whose natural habitat is the laboratory. He does not believe that the organism heretofore described by various other workers bears any relation to the cause of Hodgkin's disease.

Archives of Pediatrics, New York

February, XXXIV, No. 2

18 *Coagulation of Cow's Milk in Human Stomach. J. Brennemann, Chicago.—p. 81.
19 *Immediate Tonsillectomy in Incipient Acute Endocarditis of Tonsillar Origin. E. C. Fleischner, San Francisco.—p. 118.
20 Elucidation of Some Arrhythmias of Heart in Children by Means of Electrocardiograph. R. H. Halsey, New York.—p. 128.
21 Transmission of Bovine Tuberculosis to Human Beings. M. P. Ravenel, Columbia, Mo.—p. 137.
22 Scarlet Fever and Measles Occurring Simultaneously in Same Individual, Other Children of Family Acquiring Measles Only. D. J. M. Miller, Atlantic City, N. J.—p. 139.
23 History of Pediatrics in New York. A. Jacobi, New York.—p. 144.

18. **Coagulation of Cow's Milk in Stomach.**—Seventy-four experiments are reported in detail by Brennemann. He found that cow's milk coagulates in the human stomach within a few minutes. The small curds formed at first, increase in size, for about two hours, by coalescing with their neighbors, after which they decrease because of the peripheral digestive action of the gastric juice, but are still present after five hours. The curds of raw milk are very large and hard, and those of boiled milk small and soft; those of pasteurized milk between these, but almost like those of raw milk; that is, raw milk is a very solid food—boiled milk a semiliquid food. The less the fat in the milk the harder and larger the curd, the more the fat, the smaller and softer the curd. The greater the amount of fat the longer the stay in the stomach, and the slower the digestion. Milk taken very slowly forms a larger curd than when taken rapidly. The greater the dilution with water the finer, flakier and more porous the curd. Alkalies and sodium salts very greatly inhibit coagulation—even stop it completely if in sufficient amounts. Precoagulated milk, such as buttermilk, pegnin milk or eiweissmilch, show very little tendency to recoagulation. Dried and condensed milks, as a rule, form a minimum curd. Starchy decoctions, such as barley water, have a very decided influence in lessening the size of the curd; much more so than simple watery dilution. Soluble carbohydrates, such as dextrins and sugars (milk, cane and malt) have apparently no appreciable influence on the curd.

19. **Immediate Tonsillectomy in Acute Endocarditis.**—Cases of acute endocarditis occurring in children in whom there has previously been no cardiac disease are reported by Fleischner. The type of acute endocardial inflammation to which special attention is called is that in which the endocarditis develops in the course of an acute, or rather subacute, inflammation of the tonsils. A tonsillectomy was done in each case.

Boston Medical and Surgical Journal

March 1, CLXXVI, No. 9

24 Treatment of Pneumonia. E. A. Bates, Springfield.—p. 293.
25 Intestinal Toxemia and Sequelae. W. E. Preble, Boston.—p. 296.
26 Trench Foot. H. M. Frost, Boston.—p. 301.
27 Ileostomy for Ileus and General Peritonitis. J. W. Lane, Boston.—p. 304.
28 "Constitutional" vs. "Local" Signs and Symptoms in Diagnosis of Early Pulmonary Tuberculosis. J. B. Hawes, 2d, Boston.—p. 307.
29 Morphin-Atropin, Pituitary Extract and Ether in Obstetrics. J. F. Martin, Boston.—p. 310.
30 *Successful Use of Internal Splints in Septic Compound Fracture. P. H. Leavitt, Boston.—p. 311.

30. **Use of Internal Splints in Septic Compound Fracture.**—A case is reported by Leavitt in order to register the successful use of a bone plate in a septic compound fracture of the lower leg, the value of constant irrigation, and the subsequent use of direct sunlight. The patient sustained a compound fracture of the tibia at about its middle, a fractured fibula and fractured astragalus. The fracture was treated conservatively; that is, the skin cleaned and the edges of the wound cauterized. One cubic centimeter of 2 per cent. iodin was injected into the wound, and pillow and side splints applied.

Sepsis occurred, since the fracture was transverse and muscle pull made it impossible to hold the ends in apposition. Since after open reduction a complete plaster, even if bivalved, would not allow a careful dressing of the now septic fracture, with the large area of denuded skin, it was decided that a bone plate would be the best means of approximating the ends. A bone plate was applied and screw holes were drilled diagonally down to the point of fracture in order to insure drainage of the septic material between the approximated edges of the bone. At the end of twenty-seven days from application, the plate became loosened on account of sepsis in the screw holes; it was removed and a Parham band applied. There was at this time, about 2 by 1 inches of tibia exposed, and 3 by 4 inches of surrounding muscle. Exposure to direct sunlight was then started and kept up for six weeks. Nine weeks after operation a large sequestrum was removed, and the skin area healed over more rapidly without the aid of grafts.

Bulletin of Johns Hopkins Hospital, Baltimore

March, XXVIII, No. 313

31 *Transfusion of Blood: History, Methods, Dangers, Preliminary Tests, Present Status. R. D. McClure, Detroit, and G. R. Dunn, Baltimore.—p. 99.
32 *Aleukocythemic Leukemia. Acute Myeloblastic Leukemia. Chloroma (?). Chronic Lymphatic Leukemia. J. T. King, Jr., Baltimore.—p. 114.
33 *Possibility of Developing an Experimental Chemotherapy of Tuberculosis. P. A. Lewis, Philadelphia.—p. 120.

31. **Transfusion of Blood.**—One hundred and fifty transfusions have been performed by McClure and Dunn. These included the following cases: pernicious anemia, 17 cases; secondary anemia, 19 cases; hemophilia and shock, each 2 cases; hemorrhage, 6 cases; leukemia, 5 cases, and 39 other cases, such as intoxications, septicemia, dysentery, typhoid, other infections, purpura hemorrhagica, benzol poisoning and tumors (carcinoma). A severe reaction occurred in 20 cases; a slight reaction, in 25 cases; a chill in 15 cases; temperature over 101 F. in 34 cases; hemolysis in 8 cases. Results: life saving, 15 cases; beneficial, 63 cases; no benefit, 56 cases and harmful, 16 cases. One death was due to the transfusion as an immediate cause, owing to the improper matching of the blood.

32. **Aleukocythemic Leukemia.**—Three cases of leukemia of the aleukocythemic variety are reported on by King. In one of them, an acute myeloblastic leukemia, so far as is known these was never a real leukocytosis; in the second, a case of chloroma, there was a history of a leukocytosis, but none was found in counts made several months apart; and in the third case, one of chronic aleukocythemic lymphatic leukemia, there was no leukocytosis prior to the terminal stage. In this case there was a high mononuclear percentage. The blood picture was changed, however, from that of an aleukocythemic, to that of a typical lymphatic, leukemia during an acute bronchitis and an acute bacillary dysentery.

33. **Possibility of Developing an Experimental Chemotherapy of Tuberculosis.**—Following the observation that the tuberculous tissue in the living animal was easily penetrated by trypan red, many other dyes of the same general class, chemically speaking, were tested by Lewis for their reaction in this particular. A considerable number were found which could become concentrated in the diseased tissue to a greater or less extent. Many of these had never been accurately described from a chemical point of view; others presented difficulties in manufacture. After much consideration, a dye known to the trade as Niagara blue 2B (benzidin plus 2 H. Acid) was chosen as the starting point of a second attempt to construct a series of iodin and phenol compounds. The disinfectant action of various substances for the tubercle bacillus has also been studied. The procedure by which the results reported were obtained was to determine the least concentration of the substance in glycerin bouillon which would definitely inhibit the growth of the tubercle bacillus. For comparison, the typhoid bacillus was used. It was found that the typhoid bacillus is much more resistant than the tubercle bacillus; in other words, the susceptibility of the latter is greater. The results were as follows: Phenol: Typhoid 1/800 (concentration) = tubercle bacillus 1/2,000, or the susceptibility of the tubercle bacillus = 2½. Resorcin: Typhoid 1/4,000 = tubercle bacillus 1/100,000 or susceptibility of tubercle bacillus = 25. Benzidin and Resorcin combination: Typhoid 1/400 = tubercle bacillus 1/100,000 or susceptibility of tubercle bacillus = 250. Acridin orange: Typhoid 1/4,000 = tubercle bacillus 1/400,000 or susceptibility of tubercle bacillus = 100. Heliotrope: Typhoid 1/1,000 = tubercle bacillus 1/400,000 or susceptibility of tubercle bacillus = 400. Of the anilin dyes, specific activity is manifested quite generally by those related to safranin and to acridin, and in greater or less degree by many of the azo-dyes made with benzidin as the basic constituent. On the whole, the number of substances showing this property is large rather than small. Although in the studies previously made with other bacteria, the concentration required to inhibit the growth of the culture is roughly proportional to the higher concentration required to kill the microorganism in a short period of time, with the tubercle bacillus this is not the case. So far no substance has been discovered by which the tubercle bacillus is killed more readily than is the typhoid bacillus. The ability to inhibit the growth of the tubercle bacillus in cultures is not dependent on high disinfectant activity in general. It is an attribute of a number of substances which are relatively nontoxic for higher animals.

Journal-Lancet, Minneapolis

March 1, XXXVII, No. 5

34 Ureteral Stone; Report of Case. O. Owre, Minneapolis.—p. 129.
35 *Intracanalicular Papilloma of Breast. E. S. Judd, Rochester, Minn.—p. 141.
36 Dosage and Therapy in Tooth Extraction. F. B. Kremer, Minneapolis.—p. 144.
37 Treatment of Carcinoma of Uterus. T. Bratrud, Warren.—p. 146.

35. **Intracanalicular Papilloma of Breast.**—Among thirty-two cases of papillomas of the breast, Judd found the following pathologic classification: intracystic papillomas, 8; intracystic carcinomatous papillomas, 8; intracanalicular papillomas, 10; carcinomatous intracanalicular papillomas, 3; intra-acinar papilloma, 1; intracanalicular papilloma associated with a carcinoma of the breast, 2. In this series, carcinoma was present in 11; in 3 other cases the pathologist believed the condition was carcinomatous, but he was unable to make a definite diagnosis. The characteristic symptom in these 32 cases was bleeding or a serohemorrhagic discharge from the nipple. In a few instances there were palpable tumors, but in all of these the growth was produced by chronic mastitis or by cystadenoma, and in no instance was there a papilloma in the duct large enough to be palpated, except in one case, in which it extruded from the nipple.

Journal of Experimental Medicine, Baltimore

March, XXV, No. 3

38 *Drug Fastness of Spirochetes to Arsenic, Mercurial and Iodid Compounds in Vitro. S. Akatsu and H. Noguchi, New York.—p. 349.
39 *Resistance of Spirochetes to Action of Hexamethylentetramin Derivatives and Mercurial and Arsenic Compounds. S. Akatsu, New York.—p. 363.
40 Influence of Carbohydrates on Cultivation of Spirochetes. S. Akatsu, New York.—p. 375.
41 *Absorption of Fat in Partially, and in Completely Depancreatized Dogs. C. W. McClure, B. Vincent and J. H. Pratt, Boston.—p. 381.
42 Some Field Experiments Bearing on Transmission of Blackhead in Turkeys. T. Smith, Princeton, N. J.—p. 405.
43 Coccidia in Sparrows and Their Assumed Relation to Blackhead in Turkeys. T. Smith and E. W. Smillie, Princeton, N. J.—p. 415.
44 *Intestinal Obstruction. Experimental Study of Intoxication in Closed Intestinal Loops. L. R. Dragstedt, J. J. Moorhead and F. W. Burcky, Chicago.—p. 421.
45 Influence of Certain Organic Substances on Growth of Tubercle Bacillus. P. A. Lewis, Philadelphia.—p. 441.
46 Proteose Intoxications and Injury of Body Protein. Metabolism of Fasting Dogs Following Proteose Injections. G. H. Whipple and J. V. Cooke, San Francisco.—p. 461.
47 Id. Metabolism of Dogs with Duodenal Obstruction and Isolated Loops of Intestine. G. H. Whipple, J. V. Cooke and T. Stearns, San Francisco.—p. 479.
48 *Effect of Cold on Malaria Parasites in Mosquito Host. W. V. King, New Orleans.—p. 495.

38. **Drug Fastness of Spirochetes.**—The authors attempted to determine whether or not, by subjecting several varieties of spirochetes to increasing doses of certain chemotherapeutic agents, a gradual increase of resistance to the latter could be shown. For this purpose, pure cultures of *Treponema pallidum, Treponema microdentium,* and *Spirochaeta refringens* were used against the action of salvarsan, neosalvarsan, bichlorid of mercury and iodin potassium iodid solution in vitro. *T. pallidum* and *T. microdentium* have, within three to four months, increased their tolerance to salvarsan and neosalvarsan to five and one-half times their original mark. With *S. refringens* the increase was about three times. Against the action of mercuric chlorid the amount of increased tolerance of *T. pallidum* was about 35 to 70 times the original, while that of *T. microdentium* was about ten times as much, and was reached within ten weeks. *S. refringens* resisted thirty times the original dose. There was an unmistakable increase of resistance of these spirochetes to the action of the iodin iodid solution (Lugol's solution) when they were grown for several generations in fluid medium containing the iodin solution, but the rate of increase between the initial and the acquired tolerance was slight. In general, the addition of Lugol's solution to fluid medium has a weak inhibitory influence on the growth of the spirochetes, requiring for the total suppression of growth a quantity of over 0.7 to 5 c.c. of the culture medium. The tolerance reached was for about three times that amount. A similar tolerance phenomenon has not been established when employing a solid instead of a fluid medium containing the drugs.

39. **Resistance of Spirochetes.**—The majority of the seventy-six new compounds tested by Akatsu possessed spirocheticidal powers ranging between 1:1,000 (30) to 1:2,500 (14), while only 2 attained the power of 1:5,000, 1 of 1:25,000, and 2 of 1:50,000. On the other hand, 8 killed the spirochetes in a dilution of 1:750, 10 in 1:500, 7 in 1:250, 1 in 1:100, and 1 in 1:50. Two with an activity of 1:50,000 and 1 of 1:25,000 were mercury compounds; mercuric chlorid kills the organisms in a dilution of 1:100,000 under the same experimental conditions. Phenol is spirocheticidal in a dilution of 1:2,500, 40 per cent. formaldehyd solution in 1:750, salvarsan in 1:7,500, and neosalvarsan in 1:2,500. Neither sodium nor potassium iodid displayed any marked spirocheticidal property (1:10 only), while iodin in the form of Lugol's solution was able to kill them at 1:75. Sodium cholate killed in 1:5,000, sodium glycocholate and taurocholate in 1:2,500 each, saponin in 1:7,500; sodium oleate in 1:7,000, and cobra lecithid and native cobra venom in a dilution of 1:1,000 each.

41. **Absorption of Fat in Depancreatized Dogs.**—It was found by the authors that dogs with a subcutaneous transplant secreting and discharging pancreatic juice externally absorbed no more fat than dogs in which the pancreatic remnant was undergoing rapid atrophy and sclerosis. Hence, the condition of the pancreatic tissue remaining in the body does not influence the amount of fat absorbed by the intestine. The absorption of fat by the intestinal mucous membrane is always markedly disturbed when the pancreatic secretion is excluded from the intestine. After the complete removal of all pancreatic tissue from an animal, the absorption of considerable amounts of fat can still take place.

44. **Intoxication in Closed Intestinal Loops.**—The authors' experiments showed that closed intestinal loops in which bacteria are first removed are compatible with life. Closed intestinal loops in which bacteria are present but in which tissue necrosis is prevented, are compatible with life. Closed aseptic intestinal loops in which the blood supply is completely occluded are compatible with life. The normal secretions and bacterial products of the duodenum and jejunum are not sufficiently toxic to produce any symptoms when allowed to drain into the abdominal cavity. The results do not support the theory of Draper of a normal toxic secretion of the duodenal mucosa, neutralized by the jejunal mucosa, or the perverted secretion theory of Whipple. Bacterial activity plus necrotic tissue, or the absorption of toxic products resulting from the action of putrefactive bacteria on necrotic tissue is the important factor in the rapid death in simple closed intestinal loops.

48. **Effect of Cold on Malaria Parasites.**—The experiments reported by King show that the parasite of tertian malaria in the mosquito host is able to survive exposure to a temperature of 30 F. for a period of two days, 31 F. for four days, and a mean temperature of 46 F. for seventeen days. In a smaller series of tests the sporonts of the estivo-autumnal parasite have shown a resistance to temperatures as low as 35 F. for twenty-four hours.

Journal of Parasitology, Urbana, Ill.

December, 1916, III, No. 2

49 *Effects of Radiation on Development of Trichinella Spiralis. E. F. Tyzzer and J. A. Honeij.—p. 43.
50 Nematodes from Fresh-Water Fishes. H. B. Ward and T. B. Magath, Urbana.—p. 57.
51 Polycystid Gregarines from Arthopoda. M. E. Watson.—p. 65.
52 Trematode Larva Encysted in Crab, Helice Tridens (De Haan). S. Yoshida.—p. 76.
53 Cytoleichus Penrosei, New Arachnoid Parasite Found in Diseased Lungs of Prairie Dog, Cynomys Ludovicianus. F. D. Weidman.—p. 82.

49. **Effects of Radiation on Development of Trichinella Spiralis.**—The results obtained by Tyzzer and Honeij fail to furnish an experimental basis for the treatment of schistosomiasis by radiation, so that if the latter is attempted it should be regarded as an experiment rather than an approved mode of procedure.

Kentucky Medical Journal, Bowling Green

March, XV, No. 3

54 Detection of Early Pulmonary Tuberculosis. E. Morris, Oak Forest, Ill.—p. 103.
55 Treatment of Tuberculosis. E. Morris, Oak Forest, Ill.—p. 109.
56 Specific Treatment of Tuberculosis. S. H. Von Ruck, Asheville, N. C.—p. 110.
57 *Indications for Cholecystostomy and Cholecystectomy. I. Abell, Louisville.—p. 114.
58 *What Can Internist Do For Infection of Bile Tract? W. A. Jenkins, Louisville.—p. 117.
59 Home Treatment and Cure of Opium and Morphin Addicts with Tabulated Report of Fifty-Two Cases. J. A. Snowden, Winchester.—p. 125.
60 Pruritus; Its Cause and Treatment. C. R. Lanahan, Louisville.—p. 131.

57 and 58. Abstracted in THE JOURNAL, Dec. 2, 1916, pp. 1693 and 1694.

Maine Medical Association Journal, Portland

February, VII, No. 7

61 Surgical Significance of Abdominal Contusions. F. H. Jackson, Houlton.—p. 209.
62 Asthma in Children. F. P. Webster, Portland.—p. 225.
63 Use of Duodenal Tube. R. F. Chase, Portland.—p. 230.

Medical Record, New York

March 3, XCI, No. 9

64 Hospital Social Service for Children. H. D. Chapin, New York.—p. 353.
65 Some Recent Work on Pancreas in Its Relation to Diabetes Mellitus. W. N. Berkeley, New York.—p. 355.
66 Compulsory Health Insurance. E. V. Delphey, New York.—p. 357.
67 Problem of Medical Care of Five Million Individuals. A. C. Burnham, New York.—p. 361.
68 Nonvenereal Infection of Prostate. G. K. Swinburne, New York.—p. 363.
69 Treatment of Asthma by Pituitary Extract and Epinephrin Injections. E. Zuebelin, Baltimore.—p. 364.
70 Approved Newer Methods of General Anesthesia. R. C. Coburn, New York.—p. 367.
71 Epithelioma of Nose Apparently Caused by Irritation from Tortoise Shell Spectacles. L. F. Herz, New York.—p. 370.

Michigan State Medical Society Journal, Grand Rapids

March, XVI, No. 3

72 Medical Library of University of Michigan and Its Value to Practitioners of Michigan. A. S. Warthin, Ann Arbor.—p. 89.
73 Mitral Stenosis, Aortic Stenosis, Aortitis, Angina Pectoris and Aortic Aneurysm. W. J. Wilson, Jr., Detroit.—p. 95.
74 Poliomyelitis. I. L. Polozker, Detroit.—p. 100.
75 Methods of Diagnosis in Abdominal Disease. J. B. Jackson, Kalamazoo.—p. 105.
76 Case of Postoperative Tetanus. H. S. Collisi, Grand Rapids.—p. 110.

77 Report of Two Cases of Von Recklinghausen's Disease (Neurofibromas). H. de B. Barss, Ann Arbor.—p. 113.
78 Case of Mycosis Fungoides. J. A. Elliott, Ann Arbor.—p. 117.
79 *Relation of Pernicious Anemia to Infection; Report of Case. L. H. Newburgh, Ann Arbor.—p. 118.
80 Case of Hydronephrosis Resulting in Carcinoma of Kidney Medulla. R. W. Kraft, Ann Arbor.—p. 120.

79. **Relation of Pernicious Anemia to Infection.**—The positive findings on physical examination in Newburgh's case were extreme pallor, lemon yellow color typical of pernicious anemia, a large spleen, a heart lesion, a blood picture which could not be distinguished from pernicious anemia, and fever. The fever, which gradually diminished, averaged 100 to 102 during the first week; during the second week it was a little lower; during the third week she had practically no fever. Two blood cultures were made and both were positive, probably a streptococcus.

Military Surgeon, Washington, D. C.

March, XL, No. 3

81 Influence of European War on Transmission of Infections of Disease. W. C. Rucker.—p. 245.
82 Combined Method (Fluoroscopy and Surgery) for Localization and Extraction of Projectiles. J. M. Flint, New Haven, Conn.—p. 259.
83 Secondary Sutures of Gunshot Wounds as Economic Factor in War Surgery. D. P. Penhallow, Paignton, England.—p. 274.
84 Saline Treatment of Infected Wounds on Western Front. W. A. Clark.—p. 278.
85 Occurrence of Endamebic Dysentery in Troops Serving in El Paso District from July, 1916, to December, 1916. C. F. Craig.—p. 286. To be continued.
86 Demography in so far as it Relates to Vital Statistics of Armies. W. P. Chamberlain.—p. 303.

Modern Hospital, St. Louis

March, VIII, No. 3

87 Philippine General Hospital, Manila. W. E. Musgrave, Manila.—p. 165.
88 How Much Coal Does a Patient Cost? R. C. Beadle, New York.—p. 172.
89 Tuberculosis Preventorium for Children, Farmingdale, N. J. J. P. Quimby, Farmingdale, N. J.—p. 177.
90 Experiment in Cooperative Care of Indigent Sick. W. B. Small, Waterloo, Iowa.—p. 180.
91 County Tuberculosis Sanatoriums in Minnesota. R. Bosworth, St. Paul, Minn.—p. 182.
92 Small Community Hospital—Interns, Nurses and Employees. J. A. Hornsby, Chicago.—p. 185.
93 Nopeming Hospital for Tuberculosis at Duluth, Minn. A. T. Laird, and W. L. Sullivan, Duluth, Minn.—p. 189.
94 Oleomargarine—Useful and Economical Substitute for Butter. J. P. Street, New Haven, Conn.—p. 195.

New Orleans Medical and Surgical Journal

March, LXIX, No. 9

95 Colonization of Epileptics. W. B. Terhune, Jackson.—p. 612.
96 Agglutination of Bacteria by Means of Dried and Dosed Serums, with Special Application to Diagnosis of Cholera. G. Marocco.—p. 617.
97 Removal of Varicose Veins of Leg with Local Anesthesia. C. W. Allen, New Orleans.—p. 621.
98 Apothesine, New Local Anesthetic. C. W. Allen, New Orleans.—p. 623.
99 Sprains. I. Cohn, New Orleans.—p. 627.
100 New French Aid in Correction of Deformed Feet. P. A. McIlhenny, New Orleans.—p. 633.
101 Removal of Foreign Body (Knife Blade) from Brain. H. B. Gessner, New Orleans.—p. 636.
102 System of Peripatetics. E. S. Goodhue, New Orleans.—p. 639.

New York Medical Journal

March 3, CV, No. 9

103 Destruction of Angiomas and Other New Growths by Injection of Quinin and Urea Hydrochlorid. W. W. Babcock, Philadelphia.—p. 385.
104 Carcinoma of Bladder. H. Lilienthal, New York.—p. 386.
105 Medical Department with Mobile Army. W. H. Steers, Brooklyn.—p. 388.
106 Report of One Year's Work in Tuberculosis. J. D. Gibson, Denver.—p. 396.
107 Method of Obtaining Duplicate Reconstructions from One Series of Wax Plates. F. D. Weidman, Philadelphia.—p. 400.
108 Restoration of Sight in Case of Hypermature Cataract of Twenty Years' Standing Complicated by Acute Glaucoma. M. Talmey, New York.—p. 401.
109 Research in Epilepsy. H. A. Knox, Bayonne, N. J.—p. 406.
110 Chorea Complicating Labor. K. B. Bretzfelder, New Haven, Conn.—p. 409.

Ohio State Medical Journal, Columbus

March, XIII, No. 3

111 Need of Greater Appreciation of Foods. T. H. Infield, Zanesville.—p. 149.
112 Maxillary Sinusitis, Diagnosis, Pathology and Treatment. W. O. Bonser, Toledo.—p. 151.
113 Adenomas of Mammary Gland. J. W. Means and J. Forman, Columbus.—p. 154.
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Oklahoma State Medical Association Journal, Muskogee

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121 New Operation for Canthoplasty with Special Technic in Cases Due to Trachoma. D. W. White and P. C. White, Tulsa.—p. 93.
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124 Anesthesia. J. T. Riley, El Reno.—p. 108.
125 Differential Diagnosis and Treatment of Diseases of Throat, Characterized by Formation of Pseudomembrane. M. C. McNew, Ada.—p. 144.

Ophthalmic Record, Chicago

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126 Coloboma of Iris in Association with Congenital Cataract. G. O. Ring, Philadelphia.—p. 113.
127 Eskimo Snow Blindness and Goggles. J. Daland, Philadelphia.—p. 116.
128 Ocular Disturbances Due to Malaria and Quinin. J. S. Fernandez, Havana, Cuba.—p. 118.
129 Cornea and Retina of Eye. O. Haab, Switzerland.—p. 124.
130 New Operation for Canthoplasty with Special Technic in Cases Due to Trachoma. D. W. White and P. C. White, Tulsa, Okla.—p. 132.
131 Making Ophthalmometer More Helpful. S. Mitchell, Hornell, N. Y.—p. 143.
132 Spontaneous Rupture of Cornea and Delivery of Lens in Glaucomatous Eye. J. H. Andrew, Brooklyn.—p. 144.
133 Local Anesthetizers. E. E. Maddox, Bournemouth, England.—p. 145.
134 Some Experiences with Colored Lenses Under Subtropical Conditions. F. J. Walter, Daytona, Fla.—p. 146.

Rhode Island Medical Journal, Providence

March, I, No. 3

135 Study of Empyema or Pyothorax. J. W. Keefe, Providence.—p. 57.
136 Hookworm Disease in Rhode Island. A. M. Burgess and P. D. Meader, Providence.—p. 61.
137 Gynecology as Specialty. W. G. Sullivan, Providence.—p. 65.
138 Case of Tuberculous Meningitis. H. S. Bernstein, Providence.—p. 68.

West Virginia Medical Journal, Huntington

January, XI, No. 7

139 Ectopic Gestation with Special Reference to Treatment. X. O. Werder, Pittsburgh.—p. 233.
140 Hospital and Physician. P. O. Clark, Wheeling.—p. 238.
141 Work of Division of Sanitary Engineering of West Virginia State Department of Health. M. Tolman, Charleston.—p. 244.
142 Why West Virginia Needs Model Law for Collecting Vital Statistics. H. B. Wood, Charleston.—p. 247.
143 Clinical Notes—Chicago Clinics, November, 1916. J. E. Cannaday, Charleston.—p. 248.
144 Toxicity of Present Supply of Salvarsan and Neosalvarsan. O. S. Ormsby and J. H. Mitchell, Chicago.—p. 250.

February, No. 8

145 Plea for Mothers. E. H. Thompson, Bluefield.—p. 273.
146 Preparation of Patient for Operation and for Postoperative Treatment. J. A. Guthrie, Huntington.—p. 276.
147 Erysipelas. H. R. Fairfax, McConnor.—p. 278.
148 Raynaud's Disease. E. S. DuPuy, Beckley.—p. 279.
149 Physical Methods of Treatment. O. B. Beer, Buckhannon.—p. 281.
150 Conservation of Health of Schoolchildren. R. H. Edmondson, Morgantown.—p. 283.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

February, X, No. 4

1 *Roentgenography in Dysentery and Other Cases. C. T. Holland, —p. 357.
2 *Intestinal Protozoa of Nondysenteric Cases. A. M. Smith and J. R. Matthews.—p. 361.
3 Spirochetes Occurring in Feces of Dysenteric Patients. H. F. Carter.—p. 391.
4 Treatment of Entameba Histolytica Infections by Alcresta Ipecac. J. W. W. Stephens and D. L. Mackinnon.—p. 397.
5 *Protozoal Findings in Nine Hundred and Ten Cases of Dysentery. H. F. Carter, D. L. Mackinnon, J. R. Matthews and A. M. Smith.—p. 411.
6 Arneth Count in Healthy Aboriginal Children of Northern Australia. A. Breinl and H. Priestley.—p. 427.

1. **Roentgen Examination in Dysentery.**—Holland reports negatively on this question. He says that the shadows in the roentgenogram do not show any difference from shadows which are frequently seen when bismuth or barium meals are being watched through a bowel. Bismuth does not adhere to the surfaces of either gastric or duodenal ulcer; why should it adhere to ulcers in the large bowel?

2. **Intestinal Protozoa of Nondysenteric Cases.**—In addition to the common intestinal protozoa which Smith and Matthews found among the 500 patients whose stools they examined, cyst-like bodies were observed in the feces of seven of the patients. These were the vegetable organisms described by Wenyon and to which the name "I body" has been given. The infection was pure in four cases, but in the other three cases the organism occurred with various protozoa. The infection was occasionally fairly heavy, and in two cases was remarkably persistent. In four cases the patients had a previous history of diarrhea, while in the remaining three cases there was none. Six out of the seven patients infected had been in the Mediterranean area. In the remaining case the patient had spent a year in France. The eggs of *Trichocephalus dispar (Trichuris trichiura)* were found in four cases. The infection was always small. Three of the patients concerned had been to subtropical parts of the world. One of the infections occurred, however, in a sailor who had never been out of home waters.

5. **Protozoal Findings in Dysentery.**—Among these 910 cases there were (other than protozoal) six cases which showed worms' eggs in the feces; four patients were infected with *Trichuris trichiura* (L.) (= *Trichocephalus dispar*, Rudolphi), one with *Ascaris lumbricoides*, L., and one with *Ancylostoma duodenale*, Dubini. The organism described under the name "I body" was found in five cases.

British Medical Journal, London

February 10, I, No. 2928

7 *Therapeutic Administration of Oxygen. J. S. Haldane.—p. 181.
8 Minor Injuries to Joints. F. Romer.—p. 183.
9 Diseases of Male Urethra. F. S. Kidd.—p. 185.
10 Characters of Enterococcus. R. Donaldson.—p. 188.
11 Delayed Tetanus in Connection with Injuries to Bone not Presenting Obvious Signs of Sepsis. M. Foster.—p. 189.
12 *Smallpox Vaccination by Puncture. H. W. Hill.—p. 189.
13 Treatment of Malaria and Malarial Coma by Intravenous Injection of Quinin Urethan. Richet and W. B. Griffin.—p. 190.

7. **Therapeutic Administration of Oxygen.**—Haldane first discusses the physiologic effects of oxygen want, then how oxygen want is produced, what seems to be possible in directly combating it by oxygen administration, and what risks have to be avoided. Speaking of carbon monoxid poisoning, he says: In poisoning by carbon monoxid and similar respiratory poisons, death occurs when about 80 per cent. of the hemoglobin is disabled. If the patient is still alive there will, therefore, still be 20 per cent. of his hemoglobin available. But by administering pure oxygen one can at once increase the amount of oxygen in simple solution to about 2.5 c.c. This promptly averts any further danger from want of oxygen, and in carbonic oxid poisoning the oxygen rapidly drives out carbon monoxid from the hemoglobin, so that after fifteen or twenty minutes of continuous administration the oxygen may be discontinued. In acute inflammatory conditions of the lungs there is sometimes also want of oxygen, as shown by cyanosis; and in cases in which the inflammatory condition is accompanied by the presence of "edematous" exudation throughout the lungs, the cyanosis is often very great. When there is cyanosis (whether of the deep purple or gray type) due to hindered passage of oxygen through the alveolar walls, this can be combated by raising the percentage of oxygen in the alveolar air and so increasing the diffusion pressure. In ordinary cases of croupous pneumonia the alveolar oxygen pressure may be a matter of decisive importance.

In cases in which the source of danger is a failure of the circulation, the inhalation of oxygen may also be of use, and Haldane has seen the cyanosis in a case of valvular disease clear up at once on the administration of oxygen. In cases in which prolonged administration of oxygen seems desirable, the minimum quantity of oxygen which will remove the cyanosis should be carefully ascertained by observation of the patient. This minimum quantity is likely to be anything from 1 to 3 liters per minute. The quantity needed will depend on the weight and age of the patient; and if hyperpnea due to carbon dioxid is present, a larger quantity will be needed to reach a given percentage. A man at rest usually breathes about 7 liters of air a minute. The probable risks of prolonged administration of pure oxygen must be borne in mind, and if necessary balanced against the risks of allowing the oxygen want to continue.

12. **Smallpox Vaccination by Puncture.** — The method described by Hill is the one used in Canada since 1915. It is as follows: Wash the arm with soap and water, then with rectified spirits, and with ether. Expel the vaccine at three (or four) points on the arm, making a triangle (or square) having not less than 2 inches between the points. Puncture the arm through the drops of vaccine. Six tiny punctures, drawing no blood, are made through each drop, each set of six occupying a space of not more than ⅛ inch square. The needle is held almost parallel with the surface. Not over one thousandth of an inch enters the epithelial layer. A peculiar little "snick" is felt as the needle point goes in.

Lancet, London

February 17, I, No. 4877

14 Influence Exerted by Military Experience of John Hunter on Himself and Military Surgeon of Today. G. H. Makins.—p. 249.
15 Naval Medicine in Great War. H. D. Rolleston.—p. 255.
16 *Passive Immunity Conferred by Prophylactic Dose of Antitetanic Serum. A. T. MacConkey and A. Homer.—p. 259.
17 *Clinical Agglutinometer; Apparatus for Use at Bedside or in Laboratory for Making Rapid Estimations of the Agglutinin Titer of the Blood. R. P. Garrow.—p. 262.
18 *Effect of Pyrexia on Inoculation Agglutinins. G. S. Wilson.—p. 263.
19 Unrestricted Diet of Sedentary Worker. A. D. Waller.—p. 272.

16. **Immunity Conferred by Antitetanic Serum.**—The object of this communication is to record some experiments made to ascertain the smallest quantity of antitoxin which would give complete protection for one week. The authors found that in the guinea-pig ¼, ½ or ¾ U. S. A. unit does not afford complete protection for one week, though these amounts saved life against a dose of toxin which was fatal to the controls. However, 1 unit or more gives complete immunity during at least one week. As an ordinary man is about 220 times heavier than guinea-pigs, this would mean that, calculating by body weight only, a man would require some 250 U. S. A. units to protect him for a week, while a dose of 500 U. S. A. units would allow for a man being twice as susceptible as the guinea-pig. As large a dose of 40 U. S. A. units (corresponding to at least 8,000 units in man) does not afford complete protection for a fortnight.

17. **Clinical Agglutinometer.**—The technic described by Garrow is an elaboration of Bass and Watkins' method with the object of rendering it not merely a qualitative test for agglutinins in the blood, but an accurate quantitative estimation of the agglutinin titer of the blood. This object is attained by means of an apparatus which Garrow devised, "clinical agglutinometer," for use at the bedside or in the laboratory.

18. **Effect of Pyrexia on Inoculation Agglutinins.**—A series of ninety-seven soldiers and others, who had been inoculated within the preceding twenty months against typhoid, was taken by Wilson and the agglutinin titer of the serum of each patient was estimated. The average agglutinin titer of serums obtained from patients who suffered from a febrile attack since inoculation was lower than that of those who had no such attack. As regards the effect of pyrexia on the agglutinin titer, there appeared to be no appreciable difference between a short, high, and a long, low temperature. The results as obtained by the macroscopic and microscopic methods, taken on the average, are very similar. The relations in the individual cases between the two methods are extremely variable, the macroscopic methods showing very marked agglutination in some cases in which the microscopic failed to demonstrate any at all. Wilson analyzes his findings as being only a suggestion that febrile conditions decrease the agglutinin titer. Persistence of agglutinins in the serum of a patient who has had a temperature of 102 F. for four days, whether estimated by the macroscopic or the microscopic method, is insufficient to justify a diagnosis of typhoid.

Journal of Tropical Medicine and Hygiene, London

February 1, XX, No. 3

20 Acanthokeratodermia Precornufaciens. A. J. Chalmers and S. Atiyah.—p. 25. To be continued.

Medical Journal of Australia, Sydney

January 20, I, No. 3

21 Recruit's Heart and Soldier's Heart. R. R. Stawell.—p. 49.
22 Case of Hydatidiform Mole. J. G. W. Hill.—p. 53.

January 27, No. 4

23 Treatment of Septic Compound Fractures. H. M. Moran.—p. 71.
24 Nerve Injuries Seen on Active Service. A. E. Mills.—p. 73.
25 Impressions of Medical Work at Front. J. Morton.—p. 75.
26 Experiences with No. 2 Australian Stationary Hospital. J. E. F. Deakin.—p. 76.
27 Bilharziosis. P. E. W. Smith.—p. 79.

February 3, No. 5

28 Spruce in North Queensland. A. Breinl and H. Priestley.—p. 95.
29 *Unusual Deformity of Hand. J. N. Griffiths.—p. 101.
30 Some Cases of Metastatic Meningococcal Infection of Eye. E. T. Smith.—p. 101.
31 Myxedema of Twenty Years' Duration Commencing in Child of Nine. J. C. Verco.—p. 102.

29. **Deformity of Hand.**—Early in infancy Griffiths' patient sustained a severe burn of the hand. The wound healed with the little finger bent back over the hand and under the scar tissue. The separate phalanges were palpable under the scar tissue. A misformed finger nail projected free from the skin.

Bulletin de l'Académie de Médecine, Paris

January 23, LXXVII, No. 4, pp. 103-114

32 *Uremia and the Internal Secretions. Rémond and Minvielle.—p. 105.
33 Correction of Malformed Noses without a Scar. (Les nez vilains corrigés chirurgicalement sans cicatrice.) J. Bourguet.—p. 107.
34 *Vaccine Therapy of Typhoid Osteomyelitis. P. Emile-Weil—p. 108.
35 Influence of Vasodilatation on Localization of Spontaneous Vaccinal Pustules. L. Camus.—p. 111.

32. **Uremia and the Internal Secretions.**—Rémond and Minvielle report a few experiences with rabbits, undertaken to demonstrate the defensive power of the association of the extracts of the liver and the thyroid against the toxic products in the serum of persons with uremia. The animals injected with a liver extract and thyroid extract seemed to bear injection of human uremic blood serum much better than the controls. It also afforded protection against cantharides nephritis to a certain extent.

34. **Vaccine Therapy of Typhoid Osteomyelitis.**—One patient was cured in three weeks by the vaccine therapy of a typhoidal suppurating bone process that had dragged along for two years, during which time it had been subjected to seven futile operations. The cure was complete in one week in another case after eleven months of the affection and three operations. Improvement amounting to a cure was obtained also in two weeks in processes of six and twelve months' standing in other cases. It failed only in one case and a sequester was found and removed, and the process is now healing.

Paris Médical

February 3, VII, No. 5, pp. 85-120

36 *Treatment of Diarrhea of Breast-Fed Infants. A.-B. Marfan.—p. 87.
37 Deficit Disturbances in Infants. (La notion de la "carence" en pathologie infantile.) E. Weill and G. Mouriquand.—p. 92.
38 The Factory Worker's Infant and Infant Mortality. A. Lesage.—p. 97.
39 Outdoor Convalescence for Infants. (La lutte contre la mortalité infantile par les convalescences de plein air.) H. Triboulet.—p. 101.
40 Physical Education; Its Aims and Control. H. Méry.—p. 105.
41 Pulmonary Tuberculosis in Infants under Two. H. Barbier.—p. 109.
42 Drosera in Whooping Cough. (Traitement de la coqueluche.) P. Lereboullet.—p. 114.
43 Progeria in Dwarfs. (Nanisme à type sénile ou progeria—sénilité prématurée.) P. Lereboullet.—p. 118.

36. **Diarrhea in Breast-Fed Infants.**—Marfan says that it is not necessary to keep the child exclusively on water when it develops diarrhea. It is enough to lengthen the intervals between feeding, and give a few teaspoonfuls of boiled water in the interim.

Presse Médicale, Paris

January 11, XXV, No. 3, pp. 25-32

44 *Gastro-Enteritis for which Uremia is Responsible. C. Lesieur.—p. 25.
45 Value of Alcohol in Sterilization of the Hands. E. Marquis.—p. 28.

44. **Uremigenic Gastro-Enteritis.**—Lesieur applies this term to a subacute form of gastro-enteritis of the hypertoxic, choleriform type. He has encountered it in 33 of 413 soldiers with gastro-enteritis in the course of six months, among 1,230 cases of diarrhea. The mortality was 33 per cent. and the postmortem findings resembled closely those of grave gastro-enteritis in infants, due to toxic action. The liver was always large but the kidneys showed severe lesions, mostly accompanied by lesions of long standing, explainable by some old acute infectious diseases, scarlet fever, typhoid, or else by abuse of alcohol. The heart was also decidedly below par. Bacteriologic examination gave variable findings, but the common substratum of the kidney lesions imprinted the stamp on the clinical picture, with its choleriform condition, oliguria and uremia.

Progrès Médical, Paris

January 13, XXXII, No. 2, pp. 9-18

46 *Tests of the Hearing. (Expériences relatives au contrôle auditif.) H. Gosset.—p. 9.
47 Relapsing Fever in Servia. Duchamp.—p. 10.
48 Extract of Blood Platelets in Arrest of Hemorrhage. (Les propriétés physiologiques des globulins, leur rôle dans la coagulation du sang.) E. Forgues.—p. 14.

46. **Detection of Simulation of Deafness.**—Among Gosset's tests for simulation is one in which he tells the patient to give the sound "Ah" as high as he can and then continue it down as low as he can. The truly deaf stop when they reach the point below which they cannot hear their own voice, while the simulator continues to the base of the scale. The test can be applied reversed. In the cases of deafness from shell shock, the immobilized organ, having its function arrested, soon falls a prey to degeneracy. In deafness from any shock, sensation and motor and psychic factors cooperate in maintaining the derangement, and it must be acted on by each of these three routes. Reeducation is the guiding principle.

Revue Médicale de la Suisse Romande, Geneva

November-December, 1916, XXXVI, No. 11-12, pp. 677-824

49 Conditions Producing Amphoric Resonance with Induced Pneumothorax. L. Bard.—p. 677.
50 Association of Drugs. (Des associations médicamenteuses.) M. Roch.—p. 684.
51 *Surgical Treatment of Pyloric Stenosis in Infants. E. Monnier.—p. 704; H. Vulliet.—p. 710.
52 Fibrinous Pseudo-Râles with Empyema. F. Heim and Jeanneret-Minkine.—p. 716.
53 *Nerve Blocking for Operations on Limbs. (Toutes les interventions chirurgicales sur les membres peuvent, à l'aide de points de repère précis, relever de l'anesthésie tronculaire.) A. Jentzer.—p. 720.
54 *Spontaneous Dislocation of the Hip Joint in Congenital and Infantile Spastic Paralysis. A. Richard.—p. 735.
55 Obstruction and Inflammation of Wharton's Duct. (Whartonite aigue suppurée à la suite d'une obstruction par un calcul salivaire.) L. Du Pan.—p. 765.

51. **Operative Treatment of Stenosis of the Pylorus in Infants.**—Monnier has applied Rammstedt's method in four cases of infants, 3, 4 and 8 weeks old, and the results were most satisfactory. One child was so emaciated from the constant vomiting that any intervention seemed hazardous. But the vomiting stopped at once after the operation and the infant rapidly recuperated. None of the children probably would have survived a more complicated operation. The Rammstedt technic is merely to slit lengthwise the muscular fibers of the pylorus which are always hypertrophied in these cases. The incision leaves the mucous membrane intact. The cut edges spread apart for 2 or 3 mm. leaving a gap in the depths of which the mucosa can be seen slightly protruding. No suturing is done; at most a small flap of omentum is drawn over the gap. The whole procedure takes only a few minutes.

Vulliet discusses the limits for conservative measures, and gives an illustration of the Rammstedt technic as applied with complete success in an infant almost moribund from the incessant vomiting. The operation is done under a few drops of chloroform or ether or both, drawing the pyloric region out through a small opening above the umbilicus. The pylorus formed a hard tumor, in size, shape and hardness like an almond, the surface anemic but nothing to suggest an inflammatory process. He incised the serous and muscular coats down to the mucosa, and the cut edges gaped widely but there was scarcely any bleeding. Rammstedt warned that the feeding of the infant must be resumed very cautiously or there is liable to be trouble. In this case the infant was so hungry that it was given too much at first, and the child vomited anew while the weight declined. With more scrupulous care as to feeding and finally a wet nurse, all trouble subsided.

53. **Nerve Blocking for the Limbs.**—Jentzer has worked out on the cadaver the best means and sites for nerve blocking on the limbs, and reports excellent results from this method of anesthesia alone or supplemented by infiltration anesthesia. He gives the details of thirteen cases, mostly of suppurating tuberculous processes, including one case in which three large drains were drawn through the three fistulas, all emerging together in the palm. He usually combined infiltration to encircle the limb with the nerve blocking technic. An important advantage of the latter is that it actually cuts off the pain. Sensation does not reach the perceiving centers, while with general anesthesia, although the patient does not feel the sensation of pain yet it reaches the nerve centers and acts on them, and this is undoubtedly a factor in surgical shock. The work issues from the surgical clinic at Geneva.

54. **Spontaneous Dislocation of the Hip Joint with Spastic Paralysis.**—Richard discusses the different forms of Little's disease as encountered at the surgical clinic at Bâle, and the cases of spontaneous dislocation of the hip joint as observed there and published in the literature. The two personal cases were a young man and a girl of nearly 7. The child has a positive Wassermann although the mother gives a negative reaction. The spastic paralysis in the region not only modifies the position of the parts of the joint but interferes with their functioning and hence with normal growth. The young man was treated by reduction, tenotomy of the adductors and of the tendon of the fascia lata, but this not proving successful, arthrodesis was done, with tenotomy later of the sartorius and anterior rectus. The desired result was thus realized in time. The little girl was treated with tenotomy of the adductors, of the tendon of the fascia lata and part of the anterior rectus, with immobilization as for congenital luxation. But no benefit was derived, complete failure resulting. The outcome evidently depends in large measure on the intensity of the spasmodic contracture. Arthrodesis is evidently the only recourse when the acetabulum is displaced.

Archiv für klinische Chirurgie, Berlin

1916, CVII, No. 3, pp. 379-530. Last indexed Dec. 23, 1916, p. 1975

56 *Gallstone Obstruction and Retention Main Factor in Destructive Processes. (Die Gallensteinkrankheit im Lichte der Anfalloperation.) Sprengel.—p. 379.
57 Case of Two Complete but Empty Supernumerary Prepuces. (Eine bisher unbekannte Geschlechtsteilmissbildung beim Mann.) F. Danziger.—p. 463.
58 *Diversion of Ascitic Fluid into Subcutaneous Tissue Causing Large Local Accumulation of Fluid. (Entstehung eines grossen Hautwassersacks nach subkutaner Ascitesdrainage.) K. Henschen.—p. 469.
59 *Cartilage Transplants. (Neue Experimente zur Frage der homoplastischen Transplantationsfähigkeit des Epiphysenknorpels und des Gelenkknorpels.) F. H. von Tappeiner.—p. 479.
60 Abdominal War Wounds, Especially Wounds of the Liver. (Ueber Bauchschüsse.) E. Liek.—p. 509.

56. **Cholelithiasis as Illuminated by Local Findings in Operating During an Attack.**—Sprengel gives four colored plates showing that in the gallbladder, as well as in the appendix, the acute mechanical disturbances from obstruction of the outlet are entirely different from the disturbances that occur with slowly developing chronic processes. The latter are of far less pathogenic importance as the retention is mainly responsible for the havoc set up. Sprengel's experience with 104 operative gallstone cases in eighteen recent months shows that obstruction of the outlet and retention entail necrotic processes in the mucosa and perforation, whether there is infection or not, if the contents are virulent. The infection may be and often is secondary. In 43 of the cases the operation was done in the midst of an acute attack. In 26 of these cases the contents of the gallbladder were virulent and an insoluble stone was found plugging the outlet in 21 of them, in 2 others this was dubious, and in 3 the outlet was completely obstructed although not by a stone. In a further group of 16 cases the contents were virulent, but the stones were of the soluble kind, and the obstruction was only temporary. These are the typical "colic" cases. In a third group of 3 cases the obstruction was complete but the contents were sterile and merely hydrops resulted. In all these types repair sets in as soon as the obstruction to the outlet has been removed.

58. **Outcome of Subcutaneous Drainage of Ascitic Fluid.**—Henschen gives illustrations of a woman who had been treated for ascites five years before by diversion of the ascitic fluid into the subcutaneous tissue. It had accumulated in the abdominal wall, forming a large pendant bag on both sides. The case shows that the tissues are unable to absorb such excessive amounts of fluids. The woman had to be tapped occasionally. Conditions were about the same when examined the third and fifth years.

59. **Cartilage Transplants.**—Tappeiner reports extensive experimental work on rabbits and dogs with homoplastic implants of epiphyseal and joint cartilage. The joint cartilage gave the best results, but even these were disappointing. Only in two of the total series of rabbits did the cartilage retain its shape.

Berliner klinische Wochenschrift

January 8, LIV, No. 2, pp. 25-48

61 Present Status of our Knowledge of Ranula Cysts. E. Neumann.—p. 25.
62 *The Artificial Hand in the Practice of Medicine. (Die künstliche Hand im ärztlichen Beruf.) M. Cohn.—p. 29.
63 Methyl Violet Medicated Gauze. R. Hey.—p. 32.
64 Sclerodermia with Sclerodactylia. J. Zadek.—p. 36.
65 Spontaneous Infectious Gangrene of External Genitals in Soldiers. J. Kyrle.—p. 37.

62. **The Artificial Hand in the Practice of Medicine.**—Cohn had been practicing medicine for seventeen years when the loss of his left hand compelled the use of an artificial hand, and he relates that he is able to work with it almost as before, with very few exceptions. He knows of three other physicians who have lost a hand in the war, and he sees no reason why those long trained and long practicing medicine cannot continue their medical career. He found recently, however, that the societies protecting physicians against suits for malpractice have annulled his policies. He mentions a physician in America, who, he has been told, seems to have been able to keep up his practice perfectly well with an artificial hand.

Münchener medizinische Wochenschrift, Munich

January 2, LXIV, No. 1, pp. 1-40

66 *Epidemic of Myositis Simulating Cerebrospinal Meningitis. (Epidemie von myositischer Pseudogenickstarre.) H. Curschmann.—p. 1.
67 *Causes of Death with Intraperitoneal Rupture of the Bladder. F. Rost.—p. 5.

68 *Search for and Treatment of Bacilli Carriers. (Ueber Bazillenträgeruntersuchungen.) P. T. Müller.—p. 6.
69 Nearly Complete Utilization of Synthetic Ethyl Esters of Stearic Acid. (Die Ausnutzung synthetischer Fettsäureäthylester beim Menschen und beim Hunde.) H. H. Franck.—p. 9.
70 Means Proposed to Increase the Strength of the Young. (Hebung der Volkskraft durch Kräftigung unserer Jugend.) Doernberger.—p. 10.
71 Trigeminal Neuralgia and Anesthetization of Gasserian Ganglion. F. F. Härtel.—p. 11.
72 *A Serochemical Reaction in Syphilis. C. Bruck.—p. 25.
73 Biceps Prothesis. (Zur Versorgung von kurzen Vorderarmstümpfen durch Muskelunterfütterung.) H. Spitzy.—p. 26.
74 Roentgen Therapy Preferable to Operation for Tuberculous Cervical Glands. M. Wilms.—p. 29.
75 *Improved Technic for Inguinal Herniotomy. (Ein Verfahren der Operation von Leistenhernien.) E. Seitz.—p. 29.
76 Nervous Heart and Heart Neuroses. Geigel.—p. 30.
77 Pathology of War Epidemics. K. Helly.—p. 32.
78 Simplified Culture Medium for Typhoid Group. W. Kulka.—p. 32.
79 Determination of the Rickettsia Prowazeki in Typhus Patients. H. da Rocha-Lima.—p. 33.
80 Reinfusion of Blood after Puncture of Recent Hemathorax. Elmendorf.—p. 36.
81 Injuries from Asphyxiating Gases. P. Ujlaki.—p. 37.
82 Bath and Disinfection Cart for Field Use. R. Ohm.—p. 37.
83 Support for Pelvis. (Eine Feldbeckenstütze.) O. Vulpius.—p. 39.
84 *Actively Movable Artificial Arms. (Armersatz nach Carnes oder Sauerbruch?) von Baeyer.—p. 39.

66. **Epidemic of Myositis Simulating Meningitis.**—Curschmann describes some typical cases out of an epidemic of severe articular and muscular rheumatism affecting the spine and muscles in the neck exclusively, and thus producing the clinical picture of epidemic meningitis at first. In most of the cases this acute febrile polyarthritic or monomyositic or polymyositic rheumatism remained restricted to the neck region. The epidemic was quite widespread through the Mainz region in children and adults during the spring of 1908. The muscular process showed no signs of migrating to other regions. The sternocleidomastoid and trapezium muscles were tender and in some cases swollen. The onset was always stormy, with vomiting and high fever, and the fever kept high with subsidence by lysis. Notwithstanding this stormy onset, the myalgia and the contracture seemed to pass off harmlessly in from four to five days or six to eight; only in two cases did the affection last three weeks. In a few cases there seemed to have been a prodromal stage of pains in limbs and back resembling those of influenza, and in one case actual acute articular rheumatism had preceded and then merged abruptly into the cervical myositis. After recovery, unilateral chorea followed. Treatment in all the cases was merely with salicylates and local application of heat, dry or moist.

67. **Cause of Death in Intraperitoneal Rupture of the Bladder.**—Rost protests against the general assumption that peritonitis is responsible for the early fatal outcome in these cases. The patients who die within the first three days succumb to uremia, not to peritonitis; in fact, before peritonitis has had time to develop. This assertion is based on extensive clinical and experimental work, and it teaches the necessity for operating at once, without waiting to see if peritonitis is going to develop.

68. **Search for Bacilli Carriers.**—Müller reports here that 165 carriers of typhoid, paratyphoid or dysentery bacilli were found among the 20,019 men examined in about two months last spring. Among the lessons taught by his experience is the necessity for systematic reexamination at intervals of all the men who have anything to do with the preparation or handling of the food. He also emphasizes the necessity for repeated reexamination of carriers of dysentery bacilli, as the conditions of their elimination vary at different times. His epidemiologic studies have further shown that an indigestible meal or exposure to cold and wet is liable to bring on the disease in a previously healthy carrier.

72. **A Chemical Seroreaction in Syphilis.**—Bruck states that during the ten years since he, with Wassermann and Neisser, applied the complement fixation test to the diagnosis of syphilis, he has been constantly striving to work out a chemical technic which would have the same diagnostic significance and would render the amboceptor, complement, etc., unnecessary. Recently he noticed that the nitric acid precipitate of syphilitic serum behaves differently from that from normal serum. With normal serum the precipitate dissolves completely, while with syphilitic serum it persists and piles up in a gelatinous and characteristic pile on the floor of the test tube. The reaction seems to be due to a quantitative difference; syphilitic serum seems to contain more of the substance which nitric acid precipitates. His tests of the reaction on 200 syphilitic and 200 normal serums gave almost constantly concordant results, harmonizing with the clinical findings and almost always with the Wassermann findings. The patients with positive Wassermann findings all gave a positive chemical reaction, with the exception of one case of latent syphilis, and two in the second stage of syphilis who gave only a weakly positive reaction. The negative Wassermann cases were all persistently negative in the chemical test, with the exception of one case of inherited syphilis and one of a large defect in the palate. The Wassermann dubious findings were always decidedly positive or negative with the chemical test, and the effect of treatment could be traced in the chemical reaction.

The official pure nitric acid sometimes varies in its proportions. The one on which his technic is based contained in each 100 gm. 24.77 HNO_3, in each 100 c.c. 28.48 HNO_3. The specific gravity was 1.149. It is best to test the nitric acid until the exact amount is determined which, with normal serum, still gives a negative reaction. This amount is then to be used for the test. With the nitric acid he used, 0.3 c.c. answered the purpose. The test is made with 0.5 c.c. clear serum in a test tube to which is added 2 c.c. distilled water, and the whole shaken. Then, with a precision pipet, the 0.3 c.c. of the Ac. nitr. purum of the German pharmacopeia is added and the whole thoroughly shaken and then set aside at room temperature for ten minutes. Then 16 c.c. of distilled water at room temperature (about 15 C.) is added and, closing the tube with the finger, it is shaken up and down three times carefully, not vigorously enough to make it foam. This is repeated ten minutes later, and the tube is then set aside for half an hour. By this time the precipitate is entirely dissolved in the tube with normal serum, while the syphilitic serum shows a distinct flocculent turbidity. In two or three hours or, better still, in twelve hours, the gelatinous and characteristic precipitate is piled up on the floor of the test tube.

75. **Improved Technic for Inguinal Herniotomy.**—Seitz shows by two illustrations the weak point left by the Bassini technic and describes how he obviates this by slitting the hernial sac and spreading it out flat and suturing it over the gap. The neck of the sac is ligated and cut off close. He has applied this method only in cases of indirect inguinal hernia, but he thinks it is applicable also for the direct.

84. **Artificial Arms.**—Baeyer discusses the various advantages of the Sauerbruch and the Carnes systems of prostheses for the arm. He says that Carnes' patents have been bought by a German philanthropic organization and a Berlin factory is already turning out the arms in large numbers. The Carnes artificial arm is under control of the muscles of the shoulder and back, while Sauerbruch provides the stump with passages through the muscles from which voluntary control of the prothesis can be realized. Parallel tests with both systems seem to show that the Sauerbruch principle is simpler, while the working with the arm is less fatiguing. The men could pick up a match out of a box of matches, shuffle cards, and draw their sword out of the scabbard—three types of ordinary movements. On the whole, he declares, and for the general run of men, the Sauerbruch method seems the most advantageous.

Wiener klinische Wochenschrift, Vienna

January 4, XXX, No. 1, pp. 1-32

85 Treatment of War Wounds of Vessels and Traumatic Aneurysms. L. R. v. Rydygier.—p. 1.
86 *Operative Treatment of Abdominal Wounds in Later Stage. (Bauchschüsse im Spätstadium.) B. O. Pribram.—p. 2.
87 *Tardy Tetanus. Doberer.—p. 8.
88 High Resection of Nerve with Short Stumps below the Knee. (Entfernung des Fibularestes und hohe Resektion des Nervus peronaeus bei kurzen Unterschenkelstümpfen.) P. Erlacher.—p. 12.
89 New Thumb Made with Second Metacarpus as Terminal Bone. (Daumenplastik.) B. R. v. Arlt.—p. 15.
90 Prophylaxis of Gas Phlegmons and Tetanus by Mechanical Cleansing of Wounds and Peruvian Balsam. M. Segen.—p. 16.

91 Glue in Making of Provisional Protheses. (Ueber die Verwendung des Leimes in der orthopädischen Werkstätte.) R. Werndorff.—p. 16.
92 Exposure to Tuberculosis during the War. (Ueber tuberkulöse Exposition und exogene tuberkulöse Infektion unter den besonderen Verhältnissen des Krieges.) H. von Hayek.—p. 29. Continued.

86. **Abdominal Wounds.**—Pribram reiterates that so many men with abdominal wounds succumb in the course of the month after the injury that recovery under conservative measures alone is extremely rare. The patient may even feel quite well for days or weeks, as the most dangerous processes may run a symptomless course for a time. Intraperitoneal fecal abscesses may cause no symptoms except an evening rise in temperature, but roentgenoscopy may locate them. A typical laparotomy examining the whole intestine is too often fatal at this stage; small incisions are better, at the points where trouble is suspected. Immediate suture is preferable when the small intestine has been injured, but with the large intestine it is enough to expose the fistulas. They generally heal spontaneously. Access to a wound of the large intestine may be better from the rear; while injury of the colon flexures is best reached by resection of the corresponding ribs. Drainage toward the back is recommended but to drain the small pelvis, the patient should lie prone on the abdomen, or the drainage should be into the rectum. Spinal and local anesthesia render excellent service. These recommendations are based on analysis of 161 secondary operative cases of war wounds of the abdomen, with eighty-two recoveries.

87. **Tardy Tetanus.**—In the case reported 128 days had elapsed since the injury and the man was apparently in sound health, when, without any cause that could be discovered, tetanus developed. After a prolonged course, with injection of 400 antiserum units, the tetanus subsided. A month later the scraps of shell in the tissues were removed and at once the tetanus flared up again, but in a mild form for five days, and since then the man, an Italian prisoner of war, has been in good health. Some of the mice inoculated from the tissues around the shell scraps developed tetanus.

Gazzetta degli Ospedali e delle Cliniche, Milan

January 7, XXXVIII, No. 2, pp. 17-32

93 *True Significance of Eosinophilia in the Mild Anemias of School-children. F. Scaroni.—p. 19.
94 *Trauma and Locomotor Ataxia. E. Terrile.—p. 20.

January 11, No. 3, pp. 33-48

95 Anchilostoma or Anguillula. E. Bertarelli.—p. 33.
96 Symptoms Induced by Compression of Trunk Nerve from Traumatic Enlargement of Vessels. C. Mantelli.—p. 34.

93. **Eosinophilia in Anemia of Schoolchildren.**—Scaroni gives the particulars of examination of forty-two schoolchildren all with more or less anemia. The eosinophils ranged from zero to 25.5 per cent., and in every case with eosinophilia over 3, 7 and 12 per cent. ascarides or trichocephalus eggs were found in the stools and also in a number with eosinophilia as low as 4 per cent. School anemia was thus shown to be the work of helminths in all but twelve of the forty-two cases.

94. **Trauma and Locomotor Ataxia.**—Terrile's patient was a man of 65 in the initial phase of tabes when an industrial accident materially hastened and aggravated its course.

Policlinico, Rome

January 14, XXIV, No. 3, pp. 73-88

97 Treatment of Septic Wounds. (Ferite settiche.) L. Silvestrini.—p. 73.
98 *Rational Constitution of Local Boards of Health. T. Gualdi.—p. 78.

Supplementary Number, pp. 105-128

99 Hysteria with Sciatica; Two Cases. E. Trocello.—p. 105.
100 Eczema in Children, Acidosis, and Calcium Treatment. M. Famini.—p. 110.

98. **Rational Constitution of Boards of Health.**—Gualdi states that Italy is proud of the fact that she stands at the head of the other nations of Europe in legislation on matters of public health. From 1888 to date there has been systematically organized a wise system for public health matters which has worked well through the years and even during the upheavals of the war. The central administration, the general board of public health, watches over the entire country and intervenes wherever there is a menace of epidemic disease. It also expends most wisely the funds appropriated by the state for hygienic purposes, carrying on successful campaigns against the chronic scourges of the country. But aside from the great central administration, matters are far from satisfactory. The local boards of health, even when in charge of capable hygienists, are suffocated by formalism and political opportunism, without any means for experimental control. Outside of the cities, he says, conditions are actually medieval, and he urges that the local boards of health should be abolished and that each district should have a branch of the central public health service.

Riforma Medica, Naples

1916, XXXII, No. 46, pp. 1257-1284

101 Diarrhea and Dysentery among the Troops. G. Izar.—p. 1257.
102 *Test for Sugar in Urine and Cerebrospinal Fluid. A. Martiri.—p. 1264.

No. 47, pp. 1285-1312

103 Action of Fatigue Toxins on the Central Nervous System and on the Blood. L. Ferrannini and S. Fichera.—p. 1285.
104 Intoxication from Asphyxiating Gases. P. Sisto.—p. 1290. Conclusion.
105 Antimeningococcus Serotherapy. A. Montefusco.—p. 1294. Commenced in No. 46, p. 1267.

102. **Dosage of Sugar in Urine and Cerebrospinal Fluid.**—Martiri thinks that the method he describes obviates certain disadvantages of the Fehling technic. He adds the urine to the reagent. The latter is a mixture of 1 c.c. of Fehling's first solution, with 1 c.c. of the second Fehling solution, and 10 c.c. distilled water, heated to boiling point. Then he adds 4 or 5 c.c. of concentrated ammonia and keeps the fluid boiling gently. Then, with the other hand, he drops in the urine from a 1 c.c. pipet graduated by hundredths. He adds the urine very cautiously so that the decoloration reaction is very distinct. As the 2 c.c. of the Fehling solution are reduced by 0.01 gm. of sugar, the amount per liter can be estimated by dividing the number of cubic centimeters in the liter by 0.01, and dividing the quotient by the numbers of hundredths of a cubic centimeter required for the reaction in the test tube

$$n : 0.01 :: 100{,}000 : x$$

$$x = \frac{1000}{n}$$

With the cerebrospinal fluid, the quantities of the reagent must be only one twentieth of the above amounts.

Brazil-Medico, Rio de Janeiro

January 20, XXXI, No. 3, pp. 17-24

106 Beriberi or Beriberic Syndrome. C. Fraga.—p. 3. Continuation.
107 *Retention of the Placenta Treated by Injecting Saline into the Placenta through Umbilical Vein; Two Cases. D. von Bassewitz.—p. 21.

107. **Retention of the Placenta Treated by Gabaston's Hydraulic Method.**—Instead of Credé expression or other manual method, Gabaston fills up the placenta with saline, injecting it through the umbilical cord. As the placenta thus becomes distended, it is liable to stimulate the uterus to new contractions, while the fluid within and accumulating behind the placenta aids in separating and facilitating its expulsion. This "hydraulic method" may produce the desired result in a few minutes. In the first of the two cases reported here by Bassewitz, the atony of the uterus was marked, but under the injection of the saline from a can 1.5 meters above the level of the bed, the uterus began to contract vigorously when 800 c.c. of saline had thus been infused. Within fifteen minutes the placenta was spontaneously expelled. In the second case, notwithstanding injection of 4 liters of the fluid, no effect was apparent, and the placenta was removed by the protected hand, the uterus having been drawn out to the vulva with forceps. This case teaches that this method is of little if any use with merely partial lateral separation of the placenta, but it can be counted on for prompt and certain effect in cases of total retention of the placenta from inertia of the uterus, or in cases of abnormal adhesion between the fetal and the maternal placenta. Bassewitz warns that this hydraulic method might do great harm in case of tubal attachment of the placenta, as the fluid might traverse the tube and enter the abdominal cavity.

Semana Medica, Buenos Aires

XXIII, 1916, No. 47, pp. 511-538

108 Lymphocytosis in Syphilis. C. P. Mayer and A. C. Gourdy.—p. 513. Continuation. See abstr. 73, p. 668.
109 *The Milk Supply in La Plata. (La leche de consumo en La Plata.) G. B. Cavazzutti and E. D. Cortelezzi.—p. 515.

No. 48, pp. 539-582

110 *Tuberculin Therapy Applied in Diagnosis of Tuberculosis. (La prueba diagnostico-terapeutica a la tuberculina. Nuevo metodo vacunoterapico aplicado al diagnostico.) J. J. Viton.—p. 539.
111 Vaccine Therapy of Gonococcus Infection. (Estadistica y tratamiento de la gonococcis por el Haptinogeno Gono.) H. Dasso.—p. 543.
112 Prophylaxis of Criminal Abortion. O. L. Bottaro.—p. 548.
113 No Foundation for Alleged Antitoxic Action of Hypophysis Extracts. B. A. Houssay and L. Giusti.—p. 559.
114 Anatomy of the Larynx. (Contribucion al estudio de los ventriculos de Morgagni et sus apendices.) A. S. Lagomarsino.—p. 565.
115 Vaccine Therapy of Pneumonia in Rural Districts. (El Haptinogeno Mendez en el medio rural.) J. M. Riera.—p. 569.
116 *Improved Technic for Embalming. (Nuevo procedimiento para la conservacion de los cadaveres.) V. Delfino.—p. 571.
117 Vibratory Plasmogenesis. A. L. Herrera.—p. 572.

109. **The Milk Supply at La Plata.**—This article with eighteen illustrations shows conditions prevailing in the La Plata region and outlines the reforms to be striven for.

110. **Vaccine Diagnosis and Therapy of Tuberculosis.**—Viton gives minute doses of tuberculin as a means of differentiating the cause of symptoms in puzzling cases. If tuberculosis is responsible for the symptoms, a pronounced change for the better is manifest even under these minute doses, and the tuberculin treatment can then be continued and amplified. He calls this the diagnostic-therapeutic tuberculin test, and extols its advantages over the tuberculin skin and other local tests. There are no contraindications or by-effects from these minute doses, while the favorable modification under them is often remarkable. He uses a ten-millionth or fifty-millionth solution of the tuberculin, usually taking 1 c.c. of ten-millionth solution and diluting it in 4.5 c.c. of sterilized water with a little of a 0.25 per cent. solution of phenol. Injecting $\frac{1}{20}$ c.c. of one of these solutions, he watches the temperature, the weight and the general and special phenomena. If no change is apparent, he repeats the injection the sixth or seventh day, increasing the dose by twentieths of a cubic centimeter, and continuing this at intervals of six or more days up to fifteen days. With improvement under the tuberculin, confirming the specific nature of the trouble, the tuberculin is then continued as a therapeutic measure. These minute doses, he says, do not induce any reaction but they gently and insinuatingly start the production of antibodies. This method, he adds, has not only revealed tuberculosis in many puzzling cases, but has resulted in its cure, and he commends it, as he says, *con verdadero entusiasmo.*

116. **Preservation of Cadavers.** — Delfino comments on Dubois' method of dehydration of the tissues as a simple and effectual method of mummification. All that is necessary is to inject freely into the body cavities and tissues certain substances, such as ether, benzine, etc., which attract the water out of the tissues.

Siglo Medico, Madrid

January 13, LXIV, No. 3292, pp. 17-32

118 Etiology and Pathogenesis of Leukemic Processes. G. Pittaluga.—p. 17.

January 20, No. 3293, pp. 33-48

119 *Diabetes Insipidus. G. Marañon.—p. 36.
120 Treatment of Ulcerated Varicose Veins in the Leg. (Terapeutica dermatologica: ulceras de las piernas.) E. de Oyarzabal.—p. 39.
121 Caffein Citrate in Strangulated Hernia. D. B. Gil.—p. 41.

119. **Diabetes Insipidus.**—Marañon's experience with three cases has confirmed the modern views as to the importance of the pituitary body in the genesis of diabetes insipidus. In one boy of 13 the diabetes insipidus developed in a pronounced form a few days after he had been shot in the head, the bullet lodging at the sella turcica and blocking the egress of the pituitary secretion. He voided up to nine liters of urine a day but the amount dropped back to normal for twenty-four hours after injection of 1 c.c. of hypophysis extract. No other measures had any influence on the polyuria. Necropsy confirmed the radioscopic findings that the bullet had merely blocked the outlet, not injuring directly, not even compressing the lobes of the hypophysis, but interrupting its connection with the bottom of the ventricle. Syphilitic lesions of the hypophysis give the best prognosis for diabetes insipidus. As soon as normal conditions for the passage of the hypophysis secretion into the cerebrospinal fluid are restored, true diabetes insipidus subsides spontaneously. The pancreas may be diseased at the same time, which explains cases in which the insipidus merged into true diabetes mellitus. There is probably both a nervous and an internal secretion factor involved. Hypophysis treatment is indicated in every case of true diabetes insipidus. The injection of 1 c.c. answers the purpose and the effect lasts for thirty hours, according to Marañon's experience. The injections have to be kept up indefinitely, but there is reason to assume that if the hypophysis function is not entirely abolished, the organotherapeutic stimulus may rouse it to approximately normal functioning. This occurred in one of his cases. Restriction of fluids never seemed to have much influence on the polyuria.

Russkiy Vrach, Petrograd

1916, XV, No. 44, pp. 1033-1056

122 Unpublished Letters from Pirogoff, 1840. S. Y. Shtraikh.—p. 1033.
123 *Anesthesia under the Influence of Expulsion of Blood from the Region by a Tourniquet. (Anestezia pod vlyaniem kroveostanav. zhguta.) N. N. Petroff.—p. 1036.
124 *The Question of Inherited Infectious Diseases. (O nasliedstvennosti pri zarazhnikh zabolievaniyakh.) A. A. Yurgeliunas.—p. 1038.
125 Gold-Potassium Cyanid in Local Treatment of Lupus. (O miestnom liechenii volchanki aurum kali-cyanatum.) A. K. Khitrovo.—p. 1043.
126 *Dietetic Treatment of Rachitis. I. A. Shabad.—p. 1047. Continuation.
127 Hot Air Jet in Treatment of Suppurating Wounds. (Liechenie gnoinikh ran dushami goryachago vozdukha.) P. I. Baradulin.—p. 1049.
128 Retractors for Amputations. A. N. Treguboff.—p. 1051.

123. **Anesthesia Below the Tourniquet.**—Petroff remarks that even the ancients and the medical men of the Middle Ages had noticed that pain was not felt so much after the root of the limb had been tied around to arrest bleeding after an injury. But the danger of damaging the nerves and other tissues by the pressure and the unreliability of the results have always prevented utilization of this method of controlling pain. Braun concluded from the result of experiments on himself that the danger of paralyzing the nerve is too imminent to allow the use of the method in the clinic. Petroff rejects his conclusions, however, as Braun ligated merely fingers in his tests. The nerves were squeezed against a bone background, in which respect the conditions differed materially from those with a tourniquet applied to the root of a limb. Numbness and other signs of injury afterward must be referred to this pressure against the bone background.

At the same time, occasions may arise in war in which a tourniquet has had to be applied to arrest hemorrhage, and the wound and loss of blood have reduced the strength. The nerves have lost temporarily the faculty of transmitting sensations. In one such case the tourniquet had been in place for several hours before the shattered leg could be amputated at the middle third. The man was extremely weak, the pulse scarcely perceptible, when brought to the hospital. After injection of saline, the leg was amputated without the man's feeling it. In another case described the constriction had not been very tight and the circulation had not been entirely arrested, and only the superficial tissues were anesthetic. In short, Petroff reiterates, there is no need to inflict general or local anesthesia on persons whose limb is already completely anesthetized. The possibility that this may be the case should not be forgotten.

124. **Inheritance of Infectious Diseases.**—Yurgeliunas reiterates as the conclusion of his long study that direct transmission of infectious diseases by the germinal route, according to the conception of the older authors, is no longer admissible. Transmission of syphilis by way of the placenta is possible but rare. The heredity with infectious diseases seems to be of a more general character, a tendency to dystrophic processes.

126. **Dietetic Treatment of Rachitis.**—Shabad's conclusions have already been given in these columns, March 10, p. 815.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

January 6, LXI, I, No. 1, pp. 1-64

129 *Deforming Juvenile Osteochondritis. H. Timmer.—p. 3.
130 *Chronic Tachycardia and Its Treatment. (Over chronische tachycardie en de beteekenis der extracardiale hartzenuwen.) E. W. G. Vinnis.—p. 11.
131 Treatment of Diphtheria Bacilli Carriers. J. L. A. Peutz.—p. 17.
132 The Anticholera Campaign in the Netherlands East Indies. O. L. E. De Raadt.—p. 22.
133 *Falling of the Hair as Sign of Latent Tetany. (De area Celsi als verschijnsel van latente tetanie.) G. C. Bolten.—p. 24.

129. **Juvenile Deforming Osteochondritis.**—Timmer's first patient was a boy of 7 who had been limping for some time. Roentgenographs showed the findings characteristic of Perthes' disease. There has been gradual improvement during the year since. This affection has a favorable prognosis. It has been called variously quiet hip disease, pseudocoxalgia, epiphyseal coxa valga, and deforming juvenile arthritis. Trendelenburg's sign is almost always present. Notwithstanding the clinical improvement, the roentgenograms show that the epiphysis grows flatter and flatter and spreads and the broad flat head merges into a short, thick neck. The symptoms may simulate a tuberculous process in the neck and he discusses other affections liable to be confused with it. There is no pain or tenderness with this Perthes' affection. The gait resembles that with congenital luxation of the hip joint. The limb can be flexed and extended freely, but abduction is much restricted and rotation a little. Perthes was misled into operating in his first case, suspecting tuberculosis, but found no signs of inflammatory infiltration. The abnormal conditions were the shape of the head, the unusual thickness of the cartilage, and the islands of cartilage tissue in the spongiosa of the head. Certain cases that have been published with illustrations as cases of tuberculous trouble are now considered to have been of this type. Timmer does not discuss the treatment.

130. **Chronic Tachycardia.**—Vinnis reports a case which throws considerable light on the questions as to the limit of a rapid pulse rate compatible with health of the heart muscle, and whether the influence of the nervous system, as in the acceleration of the rate under emotional stress, is an adaptation phenomenon or an actual injury. His patient was a man of 50 who had had a pulse of 140 for three years. There was an old history of acute articular rheumatism and syphilis, but the heart did not seem to have been touched, and the rapid pulse was ascribed to nervous influences. The tracings of the jugular and radial pulse showed a chronic regular tachyatria, as Vinnis calls it, actual auricular flutter, the ventricle rate scarcely one to two of the contractions of the atrium. The cyanosis, dyspnea and low blood pressure called for treatment, although the general appearance was healthy. Vinnis gave digitalis in large doses, aiming to make the pulse irregular, hoping to transform the tachyatria into auricular fibrillation. Then on complete suspension of the digitalis a normal heart action returns. This had been successful in about half the cases in which he had given this treatment, and it proved successful in this case also. The man was given a daily dose up to 400 mg. of pulverized digitalis. The pulse became irregular but there was no actual auricular fibrillation. The stomach rebelled against these large doses, and after a pause, the digitalis was given again up to 150 mg. In a few days, with an auricle beat of 280, the ventricle beat gradually settled down to a regular 70, and the general condition improved, the area of heart dulness grew less and there was no further dyspnea or cyanosis. When the rhythm had thus become a regular one-to-four beat, a dose of 120 mg. digitalis was enough to maintain it, except under emotional stress, when a one-to-two rhythm returned. These attacks of a ventricular 140 beat grew rarer, but finally one occurred of exceptional intensity and duration, and then the digitalis was completely suspended. When this attack subsided, the desired result had been accomplished, as the heart returned to a regular, normal rhythm, both auricle and ventricle presenting a regular 65 or 85 beat. This normal rate has persisted during the year to date, and the man has attended to his business without further disturbance. Vinnis calls attention to the case not only as a model of systematically planned and carried through treatment, but from a more general clinical point of view, as the patient felt that he was cured as soon as the rhythm had become the one-to-four beat. The physician did not regard it as a cure until the rhythm had become one-to-one, but the patient felt no inconvenience from the fourfold auricle beat, and he likewise seemed to feel no inconvenience from the absence of any influence on the heart from the central nervous system. The case teaches that a heart beat of 140 can last for three years without inflicting permanent injury on the heart. Also that an auricle beat of 280 may cause no subjective disturbance. Also that when the ventricle beat is within normal range, the absence of chronotropic nervous influences may not be felt.

133. **Sign of Latent Tetany.**—Bolten describes two cases, one patient a boy of 9, the other a man in the forties. Both were healthy and apparently sound except for a positive Erb reaction characteristic of tetany. In both the hair suddenly began to fall out. The man became entirely bald and lost also his eyebrows and the hair on his body. The boy's hair also dropped out suddenly, mostly from the back of his head. Both were in good health at the time and since. The falling of the hair is evidently a trophoneurosis, but in these cases latent tetany—parathyroid insufficiency—seems the primary cause.

Norsk Magazin for Lægevidenskaben, Christiania

January, LXXVIII, No. 1, pp. 1-120

134 *Gynecology at Christiania. (Kvindeklinikken i Kristiania.) K. Brandt.—p. 1.
135 *Case of Dwarfism from Achondroplasia. V. Magnus.—p. 58.
136 Case of Aphasia, Adiposis and Stunted Growth. C. Schiøtz.—p. 76.
137 *Cancer in Liver of One-Year Babe. T. Frølich.—p. 78.
138 *Calcium Deposits in Subacromial Bursa. J. R. Natvig.—p. 83.
139 *Symptoms, Diagnosis and Treatment of Acute Cholecystitis. N. Paus.—p. 89.

134. **The New Clinic for Women at Christiania.**—Brandt gives a historical sketch of gynecology at Christiania, and describes the newly finished women's clinic which is on the spacious parklike grounds of the public hospital. Thirty-one full page illustrations are given, and a number of floor plans, including the handsome residence built nearby, also on the grounds, for the physician in chief. In connection therewith, Brandt gives a historical outline of the development of obstetrics. Until Paré introduced podalic version in 1550, obstetrics had been left entirely in the hands of women. It was considered beneath the dignity of a professional man to have anything to do with the childbirth, and when he was summoned it was merely to prescribe for the mother or do embryotomy. As complications calling for these so often proved fatal, the physician's visit was usually held responsible, and it is easy to understand that the physician was a persona non grata at a childbirth.

135. **Achondroplasia Dwarfism.**—Magnus gives an illustrated description of a female dwarf, 22 years old, who showed remarkable tolerance for levulose, 100 gm. levulose for a weight of only 37 kg., nearly twice the usual amount tolerated by an adult weighing nearly twice as much. This and the exceptionally small sella turcica suggested that the dwarfism was the result of defective development of the hypophysis. The growth was apparently normal till the age of 9, when chronic bronchitis became installed. At 22 she applied for relief from intolerable headaches and was relieved by palliative trephining first on one side and then on the other. Magnus reviews the literature on dwarf growth, citing as the most important, the monograph on dwarfism recently issued by the Eugenics Laboratory at London.

137. **Cancer in Infant's Liver.**—Frølich quotes Philipp's compilation of eighty-seven cases of cancer in children; 46 per cent. were in the digestive tract. The number includes twelve cases of carcinoma of the liver; in two of this group the ages were 3 and 14 months. Merkel collected 111 cases, including thirteen with cancer of the liver; seven were in children under 10. Frølich then describes a case confirmed by microscopic examination after an exploratory laparotomy. The first symptoms were noticed when the babe was 9 months old, coming on in the midst of apparently perfect health, and proving fatal in five months.

138. **Deposit of Calcium in Shoulder Bursa.**—Natvig has encountered several cases of disturbances from a deposit of calcium in the subacromial bursa. In one case described in detail the young woman had pains now and then in both shoulders, growing progressively worse. Roentgenoscopy showed deposits of calcium in both subacromial bursae. Natvig has encountered three similar cases since. In three there had evidently been some inflammatory process in the bursa—in one case there was a history of a fall on the hand, and the woman had been in the habit of practicing on the piano up to five hours a day. The resulting necrosis had led to a deposit of calcium, or, possibly the deposit may have preceded the inflammation. The deposits of calcium do not necessarily induce pain; the discovery of the calcium shadow on the side free from pains may be a surprise. These calcium deposits were often taken for a gouty trouble; Stieda operated in a case of the kind and discovered the calcium deposit. The age ranged from 23 to 43 in Haenisch's twelve cases (1910). It is characteristic for this disorder for the pains to come on slight at first, and then, after an interval of from one to four weeks, they suddenly become very intense. The region around the greater tubercle or under the acromion was always tender, and the arm felt weak and active abduction was painful and difficult, although passive rotation was generally painless. Natvig's patients all were cured by conservative measures alone, fixation and sedatives; when there was much pain, moist heat and baths, and later gentle massage. In three of Haenisch's cases, under these conservative measures the shadow disappeared entirely in two, and in the other grew much smaller. He and others have seen cases in which the patients were subjectively cured although the calcium shadows were still evident. When the bursa was removed it usually showed a tendency to ossification.

139. **Acute Cholecystitis.**—Paus says that 20 per cent. of the patients with acute cholecystitis in the surgical ward at Christiania had a history of digestive disturbances, and 75 per cent. had had trouble with their gallbladder before the one compelling operative measures. Pains were a prominent feature in all his cases, varying from colic and pains localized in the right epigastrium and spreading to the back, shoulder, epigastrium and breast to a relatively slight sense of oppression. Rovsing had a case in which intense pain in the right shoulder was the only symptom of the acute cholecystitis. After removal of a gallstone there was no further pain. The pain may resemble that with angina pectoris. One of Paus' patients had pain only in the left side, spreading to the left shoulder, but the gallbladder was extremely sensitive to the touch. Another patient had not only the intense pains in the left side but the tender gallbladder was located also on the left side—a case of complete transposition of the viscera. There was vomiting in 31 per cent. of his cases, generally with no connection with the meals. In some cases the symptoms suggested ileus. There was no fever in some of his twenty cases, but as a rule the temperature ran up quite high and 22.5 per cent. had chills. The most characteristic sign is tenderness under the right costal arch. Jaundice was present in only 42 per cent. and was slight. Serous cholecystitis may develop with a stormy onset while the gangrenous form may run an afebrile course for a time, especially in the elderly. In his cases of cholecystitis in women, 60 per cent. were between 31 and 50, while in men 70 per cent. were between 41 and 60. With acute appendicitis 33 per cent. were under 15. Two of Bull's patients had both acute cholecystitis and acute appendicitis, and Paus has had a case of coincident acute gangrenous cholecystitis with gangrenous appendicitis. In one instructive case a man of 56 with a history of gallstone colics suddenly developed pains under the right costal arch. The pulse was normal and a mild cholecystitis was diagnosed. A day later there was collapse, pulse of 140 and death the next day from necrosis of the pancreas. The acute cholecystitis had probably brought on the pancreas trouble. Paus has had two cases in which both the gallbladder and right kidney were the seat of an acute infectious process. Cases are known in which fever and the symptoms on the part of the lungs and bronchi were repeatedly the only signs of gallbladder trouble, until finally a typical colic revealed the true source of the symptoms. Morphin may arrest the spasmodic contractions of the gallbladder musculature, and not only relieve the pain but allow the contents to escape, and the attack of cholecystitis is over at once. In thirty-two operative cases, five died of the twenty operated on during the attack. In the five fatal cases death was due to diabetic complications, intercurrent pneumonia or the gangrenous condition of the gallbladder. Phlebitis developed later in 10 per cent. of the cases, and complications on the part of the lungs in 10 per cent. Some of the patients might have recovered without the cholecystectomy, but they would have heard from their gallbladder again and again. On the whole, Paus' experience warns that operative intervention must not be delayed until gangrene has developed and the patient has lost strength. It is better to operate occasionally when not absolutely certain that it is a question of life and death, rather than to lose a patient from perforation. In any event, the patient should be inspected every two or three hours, and be in the hands of an experienced and watchful nurse in the interim.

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140 *The Functioning of the Kidney with High Blood Pressure in the Elderly without Albuminuria. (Om njurarnas funktion vid hypertoni hos gamla utan albuminuri.) E. Wikner.—p. 1481.

141 *Polarization Apparatus for Determination of Color Sense. (Polarisationsanomaloskopet, en apparat för diagnostisk undersökning av färgsinnet.) G. F. Göthlin.—p. 1665.

140. **Causes of the High Blood Pressure in the Elderly Without Albuminuria.**—Wikner has been applying functional and other tests to 117 men and 75 women all over 50 and all free from albuminuria and mostly in good health. He found that the blood pressure averaged 141.1 in the 49 men between 50 and 60, and 142.1 in the 24 women of this age. It was 150.4 in both the men and the women in the sixties, while it was only 145.7 in the 24 men over 70, and 164.5 in the corresponding group of 27 women over 70. The average for men and women, taken together, shows a steady increase—141.4; 150.4 and 155.7—in these three decades. The possible causes of this steady rise in pressure are discussed in turn, in particular the share of the kidneys in the process, both in physiologic and pathologic conditions. Wikner precedes his report of his special findings in the various groups of cases with an analysis of the literature. His reports and tables fill 118 pages. The whole material is classified further according as the blood pressure was above and below 170. The final tabulation gives the findings when various tests were applied to the same person. Twenty-six were subjected to this special study; the findings are shown under seven headings, including day and night urine, residual nitrogen and elimination of nitrogen on a nitrogen-free diet, test intravenous injection of lactose, and the response to test intake of water. The night urine surpassed the day amount in persons with hypertonia, more often than in those with blood pressure below 170. The residual nitrogen ranged from 22 to 38.5 mg. to 100 c.c. of serum, average 32.8, in those with lower blood pressure; the range in those with high blood pressure was from 25 to 54.6, average, 36.2; and in those with high pressure plus albuminuria, from 31 to 76 with an average of 43. Strauss asserts that 35 is the extreme limit for normal conditions. Those persons with the higher blood pressure, without albuminuria, showed a somewhat slower elimination of lactose after a test intravenous injection. Also a somewhat lesser elimination of nitrogen after a nitrogen-rich test meal. It is possible that some latent weakness of the heart may cooperate in this lesser elimination of nitrogen. The research was done mainly at the Home for the Aged at Stockholm.

141. **Polarization Anomaloscope for Detection of Color Blindness.**—Göthlin's apparatus is described with illustrations. It tests the color sense with lights of different colors, alone or blended. It permits the exact graduation of the ability to recognize colors, and also diagnosis of tritanopia. The findings with 330 normal eyes are the basis for the classification in three grades which he calls protamblyopia, deuteramblyopia and tritamblyopia.

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SALVARSAN AND NEOSALVARSAN IN SYPHILIS

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After an experience of more than six years with salvarsan and neosalvarsan, pretty definite conclusions as to their value and also as to their limitations should be at hand.

The early hope of the originators of the drug, that by one massive dose the disease could be immediately eradicated, was soon abandoned. Salvarsan was put on the market for general use in January, 1911, but before this date I had had the opportunity of giving injections in many cases experimentally, in all of which relapses occurred, thus proving the inadequacy of a single injection. During the first year of its use, owing to the mistaken idea that a single dose was sufficient, there were many recurrences and some fatalities, the latter being largely due to the fact that some patients could not tolerate a full dose at the initial injection.

The early method of administering the drug was by subcutaneous injection, which was painful and frequently resulted in local necrosis; and not infrequently it became encapsulated, and therefore was not efficient, owing to nonabsorption. Later, it was administered intramuscularly in oily emulsions, usually with better results, but necroses not infrequently followed these. Still later, the intravenous method was introduced, and this method is the one of choice of most workers at present. As time went on and experience increased, repeated doses were given and mercury was added to the treatment, until at present very few employ salvarsan alone. The combined use of salvarsan and hydrargyrum is now the rule, with the addition of potassium iodid in certain cases. For many years the technic was chaotic. One is safe in saying that no definite technic has as yet been perfected for all cases.

To discuss properly the advantages which this drug possesses in the treatment of syphilis, it is necessary to consider the management of the disease in various phases. At the outset, it must be stated that the success in treatment depends largely on the stage of the disease at which it is instituted. The earlier the disease is recognized and treatment begun, the better are the prospects of effecting its eradication. That salvarsan has a remarkable influence on syphilis, no one will deny, and it is equally true that it has its disadvantages. Its chief disadvantages are: (1) the difficulty encountered in its administration; (2) the reactions which follow in a certain percentage of cases, together with untoward results which occasionally occur, and, (3) the fact that, except in a small proportion of early cases, it cannot be said to be curative.

Concerning the first disadvantage, many physicians do not care to undertake the fulfilment of the requirements necessitated in intravenous medication. In this particular instance, the technical difficulties are many, and in the older offices and clinics in which syphilis was largely treated it became necessary to add practically a new department to carry out this work successfully. The many failures constantly noted in giving intravenous injections furnish ample proof of this disadvantage. Were it possible to get results by administering it by mouth or by hypodermic or intramuscular injections, salvarsan would have a much broader use.[1]

REACTIONS

Concerning the reactions and untoward results, there is much for serious consideration. Probably from 5 to 15 per cent. of all injections of neosalvarsan are followed by some reaction, and the percentage with salvarsan is somewhat larger. These may be classed as early (that is, during the first few hours) and delayed (occurring after intervals of from twenty-four hours to several days or longer).

Early reactions consist of flushing of the face, suffusion of the eyes, dyspnea and a sense of fulness in the head, with some precardial distress, all of which pass off within a few minutes, as a rule, but exceptionally may be prolonged for some hours. Occasionally, vomiting will occur before the injection is completed, or, at times, almost as soon as the injection is well started. In other instances, in from one to four hours after the injection, a chill may occur, followed by a rise in temperature, nausea, vomiting, headache and diarrhea, all of which pass off within a few hours, leaving the patient feeling, as a rule, completely normal; or, as exceptionally happens, a feeling of weakness and depression may exist for a day or two. Angioneurotic disturbances, so called, such as urticaria and erythema, both simple and multiform in character, are occasionally seen during this period. Only rarely do these immediate reactions become of such severity as to cause apprehension on the part of the physician.

Delayed reactions often occur after twenty-four hours, several days or longer, and are commonly gastro-intestinal. They are initiated by a chill, or chilly sensations, followed by a rise in temperature, nausea and vomiting. More rarely, malaise may be present for several days, when the patient becomes actively ill, with nausea, vomiting and elevation of temperature, accompanied by jaundice or a cutaneous exanthem. When jaundice supervenes, involvement of the liver has occurred, due, as most observers believe, to the direct action of arsenic on the liver cells. In a very few, a general exfoliative dermatitis, or a generalized toxic rash, simulating an exudative erythema of persistent nature, may occur. Fortunately, these intense, delayed reactions are rare. Great caution must be exercised in the future treatment of this class of patients. Finally, renal disturbances, characterized by suppression of the urine, due to the deleterious action of the arsenic on the renal vessels, may result.

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[1] Practically all of the intravenous injections given in our office are given by my associate, Dr. James Herbert Mitchell.

Untoward results are closely associated with reactions, and those exciting chief interest are disturbances of the liver, kidneys and nervous system, and cases of general exfoliative dermatitis. A number of fatalities are on record due to the deleterious action of the drug on the liver. Neurorecurrences have been largely eliminated through more intensive treatment.

Leredde and Jamin[2] believe that the cerebral accidents which have given so much anxiety are explainable on the grounds of the Herxheimer reaction. In an intensive study of the causes of death following injections of salvarsan, they state that two theories are advanced: first, genuine intolerance; second, that predispositions due to organic lesions preexisting are created by syphilis itself, and give rise to reactions provoked by the too energetic therapeutic reaction. They further state that Milian is the strongest supporter of the theory of intolerance, and maintains that the cerebral lesions which are found at necropsy (serous apoplexy) or the nitroid crises are due to the hypo-alkalinity of the injection. He says that certain patients are predisposed to these crises because of hypo-alkalinity of the blood. Against this is cited the fact that certain patients exhibit nitroid crises during the course of a neutral neosalvarsan injection.

Leredde and Jamin found, in a study of forty cases of death with epileptiform seizures, that only one was accompanied during the injection by this nitroid crisis. The principal argument of Milian is that salvarsan is a vasodilator; but Leredde believes this is insufficient reason to attribute the cerebral accidents to the drug. Vasodilatation determines the reaction of Herxheimer in the areas of syphilitic lesions. In the reaction of Herxheimer, the hypothesis is that death follows a meningeal or cortical reaction due to excessive and sudden destruction of spirochetes following an excessive dose of salvarsan. In the series of forty cases, spinal puncture was performed during life in twelve cases, and ten of these showed pathologic findings.

Leredde and Jamin believe that neither the theory of ordinary intoxication nor that of intolerance will explain these facts, which are readily explainable on the basis of the Herxheimer reaction. Twenty-nine of the forty cases were examined postmortem, and in fourteen of the twenty-nine, important nervous lesions were found.

Eight deaths occurred during the primary period, fifteen during the secondary period, and seventeen in old syphilis.

In six cases, death occurred after the first injection; in twenty-five, after the second; in six, after the third; in one, after the fourth; in one, after the fifth, and in one after the sixth.

Certain errors of technic are to be found. The most frequent one is the shortness of the interval between the injections: two days in one case, three in another, four in another, and in one case the injections were given daily. If intolerance were the cause of death, the number of cases of death should increase with the number of injections. It would be the same if it were ordinary intoxication. Finally, if anaphylaxis were concerned, one cannot understand how death should follow the first injection. It must be noted that in a few cases death has followed a very small dose, notably in one case of Wechselmann's, who gives an excellent description, comporting with the theory of the reaction of Herxheimer. In some of the cases it must also be noted that the initial dose was the maximum dose.

Leredde and Jamin gave 3,777 injections from 1910 to 1913. Three-fourths of these averaged a dosage of from 0.6 to 0.9 gm. of neosalvarsan. Out or 632 patients, one patient died following 0.15 of neosalvarsan. In this patient, the general paresis with the cerebral lesions presented the necessary conditions for death. In this case neither intoxication nor intolerance explains the cause of death. The explanation is that in this particular case the dose, even though small, was too high for the patient.

Meirowsky and Kretzmer,[3] in a review of 109 fatal cases following salvarsan injections, state that 41 per cent. occurred in the secondary period, three fifths of which resulted from encephalitis. Forty-five per cent. of these occurred in cases in which the dose exceeded 0.5 gm. Sixty-six per cent. of the patients received doses of over 0.5 gm. They conclude that the size of the dose, therefore, is the most important factor in the causation of encephalitis, the danger decreasing in proportion to the duration of the interval between injections.

In the study of the cause of reactions in general, most observers, during the earlier period of the use of salvarsan, started with the hypothesis that all salvarsan was identical, and that trouble arose from faulty technic, individual susceptibility, or so-called anaphylaxis. That faulty technic was responsible for much trouble was proved when a marked reduction in reactions occurred on the constant use of freshly distilled water. On the question of so-called anaphylaxis, the statistics of Leredde[4] throw some light. He stated that, in 1910, sixteen deaths occurred out of 50,000 injections; in 1911, ninety-two deaths among 800,000 injections; in 1912, sixty-six deaths among 1,280,000 injections, and in 1913, thirty-seven among 2,000,000 injections. Of these, 104 followed the first injection, and only three occurred subsequent to the fourth injection. These results testify strongly against so-called anaphylaxis.

In a series of 8,000 injections, Fordyce,[5] in 1914, had not encountered an anaphylactic reaction.

In the clinic of Bordeaux, Morin and Joulia[6] report thus on reactions: During a period of nine months, 192 injections were given to 100 patients. Serious reactions were few, but moderate reactions were quite frequent. Febrile reactions were studied in eighty-seven cases. Fifty-two of these patients had fever in the course of the treatment. It usually occurred after the first injection. Generally, it was very slight, but in a few cases severe. The number of reactions in men and in women are given in the accompanying tables.

On reading Table 1 horizontally, it is seen that after the first injection there were 41 reactions out of 57; after the second injection, there were 16 reactions out of 41; after the third and fourth injections, there were but 7 reactions in 22 cases. On this, Morin and Joulia conclude that the chances of elevation of temperature diminish with the number of injections.

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[2] Leredde and Jamin: Bull. de dermat. et de syph., January, 1914.

[3] Meirowsky and Kretzmer: Praktische Ergebnisse auf dem Gebiete der Haut- und Geschlechtsheilung, Wiesbaden, 1914.

[4] Leredde: Bull. Soc. franç. de dermat. et de syph., 1914, p. 91.

[5] Fordyce: Jour. Cutan. Dis., 1914, 32, 1.

[6] Morin and Joulia: Ann. de dermat. et de syph., February, 1914.

It is evident from these two tables that febrile reactions are less frequent in women than in men. All severe reactions followed the first injection, and after the second injection there was no severe reaction in any case.

In one of our series of 253 injections noted elsewhere in this paper, forty-three were followed by reactions. Of these, seventeen, or 40 per cent., occurred after the first injection, when anaphylaxis could not be considered. While anaphylaxis must be recognized, it must play but a small rôle in the production of reactions. Individual susceptibility must be recognized, and undoubtedly accounts for a moderate number of reactions. The most important consideration is the question of varying degrees of toxicity of the drug as we use it.

TABLE 1.—NUMBER OF REACTIONS IN MEN

	Severe Reaction	Moderate Reaction	Mild Reaction	No Reaction
Injection 1.......	16	17	8	16
Injection 2.......	3	11	2	25
Injection 3.......	1	2	4	15
Injection 4.......	0	1	0	10

In a series of marked reactions recorded by Dr. Mitchell, and myself,[7] a few months ago, six severe reactions occurred at once with a given lot of salvarsan. Anaphylaxis, so called, could be ruled out of these, as in one of the group it was the patient's first treatment, and in another it followed the second treatment. Individual susceptibility could hardly account for them, as four had shown no previous susceptibility. Faulty technic could not be considered, as it fulfilled the requirements now demanded. We concluded, therefore, that toxicity was the factor. One of the ampules of this lot was forwarded to Dr. Schamberg, together with an ampule of a lot with which we had had no difficulty, with the request that his laboratory test these as to toxicity, which he kindly acceded to, with the following result: Sixty mg. per kilogram of body weight, which is the amount demanded by this laboratory as the *dosis tolerata* of its product before it is sent out, were injected into two rabbits. One died after two days, the second after five days. The control ampule, which had given us no trouble, was similarly injected into another animal, with no untoward results.

We also asked for the animal results in a certain control number we had used of arsenobenzol without reactions, and the answer was that the animal used for this lot lived indefinitely, showing that the toxicity of this also was within the limits of animal safety.

We believe, therefore, that the answer to the question of cause in this group of reactions is increased toxicity in this particular lot, the animal experiments confirming the clinical results. Whether or not animal experimentation will disclose the fact in all instances that a given lot is likely to produce reaction is as yet an unanswered question; but the fact that the foregoing lot, which was apparently unusually toxic in man in one series, was toxic beyond the limits of animal safety as demanded by the Schamberg laboratories is significant.

Through the courtesy of Dr. Schamberg, the following facts are taken from an unpublished manuscript of Dr. Schamberg and his associates, John A. Kolmer and George W. Raiziss.[8] The main facts embodied in the work, however, were presented at the meeting of the American Dermatological Association in 1916. The complete paper is to be published soon.

In a careful experimental study of the causes of reaction, Schamberg believes that too much stress has been laid on errors of technic and personal factors, and too little attention has been paid to the study of causes related to the drug itself. He states that salvarsan is an extremely complex substance. During its elaboration, many intermediate products are prepared. On the purity of these the purity of the final compound depends to a degree. During this complicated process, certain substances in addition to salvarsan occur. As salvarsan cannot be purified by repeated crystallization, it cannot be regarded as an absolutely pure compound. One of the dangerous by-products which may occur from oxidation or insufficient reduction is amino-oxyphenyl arsenoxid, which is about twenty times more poisonous than salvarsan. The amount of this material in the commercial product is usually less than 1 per cent., the best preparations containing, according to Ehrlich, from 0.5 to 0.8 per cent.

The immediate reactions, which are vasomotor, are due, according to Schamberg, to something in the drug which induces a paresis of the blood vessels, characterized by dilatation, and not infrequently by leakage of serum into the tisues. These symptoms are regarded by him as vasoparetic in character. From various experiences, he suspects that they are produced by traces of an impurity in the drug, which he has designated as "Substance X." On the comparative amount of this material depends the severity of the early reactions.

Schamberg further states that there is some reason to believe that preparations which give the best toxicity tests in animals are prone to give the most satisfactory clinical results as regards reaction, but he is not convinced that Substance X can always be discovered by its toxicity record on animals. Some of his experiments have caused him to reserve judgment on this point for the present.

TABLE 2.—NUMBER OF REACTIONS IN WOMEN

	Severe Reaction	Moderate Reaction	Mild Reaction	No Reaction
Injection 1.......	3	4	3	18
Injection 2.......	0	3	3	13
Injection 3.......	0	0	0	11
Injection 4.......	0	0	0	3

Regarding neosalvarsan, in the report mentioned above we stated that, in view of an increased number of immediate, sharp reactions, we believed the supply then being used was also more toxic than previous lots. I have recently gone over some of our records with the following results:

In a series of 253 consecutive injections of neosalvarsan given to eighty-six patients, before the temporary withdrawal of the drug from the market, thirty-two were followed by reactions of varying degree, none immediate, and 210 were followed by no reaction, a total of 17 per cent. of the injections presenting reactions.

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[7] Ormsby, O. S., and Mitchell, J. H.: Arsenobenzol in the Treatment of Syphilis, THE JOURNAL A. M. A., March 18, 1916, p. 867.

[8] Schamberg, Kolmer and Raiziss: American Dermatological Association, Washington, D. C., May 8-10, 1916.

In another series of 209 consecutive injections of neosalvarsan, given to eighty-two patients after the drug was restored, twenty-four were followed by reactions (many immediate), and in 185 no reactions occurred, a total of 11.5 per cent.

In a third series of 258 injections, given to eighty-nine patients during the four months ending February 15, 230 were followed by no reactions, and twenty-eight, or about 10 per cent., by reactions, chiefly immediate. These statistics apparently disprove increased toxicity as a whole, as the percentage of reactions in the first group was 17 per cent. before the temporary withdrawal, and 11.5 per cent. in the first group immediately after its restoration, and 10 per cent. recently. However, in view of the fact that the recent reactions were immediate and sharp, it still appears that certain lots of neosalvarsan are also more toxic than formerly, but not sufficiently so to cause anxiety.

In a large experience with arsenobenzol prepared by laboratories under the direction of Dr. Schamberg, we encountered fewer reactions than with salvarsan or neosalvarsan.[7]

CONTRAINDICATIONS

When salvarsan was first used, warning was directed particularly against giving the drug to patients with disorders of the kidneys, heart, vascular system and eyes. With increased experience, few of the original contraindications have remained as such. Where organic changes have occurred in any vital organ, the treatment should be given with care and always initiated with a small dose.

PRECAUTIONS

In order to safeguard the patient to be treated with salvarsan, it is absolutely essential that the technic be correct. This includes the use of freshly distilled and sterilized water for making the sodium hydroxid, the sodium chlorid and the salvarsan solutions.

The initial dose should always be small: 0.1 or 0.2 gm. of salvarsan, or 0.2 or 0.3 gm. of neosalvarsan. Should an idiosyncrasy be present, serious results are thus avoided.

It is well to have the patient on a restricted diet immediately preceding the injection, and elimination should have been promoted by catharsis. In the absence of the contraindications noted, this procedure offers most promise for good results.

CLINICAL RESULTS

The remarkable clinical achievements of salvarsan need not be considered in detail. The rapid healing of infectious lesions of the skin and mucous membranes, and the gain in weight and general health are too well known to need emphasis here.

As has been previously stated, a definite technic cannot be outlined, as the patient has to be considered individually, as well as the disease with which he is suffering, and the stage and severity of the latter. In a review of the enormous literature of the subject, the general trend now appears to be to give salvarsan and mercury in courses of from five to eight injections of the former and from twelve to twenty injections of the latter, repeating the courses at intervals of from six to eight weeks and as many times as appears necessary in individual cases. The method employed by us, which follows, is perhaps an average of that used in various parts of the world.

We divide our treatment into courses of from five to eight injections of salvarsan and twelve to twenty injections of mercury, or the equivalent of the latter in inunctions. The interval between salvarsan injections is from seven to fourteen days, while the mercurial injections are given every second day, if a soluble salt is used, and weekly if an insoluble one is employed. The soluble salt usually selected is mercuric chlorid, in dosage of one-fourth grain, and mercuric salicylate in dosage of from 1 to 2 grains.

In the chancre stage, treatment is instituted with salvarsan, and one course is usually sufficient. Many of these patients have not developed a positive Wassermann and have remained free from symptoms for some years.

In active syphilis, mercury precedes salvarsan, to prevent neurorecurrences, and three courses are given, with a rest of from six to eight weeks between courses. If after the termination of these the reaction remains negative a year, a provocative treatment is given, when, if not followed by a positive reaction and the spinal fluid is found normal, a prolonged rest is given.

In tertiary and latent cases, several courses are given, if necessary, together with potassium iodid.

In involvement of the nervous system, intravenous medication with salvarsan, together with intramuscular mercurial injections, precedes intraspinal medication. In the latter, we have employed only the Swift-Ellis method of injecting salvarsanized serum. We have not used the Ogilvie[9] method of direct salvarsan injections, nor have we used intracranial injections. The latter methods have been efficient in the hands of others. We insist on energetic treatment early, and believe that many of the failures are directly attributable to insufficient treatment. In a few selected cases, we have employed the intensive method of Pollitzer with good results, but cannot accept it as routine.

In a recent report from the clinic of Professor Jadassohn (Bern), Nägeli[10] states that 900 syphilitic patients were given 7,000 injections of salvarsan and neosalvarsan with no fatalities and few reactions. The initial dose employed in this clinic is always small: 0.1 or 0.2 gm. of salvarsan and 0.15 or 0.3 gm. of neosalvarsan, and as a maximum dose 0.3 gm. of salvarsan in the case of women, and 0.4 gm. in the case of men, or 0.45 and 0.6 gm., respectively, of neosalvarsan. The absence of reactions in their cases is attributed to small dosage. The interval between injections averages one week, though in certain cases four days has been the interval. Injections of mercury, usually insoluble preparations, are added, and in certain cases potassium iodid also is used. They recommend repeating the dose before the Wassermann reaction becomes positive or before symptoms begin to develop.

Pollitzer[11] gives three injections of large doses of salvarsan at twenty-four hour intervals, followed by twelve mercurial injections. In secondary syphilis, three courses are given, with two month intervals between courses. In older cases, treatment is continued until the Wassermann reaction becomes negative, and subsequent to this two courses are given. After a year of negative Wassermann reactions, a provocative injection is given and an examination of the spinal fluid is made.

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[9] Ogilvie, H. S.: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, The Journal A. M. A., Nov. 28, 1914, p. 1936.

[10] Nägeli: Corr.-Bl. f. schweiz. Aerzte, October, 1915.

[11] Pollitzer: Jour. Cutan. Dis., 1916, 34, 633.

Nicolas and Moutot,[12] in 9,000 injections, covering a period of three years, had two fatalities. In the group were 200 cases of primary syphilis, the chancre being of from three to thirty days' duration. These were treated with four or five injections, at eight day intervals, or with four injections, followed later by two more. Most had subsequent mercurial treatment. A few of this group had recurrences; two had reinfections. In secondary syphilis, they record many recurrences after eight injections. Among the cases, in addition to the two fatalities, were many reactions, a few with coma or epileptoid seizures, and three cases of generalized exfoliative dermatitis, two cases of optic neuritis, and six of labyrinthitis.

Goubeau[13] uses salvarsan, mercury and potassium iodid in all cases. In primary syphilis he recommends excision of the chancre, forty day treatment with injections of mercury benzoate, five injections of salvarsan, and lastly potassium iodid by mouth for forty days. Five of six cases were apparently cured by this method. In secondary syphilis, each period consists of five injections of salvarsan, followed by a series of mercurial injections, this followed by a period of potassium iodid by mouth. He rarely gives more than two such periods. In sixteen of twenty-four patients, symptomatic and serologic cure was obtained. Eight had recurrences. In thirteen latent cases treated by this method, all the patients were serologically cured, with no relapses in two years. Patients with hereditary and nervous syphilis were improved.

In a recent contribution, Fordyce[14] recommends the use of salvarsan and mercury in courses, each consisting of five or six injections of salvarsan, in dosage of from 0.3 to 0.5 gm. for men, and from 0.25 to 0.4 gm. for women, at intervals of from one week to ten days, together with from twenty to thirty injections of a soluble salt of mercury, repeated daily or every second day, or from ten to twelve of an insoluble salt, repeated weekly.

In primary syphilis, before the Wassermann reaction becomes positive, two courses are given. In secondary syphilis, three courses are frequently necessary. In tertiary and latent cases, mixed treatment with potassium iodid and mercury is frequently added. In visceral cases, he recommends salvarsan in small dosage.

Fordyce gives as criteria of a cure a negative Wassermann reaction for at least a year, continuing so after a provocative injection, and a normal spinal fluid, with certain exceptions. He urges energetic treatment in all cases.

COMPARATIVE VALUE OF SALVARSAN AND NEOSALVARSAN

In a study of comparative results with salvarsan and neosalvarsan, Whitehouse and Clarke[15] based conclusions on an experience of 317 injections of salvarsan to 104 patients, and 180 injections of neosalvarsan given to forty-six patients. They obtained nearly 20 per cent. more permanent negative results serologically with salvarsan than with neosalvarsan. Clinically, the drugs were equally efficient. They considered five doses of neosalvarsan equivalent in end-results to four of salvarsan. In this series, 20 per cent. of the cases under salvarsan showed reactions, as against 8 per cent. under neosalvarsan. Nelson and Harris[16] in the army service, state that in a period of nine months patients were each given five injections of neosalvarsan, combined with intensive mercurial treatment, with the result that 33.3 per cent. became negative, while 66.7 per cent. remained positive. In a second series of twenty-five patients, each given four injections of salvarsan, together with intensive mercurial treatment, 64 per cent. were made negative, while 36 per cent. remained positive. In other words, salvarsan produced double the number of negative reactions obtained with neosalvarsan. On these findings, they recommended the discontinuance of neosalvarsan and the exclusive use of salvarsan. On the other hand, in a recent study, Trimble and Rothwell[17] report a larger percentage of negative reactions with neosalvarsan than with salvarsan. In both instances, their proportion of negative reactions was very small. They conclude that neosalvarsan is superior to salvarsan, easier of administration, less likely to cause severe reactions, and produces a greater number of negative Wassermanns.

In the discussion which followed the reading of the latter paper, Schamberg stated that, basing his opinion on clinical observations, together with the use of the two drugs, salvarsan and neosalvarsan, in experimental trypanosomiasis, he believes that salvarsan is distinctly superior to neosalvarsan. Capelli,[18] as a result of experiments in rabbits, concludes that the antisyphilitic effect of salvarsan compared with neosalvarsan is as 5 : 4.

In our own work we have not made a careful comparison of results in any specified number of cases. It has been our impression that salvarsan was ultimately more efficient than neosalvarsan. In view of all the conflicting reports and opinions, it appears that the situation is as follows: Clinically, there is very little difference in the results between the two preparations; serologically, salvarsan appears more efficient. In other respects, salvarsan is more difficult to give, and it is followed more frequently by reactions; neosalvarsan is more convenient, requires much less care, and is accompanied by fewer reactions. Taking into consideration the advantages and disadvantages of each, it appears that for general use either can be properly recommended.

SUMMARY

Salvarsan and neosalvarsan are the most efficient drugs yet discovered in the treatment of syphilis. Alone they have completely eradicated the infection in early cases before the Wassermann reaction has become positive. The large number of reinfections testify to this fact. Yet even in these cases mercury is recommended as an adjunct.

In all other cases, mercury should always be an accompaniment of salvarsan, and in many cases potassium iodid is indicated, especially in the so-called tertiary and latent cases and in those involving the nervous system. The ability of potassium iodid to remove infiltrations, gummas and nodules, together with its marked effect on vascular implications, renders its use imperative.

The major number of reactions following the use of salvarsan and neosalvarsan are insignificant. The more serious ones are to be avoided, so far as possible, by an initial small dose to test the tolerance of the patient, by careful attention to details in administrative technic, by recognizing contraindications, and, in the case of early, active syphilis, preceding the salvarsan treatment with mercury, to prevent neurorecurrences; and finally, by giving sufficient treatment to control the disease. Emphasis must be laid on the latter statement, as much harm may be done by its apparent effect, the degree of relief placing the patient in a position of false security; therefore, sufficient treatment is demanded to prevent recurrences and relapses.

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[12] Nicolas and Moutot: Ann. de dermat. et de syph., July, 1914.
[13] Goubeau: Bull. de dermat. et de syph., March, 1914.
[14] Fordyce: Tr. Am. Phys. and Surg., 1916, **10**, 1.
[15] Whitehouse and Clarke: Jour. Cutan. Dis., 1913, **31**, 633.
[16] Nelson, Kent, and Haines, E. F.: Observations of the Results of Seven Months' Experience with Salvarsan in the Treatment of Syphilis, The Journal A. M. A., Dec. 26, 1914, p. 2277.
[17] Trimble, W. B., and Rothwell, J. J.: A Comparative Study of Salvarsan and Neosalvarsan in the Treatment of Syphilis, The Journal A. M. A., Dec. 30, 1916, p. 1984.
[18] Capelli: Dermat. Wchnschr., 1915, **61**, 907.

Many of the earlier cases, following insufficient treatment, of rapid onset of symptoms which ordinarily come late in the disease, such as nervous involvement and precocious tertiary manifestations, were eradicated by more salvarsan, and now should be entirely avoided by treatment of sufficient intensity and amount to control the disorder.

The treatment of syphilis with salvarsan and neosalvarsan has caused an intensive study over the entire world of the question of efficient management of the disease, to such a degree that great lessons have been learned and much good accomplished. Their ultimate value will require many more years to determine.

As to a choice between the two drugs, salvarsan and neosalvarsan, the extensive use of both proclaims their efficiency, so that individual circumstances with the physician and patient must decide which, under the circumstances, is to be selected. The apparent preponderance of opinion that salvarsan is more efficient is offset to a degree by the difficulties of its administration and the more frequent reactions following its use.

The problem of reducing toxicity to a minimum rests with the producers of the drug.

Concerning the dangers following the individual injections, many warnings have been given to exercise care after the fourth injection. The warning has not been accompanied by tabulated results showing proof of this contention. On the other hand, the statistics now available show that the major portion of severe reactions, untoward results and fatalities have followed the first injection, and that with subsequent injections these results were greatly decreased.

CONCLUSIONS

The efficiency of salvarsan and neosalvarsan is of such a high order, and the limitations are so comparatively few that they will probably hold an important place in the future treatment of syphilis. The clinical results are striking, and in addition their effect serologically is such that the question of their abandonment can be conceived only by the discovery of a more potent remedial agent.

25 East Washington Street.

Seventh Sense.—Aristotle and his contemporaries were accustomed to distinguish five special senses, namely, sight, hearing, smell, taste and touch. To these physiologists have added several, the muscular sense, the heat sense, etc., which may be comprehended as a sixth; and N. D. Mackay (*Med. Press and Circular,* 1916, **102,** 491) adds still another—the saving seventh—the extra special sense of humor, without which existence is as salt which has lost its saltness, and without which the events of life present to the unfortunate who lacks it a picture tame and insipid, drear and cold as the picture presented by Nature to the photographic vision of the totally color blind.

THE LEUKOTOXIC FACTOR IN LYMPHATIC LEUKEMIA

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The earliest stage of leukemia is unknown. Cases are not uncommon in which an aleukemic blood picture (that is, one showing no increase in the total number of leukocytes but a relative increase in the lymphocytes) has later developed into a typical lymphatic leukemia. Not only this, but there is so close a resemblance between the blood picture and pathologic lesions of aplastic anemia and those of aleukemic (sublymphemic) leukemia, that there is a fair suspicion that the two diseases have some sort of pathogenic relationship.

In aplastic anemia one of the striking features is the great diminution of the granulated leukocytes in the circulation. Within the last few years our understanding of the probable pathogenesis of this has been greatly increased by Selling's studies on benzol poisoning. Benzol (benzene, C_6H_6) is an agent which destroys circulating polymorphonuclear leukocytes as well as the leukoblastic tissue of the bone marrow, and also injures but does not so readily destroy the lymphoblastic tissue. It seems probable that the agent which is at work in aplastic anemia acts in a somewhat similar way. Many workers have recognized that in all types of leukemia there is not only an overproduction, but also a greatly accelerated destruction of leukocytes. It seems probable that in the aleukemic or sublymphemic cases the same factors, productive and destructive, are at work, but that the destructive process exceeds cell reproduction. Changes in the relative rate of leukocyte production and destruction explain the transition from the aleukemic to the leukemic blood picture, as well as the reverse, which also sometimes occurs.

We have recently studied a case of aleukemic leukemia which finally developed into a typical chronic lymphatic leukemia. During the leukemic stage a large blood transfusion was performed. The interesting point to which we wish to draw attention is that in spite of the fact that a great number of granular leukocytes were transfused to the patient, these leukocytes had entirely disappeared from his circulation twenty-four hours after the transfusion. That this rapid disappearance of leukocytes is not the exception but the rule after transfusions in lymphatic leukemia, one of us can testify from observation in several similar cases.

There are two possible explanations of this phenomenon. Either the leukocytes were removed from the circulation and held in some internal organs, or they were destroyed. Which of these two possible explanations is the correct one can be settled only by extensive postmortem study. But from the fact that in cases of lymphatic leukemia in which there is almost a disappearance of polymorphonuclear leukocytes from the circulation, one does not find polymorphonuclears in any large numbers in the tissues or organs, it seems far more probable that the transfused leukocytes were very rapidly destroyed in the present case. In the case to which we are now referring, the patient was a young child, weighing 53 pounds, and the amount of blood transfused, 250 c.c., was estimated to represent about a quarter as much as the patient's own blood volume. It appears, therefore, that there must have been some toxic agent present capable of destroying within twenty-four hours approximately a quarter as many leukocytes as the child normally should have had in the circulation.

The history of the case is briefly as follows:

J. F., boy, aged 3 years, was seen, Aug 21, 1916. The family history and the child's previous history are unessential. He had been ill for several months with fever and increasing pallor and weakness. He showed numerous large, hard, discrete lymph nodes on each side of the neck, and somewhat smaller lymph nodes in the groins and axillae. The spleen was four finger breadths below the free border of the ribs. There was a loud systolic murmur over the entire precordium, a pulse ranging from 120 to 140, extreme pallor, with petechiae on the trunk, and hemorrhagic spots in the skin of the legs. The temperature at the first examination was 103.6 F. The blood count showed a grave anemia with less than the normal number of leukocytes. The differential count showed a predominance of small lymphocytes, with a small number of large lymphocytes and so small a number of polymorphonuclear cells that one could almost speak of the absence of the polymorphonuclear cells from the blood. The leukocyte count continued subnormal for two and a half weeks, and then abruptly within five days rose from 4,200 per cubic millimeter to 60,000, and eleven days later to 160,000 (as indicated in the accompanying table of blood counts). During this period the treatment consisted of arsenic and four intragluteal injections of 20 c.c. of whole blood obtained from the child's father. The condition of the patient slowly grew worse. He continued to have high irregular fever and developed some edema of the face and extremities. September 24, a transfusion of 250 c.c. of blood by the syringe method (Unger apparatus) was performed. Aside from an improvement in color, the general condition of the patient was not materially affected by the transfusion. On the following day the number of red cells was increased from 1,260,000 to 2,045,000. The total number of leukocytes in the circulating blood had dropped from 160,000 the day before transfusion to 49,000 on the day after. Unfortunately no blood count was made immediately after the transfusion, but the blood count made twenty-four hours after it showed a complete disappearance of the polymorphonuclear cells which had undoubtedly been transfused and which must have been in the circulation immediately after the transfusion. It was necessary to count 400 leukocytes in order to find one polymorphonuclear cell. The child lived only six days after the transfusion. The febrile and toxic symptoms continued unabated. The day before his death he developed a subicteric appearance.

BLOOD COUNTS

Date	Hemoglobin per Cent.	Red Blood Cells	White Blood Cells	Polymorphonuclears. per Cent.	Large Lymphocytes, per Cent.	Small Lymphocytes, per Cent.	Eosinophils, per Cent.	Basophils, per Cent.	Myelocytes, per Cent.
August 21....	..	1,400,000	4,200	0	91	9	..	....	....
August 25....	..	2,080,000	2,800	3	87	10	..	....	....
August 28....	15	1,280,000	2,200	1	95	4	..	....	....
August 30, injection of 20 c.c.									
September 5..	25	1,120,000	1,500	2	94	4	..	....	....
September 6, injection									
September 6..	32	2,040,000	4,200	14	64	22	..	....	....
September 11.	28	1,280,000	60,000	7	80	12	1	....	....
September 11, injection									
September 24.	25	1,260,000	160,000	0.75	99	..	..	0.25	0.25
September 24, transfusion									
September 25.	..	2,045,000	49,000	0.25	99.5	..	..	0.25	....

That this destruction of leukocytes was not due to any destruction of the transfused blood as a whole was shown by the absence of icterus or hemoglobinuria after the transfusion, and by the pronounced rise in the total number of red cells on the day after transfusion, as well as by the fact that before transfusion very careful tests were made to preclude hemolysis or agglutination between the blood of the donor and that of the patient.

3 West Eighty-Sixth Street—15 West Eighty-Ninth Street.

THE MEDICAL CORPS OF THE ARMY AS A CAREER

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To the young men of the profession, who are serving their internship and planning for their future, the Medical Corps of the Army as a career presents itself. Many give this service little consideration, because they lack information as to what the corps is and what it has to offer, or because of a misconception of the duties and functions of the medical officer.

Even those who are better informed, and are seriously considering the army as a life work, have little real information as to the duties of the medical officer; the question of pay and allowances is but vaguely understood, and even less known as to what is offered from a strictly professional point of view.

An applicant naturally asks: "What are the duties of the medical officer? What opportunities are offered, and is there encouragement to specialize? What are the requirements for admission?"

In the first place, one must bear in mind that the medical officer is not only a physician, but in addition he is a soldier and an integral part of a highly organized body. Hence he has to coordinate himself and his duties with the whole in order that the organization may work smoothly, as it is on the medical officer that the commanding officer depends for the efficient administration of the sanitary service, the health of the troops, the care of the sick, and the prompt return of the physically fit to their organizations.

THE MEDICAL OFFICER AS A SPECIALIST

The medical officer is a specialist, trained for certain specific duties, aside from the care of the sick, which do not fall to the lot of the civil practitioner. He is an administrator, a sanitarian, and cares for the sick and injured. In the case of the sick and injured the medical officer has a twofold responsibility: the protection of the interests of the government, and justice to the individual.

The primary duty of the medical officer is that of a sanitarian. He must safeguard the health of the command by familiarizing himself with the health conditions of surrounding territory, and take measures to prevent the introduction of epidemic diseases into the camp or garrison. Should an epidemic occur he must make early diagnosis of the disease, institute such measures as will limit its spread, care for those sick, isolate contacts, and eliminate carriers; all of which requires sound judgment, common sense, and quick decision.

The history of the medical service of the army is rich in examples of the distinguished work of its individual officers. Their work as sanitarians in Cuba, Porto Rico, the Philippines and Panama forms a brilliant page in the history of preventive medicine. One has only to read medical literature for the past eighteen years to be familiar with their accomplishments.

The work of the corps as a whole is shown in the remarkably low morbidity and mortality rates among the troops recently and now on the border, both regular troops and those in the national guard. To perceive its value, the death rate of the Spanish-American War should be contrasted with the conditions in Texas since 1911. A concrete example of the former was the unhappy condition of the division of volunteers at Jacksonville, Fla., in 1898. There 10,759 men, within four months, had 248 deaths from typhoid fever and 281 deaths from other illness, a total of 529, equivalent to an annual death rate of 147.4 per thousand; of this total, 78.3 per thousand were due to diseases other than typhoid. Against this, the division of regular troops which was encamped at San Antonio, Texas, in 1911, for the same length of time, had no deaths from typhoid fever, and but eleven deaths from other diseases, equivalent to an annual death rate of 2.58 per thousand per annum, and a death rate for diseases other than typhoid fever of less than one thirtieth of that among the volunteers at Jacksonville, Fla., in 1898. The comparison illustrates the work of the military specialist as against that of the practitioner untrained in the special duties of the medical officer.

Troops have for the last five years been on the border under field conditions with a sick rate less than the average garrison rate. Since June the national guard has been encamped on the border under conditions similar to the regular service. Although many of the officers and enlisted men of the national guard were untrained in sanitation, army methods were enforced by army sanitarians from the time of their arrival. The result is shown in the low sick rate, averaging less than 30 per thousand for all troops, about 150,000 with only 166 deaths from disease in seven months; a (total death) rate of 1.9 per thousand per annum against a death rate from sickness in 1898 of 28.18 per thousand per annum. Such results can be accomplished only by specializing, by creating a medical corps which will be the great conserving agency of the army in peace or in war.

In civil life, the practitioner, unless possessing ample means, specializes only after some years of general practice. In the army he begins to specialize while a student candidate for commission; for it is at the Army Medical School that the special duties of the medical officer as differing from practice in civil life are taught. Later, after qualifying for the corps and receiving a commission, the medical officer is encouraged to specialize in one of the several branches of the profession, just as does the practitioner in civil life.

REQUIREMENTS

An applicant for a commission in the Medical Corps of the Army must be a graduate of a reputable medical school, must have served one year (postgraduate) as a resident intern in a hospital, and must be of good moral character, physically sound, and between the ages of 22 and 32 at the time he receives his commission. He is required to submit an application in his own handwriting, accompanied by two letters or testimonials, and evidence that he is a graduate of a medical school, that he is within the age limit, and that he has served the required internship.

Twice a year or oftener, boards for the supervision of the preliminary examinations are appointed, and these boards, meeting on a specified date and hour, hold sessions in various parts of the United States and its dependencies. The examination is physical and professional. After the physical examination comes the written examination. In this a day is given to major subjects and a half day to minor subjects. As these boards are merely for the purpose of conducting the physical examinations and supervising the written examinations, the reports of the physical examinations and the papers of the various candidates are sealed and sent to the surgeon-general of the army, who in turn forwards them with the testimonials of the applicants to the central examining board, appointed by the secretary of war, usually from the faculty of the Army Medical School. The papers are graded by the individual members of the central board and the markings later reviewed by the full board. The successful candidates are reported to the surgeon-general, who submits recommendations to the adjutant-general of the army that they be commissioned as first lieutenants in the reserve corps, in order that all candidates for the corps may have an official status while attending the Army Medical School. If the examination is in January, the successful applicants are commissioned at once and when practicable ordered to active duty at a post or in the field until the opening of the Army Medical School, October 1.[1]

THE ARMY MEDICAL SCHOOL

Attendance at the school and graduation therefrom are prerequisites for a commission. The course is both undergraduate and postgraduate — postgraduate in the sense that the laboratory courses are of the highest order, on a plane far above that taught at the average medical school. No similar advanced course is offered elsewhere, except in postgraduate schools to applicants for higher degrees. The school is under the command of a colonel of the medical corps, who is assisted by a faculty of medical officers. The course includes military medicine and surgery, sanitary chemistry, camp sanitation, the hygiene of the soldier, sanitary tactics, bacteriology, pathology, operative surgery, clinical medicine, ophthalmology, roentgenology, the duties of the medical officer, administration, the customs of the service, military law and equitation. The discipline of the school is strict, the requirements high and the work hard. The midterm examinations practically settle the future of the student. If he holds up to the standard after passing these examinations, he is almost sure of his commission; but should he fail at the midterm examination, he is relieved from duty at the school and ordered to his home.

The final examinations are held in May, and diplomas awarded to those who graduate. Commissions are issued to graduate candidates who obtain more than the minimum passing mark, and who are physically qualified for the service.

Even should a candidate fail to obtain a commission, he has received a course of instruction which cannot be duplicated in civil life. He attends school as an officer of the reserve corps, with the pay and allowances of the grade, equaling about $200 per month, and mile-age to and from his home, the government in addition paying for the transportation of his household goods up to 5,100 pounds. This is the material side. From the professional side he has the advantage of work for eight months, in laboratories and wards equipped with the best and most modern apparatus, under instructors who are themselves specialists in the various branches of their profession. The foundation for a specialty is laid in the school — whether it be in internal medicine, surgery, bacteriology and pathology, roentgenology, ophthalmology, sanitation or any other branch of medicine.

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[1] Owing to the shortage of medical officers, the school years 1916-1917 and 1917-1918 will be divided. The school will open July 1, and Oct. 1, 1917, and March 1, 1918. Candidates who qualify at this time would enter the school, July 1, and receive their commissions in October, saving almost one year in their service.

There are at present 230 vacancies in the corps, with less than 100 qualified applicants. July 1, there will be an additional 222 vacancies.

The school also provides postgraduate instruction to commissioned medical officers, who in such numbers as can be spared from other duties are ordered to the school for four months each year for special work.

PRACTICAL DUTIES

The newly commissioned medical officer is first assigned to post or field duty in the United States, where he must apply the theory learned at the Army Medical School. He later takes his tour of foreign service, either in Alaska or the Philippine Islands for two years, or in the Canal Zone, Hawaiian Islands, or Porto Rico for three years. The foreign service roster is fixed for each grade, and an officer takes his tour of service when his name is reached on the list. On foreign service the routine duties are the same as at home, but each officer is expected, so far as his ability permits, to take up the study of the diseases peculiar to the locality in which he is stationed.

In addition to the facilities for study in the medical department, the medical officer thus is assured of travel in foreign lands, with its attendant opportunities to observe the peoples thereof and their customs. While on duty in the Philippine Islands, leave of absence can readily be obtained, when service conditions permit, for the purpose of visiting Australia, the East Indies, China or Japan; and at the end of his tour authority (in time of peace) to return to the United States via the Suez Canal or Siberia. If on duty in Porto Rico or the Canal Zone, similar privileges are available to visit South America, with which there is direct communication by steamship.

The medical department takes a paternal interest in its officers, and encourages the ambitious and studious by supplying equipment of operating rooms, Roentgen-ray and research laboratories, etc. New publications are sent to posts and general hospitals; periodicals are supplied, and special books are furnished on requisition. In fact, the department aids and encourages the personnel of the corps in every way so far as the interests of the service will permit.

LEAVES, POSTGRADUATE STUDY AND RESEARCH WORK

Leaves for study are granted to officers when possible. Prior to promotion, captains are assigned for one year to medical centers for the purpose of study and research. Officers so assigned are expected to attend clinics, take courses at a postgraduate school, and to specialize in some branch of the profession. Reciprocal arrangements have been made with certain medical schools and foundations for special privileges to medical officers on condition that medical officers give instruction in military medicine, hygiene and the duties of the medical officer. Officers selected for these assignments enjoy opportunities which come to few of the profession in civil life.

Research into the causes of disease as well as in prevention has in the army reached a high plane. Original work, and the systematic study of all conditions affecting the health of the army are encouraged. The former difficulty in carrying on systematic research due to frequent interruptions occasioned by strict adherence to the foreign service roster is now corrected by the organization of the research division; and, in the future, results as important to the medical world as those contributed in the past by the corps are confidently expected. The establishment of this division is one of the most important advances in medical department administration made in many years, as it will enable the department to utilize to the fullest extent the trained laboratory workers in the corps.

Twenty-four officers have been assigned to this division. This number will be increased as the work expands and the necessity arises.

PROMOTIONS AND PAY

In passing through the various grades from first lieutenant to colonel, examinations are required. Should a lieutenant or captain fail in examination, he is honorably discharged with one year's pay. Should a major or lieutenant-colonel fail in examination for promotion, he is suspended from promotion for one year, is then reexamined, and, should he fail the second time, is placed on the retired list.

The pay of the medical officer may be compared to that of a full-time instructor or professor in a medical school. The first lieutenant receives $2,000 a year in addition to allowance for quarters, fuel and light. The basic pay of captain (a grade attained after five years' service) is $2,400 a year, with 10 per cent. increase for each five years' service up to twenty years. This gives a 40 per cent. increase, or a maximum pay of $3,360 a year, with allowance of quarters, fuel and light. The pay of a major is limited to $4,000, lieutenant-colonel to $4,500, and a colonel to $5,000 a year, with quarters, fuel and light. The law also provides for retirement on three quarters of the pay of the grade for disability at any time in line of duty, or for age at 64. The earnings are less, perhaps, than those of men of equal ability in civil life, "but the position is one of dignity, opportunity and service to one's country."

ADVANTAGES OF THE SERVICE

Never since the establishment of the medical department by Congress have the opportunities been so great, never has the medical corps been on a better footing, and never have the officers of the corps been encouraged to work along independent lines and to specialize as now. Socially there is the association with the highly educated, thoughtful and purposeful men and women of the service, the absence of the social jealousies often encountered in civil life, the assurance of a home, and a competence during life.

In the medical corps, as in civil life, there is opportunity to promote the progress of medicine and to achieve individual distinction. As in civil life, the advantage to be taken of this opportunity depends on the individual, the real difference being that in the army there is a constant incentive for duty, if not from individual ambition, at least by pressure from higher authority, although the officer who requires constant pressure from higher authority does not last. It is the professionally fit who succeed in the army as elsewhere, the men who require no incentive other than their own ambition.

ALKALINE TREATMENT OF EARLY GALLBLADDER CARRIERS

WITH OBSERVATIONS ON THEIR DETECTION BY AID OF THE DUODENAL TUBE *

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Gallbladder carriers include carriers of the typhoid group, cholera carriers and probably also bacillary dysentery carriers. I have called attention[1] to the problem of the pathogenesis of gallbladder lesions in these diseases, and have emphasized the mechanism of descending infection of the bile from the liver. It was shown by means of the common duct fistula method in rabbits that more typhoid bacilli appear in the bile with larger intravenous doses; that more bacilli appear after mesenteric than after ear vein injections; that more bacilli appear in immunized animals than in normal animals, and that more actual gallbladder infections occur under these conditions, which favor the presence of micro-organisms in the bile, than otherwise.

TABLE 1.—RESULTS OF EXAMINATION OF DUODENAL CONTENTS IN TEN CASES OF RECENT RECOVERY FROM TYPHOID

No. *	Diagnosis by	Temperature Normal, Weeks	Time of Collection, Hours	Amount, C.c.	Color	Appearance	Consistence	Reaction to Litmus	Microscopic Examination	Culture for Typhoid Bacilli	Stools and Urine	Time Since Typhoid Prophylaxis
1	Blood culture.	2	4	About 10	Greenish-yellow.	Turbid.	Mucoid.	Neutral.......	Amorphous sediment	(—)	(—) (—)	2 years
2	Agglutination	2	5	10	Greenish-yellow.	Turbid.	Mucoid.	Slightly acid.	Amorphous sediment	(—)	(—) (—)	No prophylaxis
3	Agglutination	3	4	10	Greenish-yellow.	Clear...	Mucoid.	Slightly alkaline	Amorphous sediment	(—)	(—) (—)	5 years
4	Blood culture.	2	4	10	Greenish-yellow.	Turbid.	Liquid..	Neutral.......	Cholesterin crystals; bacilli	(—)	(—) (—)	1 month
5	Blood culture.	2	5	10	Greenish-yellow.	Turbid.	Mucoid.	Neutral.......	Débris; mucous yeasts; cocci	(—)	(—) (—)	2 years
6	Blood culture.	1	5	10	Greenish-yellow.	Turbid.	Mucoid.	Slightly alkaline	Yeasts; amorphous débris	(—)	(—) (—)	2 years
7	Blood culture.	1	4½	10	Greenish-yellow.	Clear...	Mucoid.	Slightly alkaline	Bacilli; amorphous débris	(—) Colon (+)	(—) (—)	5 months
8	Bile culture....	†	4	10	Greenish-yellow.	Turbid.	Mucoid.	Neutral.......	Yeasts; débris.	(+) Typhoid	(—)‡ (—)¶	3 months
9	Blood culture.	2	5	10	Greenish-yellow.	Turbid.	Mucoid.	Slightly alkaline	Yeasts; amorphous débris	(—)	(—) (—)	3 months
10	Blood culture.	3	5	10	Yellow..........	Turbid.	Mucoid.	Neutral; 1.4% acid to phth.	Bacilli; amorphous débris	(—) Colon (+)	(—) (—)	3 months

* Regulars, Nos. 1, 2, 3, 8; militiamen, Nos. 4, 5, 6, 7, 9, 10. † Five days, then relapse. ‡ Urine, once. ¶ Feces, six times.

The mechanism of infection in the case of typhoid, cholera and dysentery organisms seems, therefore, to be different from that in case of the streptococci which, as has recently been shown by Rosenow,[2] seem to infect first the gallbladder wall by means of emboli. This difference in the action of the two groups of micro-organisms is recorded in the tissues. In experimental typhoid gallbladder lesions in the rabbit, section of the gallbladder wall shows an infiltration with round cells only immediately underneath the mucous membrane where the influence of the infected bile is first exerted. No foci of infection are found in the wall of the bladder, and no peritonitis is present. The bladder is often ballooned out with a very thin transparent wall. In the case of the streptococci, distinct evidence of embolic infection is present in the muscle wall and peritoneal covering of the gallbladder.[2] The explanation of this difference is apparently to be found in the selective effect of the bile as a culture medium. The bile capillaries are separated from the blood stream of the intralobular veins by less than one half of the width of a liver cell, and we have experimental evidence that, in any marked septicemia, micro-organisms easily pass this barrier. Once in the biliary system, they are of course subject to the action of the bile.

In the case of the streptococci, whose growth is not favored by this medium, it appears that they are simply washed through the bile passages or die off in them; if an infection of the gallbladder is to occur, it must start in the gallbladder wall. The other organisms mentioned, however, can first multiply in the bile and then secondarily invade the gallbladder wall.

Under these circumstances it is indicated to direct early therapeutic efforts to the bile rather than to the blood or tissues. In the experimental work referred to, I found that, while human bile and ox bile generally favor the growth of typhoid bacilli, rabbit and guinea-pig bile kill off all bacilli in twenty-four hours. This effect was first noted with bile from a common duct fistula. It is not so definite, especially in case of the rabbit, with bile from the gallbladder, which is less alkaline and contains more solids than bile directly from the liver. This antiseptic action was found to be due largely to the alkalinity of the bile, because it disappears on neutralization. This finding suggested that alkaline treatment might be of value in the treatment especially of incipient carriers. The reaction of the bile can be influenced by the administration of alkalies. It was found that sodium bicarbonate injected intravenously made rabbit bile more alkaline. In man the same thing is apparently true, as evidenced by the following experiment: The duodenal contents of a normal person were titrated with a result that 5.4 c.c. of normal sodium hydroxid were required to neutralize 100 c.c. to phenolphthalein. The subject was then put on a daily dose of 6 gm. of sodium bicarbonate; at the end of a week, the duodenal contents were again titrated, and only 1.2 c.c. of normal sodium hydroxid were required to neutralize 100 c.c. The urine became neutral on the fourth day. Such tests should preferably be made in cases of biliary fistula, because in the duodenum the bile may be mixed with gastric and pancreatic fluid; but it seems reasonable that the result would be qualitatively the same. In the work on anesthetics recently reported by Crile,[3] the reaction of the bile was influenced by changes in the alkalinity of the blood.

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* From the Laboratory Service of the U. S. Army Letterman General Hospital, San Francisco, and Southern Department Laboratory No. 2, El Paso, Texas.

[1] Nichols, H. J.: Jour. Exper. Med., 1916, **24**, 497.

[2] Rosenow, E. C.: Jour. Infect. Dis., 1916, **14**, 527.

THE DETECTION OF GALLBLADDER CARRIERS BY AID OF THE DUODENAL TUBE

The subject of the treatment of carriers naturally brings up the subject of their detection. While much advance has been made by the examination of feces, I believe that the examination of the duodenal contents marks an advance over any enrichment mediums for the feces. A report on the value of the use of the duodenal tube in general diseases of the gallbladder has recently been made by Einhorn,[4] and in the detection of typhoid carriers by Garbat.[5] As a result of the experimental work referred to, I was especially impressed with the possibilities of the method advocated in these articles. The various new mediums which are still being devised[6] for the detection of typhoid bacilli in the feces show that this method is not altogether satisfactory, and a concrete example is found in the fact brought out by Garbat's cases, and also by my own, that the duodenal contents of early carriers may contain typhoid and paratyphoid bacilli while repeated examination of the feces fails to reveal them.

TABLE 2.—RESULTS OF EXAMINATION OF DUODENAL CONTENTS OF TEN CASES OF RECENT RECOVERY FROM PARATYPHOID *

No.	Paratyphoid A Diagnosis by	Temperature Normal, Weeks	Time of Collection, Hours	Amount, C.c.	Color	Appearance	Consistence	Reaction to Litmus	Microscopic Examination of Sediment	Culture for Paratyphoid Group	Stool and Urine
1	Blood culture.	2	5	About 10	Yellowish-green.	Turbid.	Liquid..	Neutral.......	Bacilli; débris..	(—) Colon (+)	(—) (—)
2	Blood culture.	2	4	10	Yellowish-green.	Clear...	Mucoid.	Neutral.......	Bacilli; yeasts; débris	(—) Colon (+)	(—) (—)
3	Blood culture.	2	4	10	Yellowish-green.	Turbid.	Mucoid.	Neutral.......	Débris; crystals.	(—)	(—) (—)
4	Blood culture.	1	5	10	Yellowish-green.	Turbid.	Mucoid.	Neutral.......	Débris; crystals; bacilli	(—) Colon (+)	(—) (—)
5	Bile culture....	2	4	10	Yellowish-green.	Turbid.	Mucoid.	Slightly alkaline	Débris; cocci....	(+) Numerous colonies Paratyphoid A	(—) 8 times (—) (+) once
6	Agglutination	4	4	10	Yellowish-green.	Turbid.	Mucoid.	Neutral.......	Débris...........	(—)	(—) (—)
7	Blood culture.	2	4	10	Yellowish-green.	Clear...	Mucoid.	Neutral.......	Débris...........	(—)	(—) (—)
8	Blood culture.	1	4	10	Yellowish-green.	Turbid.	Mucoid.	Slightly alkaline	Débris...........	(—)	(—) (—)
9	Blood culture.	2	4	10	Yellowish-green.	Clear...	Mucoid.	Slightly alkaline; 1.2% to phth.	Débris...........	(—)	(—) (—)
10	Paratyphoid B; feces culture	1	5	10	Yellowish-green.	Turbid.	Mucoid.	Alkaline	Débris; cholesterin crystals; bacilli	(—) Colon (+)	(—) (—)

* No paratyphoid prophylaxis in any case.

As will be seen in Tables 1 and 2, I have used this new method in twenty cases with two positive results. All were soldiers of the regular army or militia at the Letterman Hospital, March, 1916 (one), and at Base Hospital No. 2, September-December, 1916 (nineteen). Garbat passed an Einhorn tube overnight, but suggests that the time could be shortened by use of a gravity tube. We have used the Einhorn tube successfully in a shorter time, and also use selective mediums for cultivation.

Technic. — A regular breakfast is allowed at 7 o'clock; in about two hours the metallic sinker is chilled in ice water and is put in the mouth with the patient sitting up in bed, and a small drink of water is given; as soon as the patient swallows the sinker he lies down on the right side and waits for the tube to descend to the duodenum (third mark). On an average, a wait of about four or five hours was necessary. At the end of three hours, Dr. Artaud, of the Medical Reserve Corps, "primes" the tube by aspiration with a syringe, which usually produces a small amount of whitish mucus, acid to litmus. This procedure often establishes a siphon, and in another hour yellowish-green fluid, neutral or alkaline to litmus, may be dropping out of the tube. Further suction gives from 10 to 20 c.c. of genuine duodenal contents. If the contents are still acid, a further wait is necessary, and rarely another trial on another day must be made. No special hardship is involved, and one patient took the tube four times. Altogether twenty-eight successful attempts were made out of thirty-two trials on twenty-five patients. Endo plates are inoculated as soon as possible, one with the straight fluid and one with the centrifugate. Another portion is put in brilliant green peptone water, 1 : 20,000, and plated on Endo's medium after twenty-four hours' incubation. The centrifugate is also examined microscopically for organisms, crystals and cells. In one case many active *Lambliae intestinales* were recovered, while the stool showed only a few cysts.

In general, the contents in all cases were much the same, consisting of a yellowish-green, mucoid, slightly turbid liquid, neutral or slightly alkaline to litmus. The specimen, therefore, differs from the thick brown fluid obtained from a biliary fistula, but the change in appearance is apparently due largely to dilution, which does not affect its suitability for culture. In the centrifugate, amorphous débris predominates, a few cholesterin crystals are occasionally seen, and also yeasts, cocci and motile bacilli, which culture shows are usually colon bacilli. The two positive cases showed no distinct macroscopic or microscopic evidences of infection, although carriers of longer standing would probably show some pus cells.

It so happened that, in the two positive cases, examination of the duodenal contents also furnished a diagnosis which could not have been made otherwise with certainty. Both patients were admitted late in their fevers, blood cultures and stool culture were negative, and agglutinations did not furnish much information, as the patients had both been vaccinated with typhoid vaccine and gave a good reaction for typhoid while paratyphoid A agglutinations are weak even in infected persons. In one case paratyphoid A bacilli were found in considerable numbers, and, in the other, typhoid bacilli. The latter patient soon developed a typical typhoid relapse.

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[3] Crile, G. W.: An Experimental Research into the Nature of Nitrous Oxid and of Ether Anesthesia, The Journal A. M. A., Dec. 16, 1916, p. 1830.

[4] Einhorn, Max: The Duodenal Tube as a Factor in the Diagnosis and Treatment of Gallbladder Disease, The Journal A. M. A., June 17, 1916, p. 1908.

[5] Garbat, A. L.: Duodenal Cultures in Typhoid Fever as a Means of Determining Complete Convalescence, The Journal A. M. A., Nov. 18, 1916, p. 1493.

[6] Teague and Clurman: Jour. Infect. Dis., 1916, **18**, 647, 653.

ALKALINE TREATMENT

Case 1.—*Paratyphoid A carrier.*—Truck driver, aged 26, Quartermaster Corps, was admitted to Base Hospital No. 2, El Paso, Texas, Oct. 10, 1916, with a temperature of 103 and a history of fifteen days' fever in Mexico. Blood culture and feces culture were negative, October 11. Typhoid prophylaxis had been given in 1911 and 1914. The temperature became normal, October 14. October 30, duodenal contents were obtained and a large number of suspicious colonies were found on the Endo plates which proved to be those of Paratyphoid A bacilli. The contents were slightly alkaline.

TABLE 3.—WIDAL TESTS IN CASE 1

		Agglutinations				
		1:40	1:80	1:160	1:320	1:640
October 18	Ty..........	(++)	(+)	(+)	(+—)	(—)
	A..........	(+—)	(—)	(—)	(—)	(—)
	B..........	(—)	(—)	(—)	(—)	(—)
October 27	Ty..........	(++)	(+)	(+)	(+—)	(—)
	A..........	(—)	(—)	(—)	(—)	(—)
	B..........	(—)	(—)	(—)	(—)	(—)
November 3	Ty..........	(++)	(++)	(+)	(+—)	(—)
	A..........	(+—)	(—)	(—)	(—)	(—)
	B...... ...	(—)	(—)	(—)	(—)	(—)

The patient was put on 2 gm. of sodium bicarbonate, three times a day, for ten days. The urine became alkaline in three days. Second examination of the duodenal contents was negative, November 14. The bile was definitely alkaline to litmus. The feces examination was negative eight times during the treatment, and was strongly positive once. The urine was negative twice.

Case 2.—*Typhoid carrier.*—A militiaman, aged 20, was admitted, November 3, with a temperature of 104 and a history of fever for one week. Blood cultures and stool culture were negative, November 4 and 5. Typhoid prophylaxis had been given in July, 1916. The temperature was normal, November 13. November 15, a duodenal tube was passed, and the contents showed typhoid bacilli in a brilliant green sample; the direct plate was accidentally dropped and lost. The contents were neutral. There was a relapse from November 18 to December 10. Sodium bicarbonate, 2 gm., three times a day, was given, November 19-28. Second bile test. December 21, was negative. The feces examination was negative six times, and the urine negative once.

In brief, both these early carriers were negative on a second examination of duodenal contents after a course of sodium bicarbonate. They may have been simply temporary carriers and might have cleared up of themselves, as did Garbat's and Berry's[7] patients. On the other hand, they might have become permanent carriers. In the paratyphoid A case a suggestive finding occurred: the stools were negative except on one examination, which showed a large number of colonies. This result may have been in the nature of a "provocative" reaction due to washing out of a plug of infected mucus.

COMMENT

The superiority of examination of duodenal contents over that of the feces for the detection of carriers is, of course, to be expected theoretically and seems to be strongly indicated by the few cases so far examined. Whether the bacilli are constantly or only intermittently present in the duodenal contents of a carrier will have to be determined by further work; the chances favor the former possibility; but if bacilli are only intermittently discharged, the gallbladder may be stimulated to contract during the examination by a preliminary meal, as suggested by Garbat.

The number of permanent carriers of typhoid bacilli is usually put at about 3 per cent. of cases, while temporary carriers run much higher, depending on the time of examination. Examination of the duodenal contents may increase the percentages for both kinds of carriers, but especially for temporary carriers. In this connection a practical point is the proper time after recovery for examination, because the bile always contains typhoid group bacilli at some period of the disease. Probably at least a month should pass after the temperature is normal before the test is made, in order to avoid picking up the purely temporary carriers which clear up of themselves.

The importance of the detection of carriers of the typhoid group has been generally recognized in our military service, especially since the work of Russell on the typhoid problem in the army, and two negative feces and urine examinations are required before discharge. In civil life, as shown by Garbat, the same is hardly true as yet, and the traditional view that welfare of the individual patient is the end-all of the physician's duty still has force. In the service and in public health work generally, in which a medical officer is charged with preserving the health of large numbers of persons, the more modern views of preventive medicine and social welfare are perhaps more in evidence. The individual, of course, must still remain the unit of attention, but many possible cases have claims as well as the one actual case. A concrete example is found in the possible spread of paratyphoid A infections as a result of the present mobilization. As we now know, this disease is far from rare in Mexico and on the border, and a number of cases have occurred in the troops, as will later be reported by medical officers. Fortunately the disease was promptly stopped by vaccination, and the convalescents have been examined for carriers;[7] but it should be recognized that these measures are distinctly recent and are due to modern broad conceptions of medical work.

TABLE 4.—WIDAL TESTS IN CASE 2

		Agglutinations				
		1:40	1:80	1:160	1:320	1:640
November 7	Ty..........	(++)	(++)	(+)	(+—)	(—)
	A..........	(—)	(—)	(—)	(—)	(—)
	B..........	(—)	(—)	(—)	(—)	(—)
November 8	Ty..........	(++)	(++)	(++)	(+)	(+—)
	A..........	(—)	(—)	(—)	(—)	(—)
	B..........	(—)	(—)	(—)	(—)	(—)
November 17	Ty..........	(++)	(++)	(++)	(+)	(+—)
	A..........	(—)	(—)	(—)	(—)	(—)
	B..........	(—)	(—)	(—)	(—)	(—)

In regard to the alkaline treatment of early carriers, the work so far done is largely preliminary; only two cases have been treated, and they were not of a decisive character. The object of this article is to call attention to the importance of realizing the pathogenesis of the carrier condition and of appreciating the possibilities of early treatment through the bile. As in many other conditions, much more may be accomplished early than late. No opportunity has yet presented itself for the treatment of a chronic carrier, but the conditions here would seem to be more difficult. Vaccination seems to have cured some cases and in others surgical intervention has been tried successfully when vaccine failed. Again, removal of the gallbladder is not always successful, as the bile passages may be infected. The chances of curing a well established lesion by simple measures certainly do not seem as good as they may be in early lesions. The reasons for trying to cure early carriers through influencing the reaction of the bile are: The bile is first and always infected; it spontaneously frees itself from infection in most cases by its antiseptic action; the antiseptic action is largely dependent on its alkaline reaction, and the reaction of bile can be made more alkaline by appropriate means. In case of a combined gallbladder and urinary bladder carrier, the case would of course require separate lines of treatment, one alkaline and the other acid. Many other factors, such as the effect of the infection itself on the reaction of the bile,[8] the extent to which the reaction can be changed, and the amount of alkali required remain to be determined.

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[7] Berry, C. W.: Med. Rec., New York, 1917, **140**, 135.

SUMMARY

1. The mechanism of gallbladder infection in the typhoid group, cholera and bacillary dysentery is by descending infection of the bile from the liver and not by emboli in the gallbladder wall.
2. Alkalinity of the bile favors its antiseptic action, and the reaction of the bile can be affected by the administration of alkalies.
3. The detection of early gallbladder carriers by examination of the duodenal contents is "a more reliable and simpler method" (Garbat) than examination of the feces.
4. Alkaline treatment is suggested for early gallbladder carriers.

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THROMBO-ANGIITIS OBLITERANS

THE CONSERVATIVE TREATMENT BY BIER'S HYPEREMIA SUCTION APPARATUS *

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Until recently, the opinion prevailed that this condition is incurable, and that the affected limb will have to be amputated sooner or later. This opinion is shared by many, even now; but since the pathologic changes in the amputated limbs began to be studied more carefully, it has become more and more evident that in almost all there is a tendency to self cure by the establishment of a compensatory circulation, either by anastomotic routes or by the canalization and vascularization of the thrombosed main blood vessels.[1] Since this was demonstrated, there has been a strong tendency toward conservatism in the treatment of the disease, and most of the measures advocated had as their object the correction of a hypothetic, physiologic or pathologic disturbance, which in the opinion of the different observers is responsible for the clinical condition.

As at present practiced, the conservative treatment consists of: (1) surgical procedures, such as arteriovenous anastomosis, and ligation of the femoral vein; (2) the use of drugs, such as nitrites and glandular extracts; (3) the use of substances to modify the state of the blood, such as hypodermoclysis or intravenous injections of anticoagulating substances; (4) local measures to improve or modify the circulation by local agents, such as the use of baking or superheated air, electricity and the induction of an active or passive hyperemia. All these measures are being used by different clinicians singly, combined or in succession. The results, however, are not uniform, the advocates of each method claiming good results, while others in an equally large series of cases report hardly any results whatever.

Superheated air or baking is at present more extensively used in the treatment of this disease than any other measure. The hyperemia and heat produced by this means have a considerable anodyne effect, and the warmth which follows its use and lasts for some time is welcomed by the patient; but a lasting effect is seldom seen, as the troublesome symptoms unfortunately recur after a few hours. All our patients have had their limbs baked every day for a long period of time, and although they liked the temporary warmth obtained, they all agree that it is of no permanent benefit.

The unsatisfactory results obtained by the employment of the various modes of treatment as carried out at present, and the intense suffering of the patients in the advanced stages have impressed us with the necessity of looking for some method which would give temporary relief in the hopeless cases, and promise some permanent results in the less advanced cases. Not only is the superheated air, used with some advantage in the earlier stages, without effect on the extremely painful ulcerated and gangrenous parts, but also it seems distinctly to intensify the pain. The anodyne effect of the hyperemia produced by the baking is offset by the irritating effects of the heat, which is not tolerated by the extremely sensitive parts. The changes and movements of the air incident to the constantly increasing temperature also seem to intensify the pain.

These observations prompted us to try the induction of a local hyperemia without the accompaniment of the factors mentioned above. The passive hyperemia as produced by Bier's suction method seemed to us the most suitable, and the ideal form to use in these cases. The hyperemia produced in this way is more intense than by any other means employed, and the irritating effects of the heat and atmospheric changes are done away with when the foot is enclosed for some time in a vacuum. As the main arteries of the foot are already obliterated in the majority of the cases at the time they come under observation, and as the disease itself has a tendency to self cure by the formation of a collateral circulation, the object of any conservative method of treatment should be to alleviate pain, to keep up the nutrition of the distal parts when gangrene is threatened, and to assist Nature in its attempts to establish a compensatory circulation. In addition to the production of a passive hyperemia, the negative pressure produced by exhausting the air also brings about an arterial hyperemia by its suction effect and by dilating the capillaries. The increased amount of blood thus produced results in greater nourishment to the tissues, and thus gangrene is delayed. Increased nutrition is also favored by the increased osmosis in the tissues taking place as a result of the difference in pressure.

The apparatus used was an ordinary Bier's suction cylinder, large enough to enclose the front part of the foot. The rubber cuff attached to the open end of the cylinder fits snugly around the ankle. The air is exhausted by a hand pump attached to a small opening at the closed end of the cylinder. We prefer using a cylinder which admits only the fore part of the foot, to a larger one admitting also a part of the leg, for the reason that there is more local action on the distal parts, which are mainly affected and responsible for the symptoms.

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[8] Frothingham, Channing, Jr.: Acidosis in Acute and Chronic Disease, Arch. Int. Med., December, 1916, p. 717.

* From the Physico-Therapy Department of Mount Sinai Hospital.

[1] Buerger, Leo: Am. Jour. Med. Sc., October, 1908, p. 567.

The treatment was begun on several bedridden patients who had suffered with extreme pain and were unable to keep the affected limb in the pendent position. After the first application of this treatment for about five minutes, we were surprised to hear from one patient that his pain had left him, and he was able to sleep a number of hours that night, thus getting rest which he had not had for a number of weeks. The other patients were also greatly benefited: they were able to sleep for several hours after each treatment, their appetite improved, they gained weight, and they became cheerful. An ulceration on the sole of the foot of one patient, which had persisted for months, almost completely healed after five weeks. With the kind permission of Dr. Heinrich Wolf, head of the physicotherapy department of the Mount Sinai Hospital, we proceeded to test the value of this suction treatment on a number of ambulatory patients in the outpatient department of that hospital, all other treatments which the patients were getting at that time having been discontinued. Twenty patients were treated in this way during the past five months, most of whom attended the clinic regularly three times a week.

All the patients have been suffering with this disease for a long time, and have had treatment by the various methods described above. All but two had no pulsations in their feet, both anteriorly and posteriorly; two patients had ulcerations on their second toe; one patient had the femoral vein of one leg ligated; three patients had one leg amputated previously for the same condition. In about half the cases, the feet were blanched, and in the other half they were either cyanotic or red. The results obtained are as follows:

All patients but one were affected favorably, and, as far as subjective symptoms are concerned, the patients assert that they were never before so much benefited by treatment. The case in which no relief was obtained was one of long standing, in which one leg was previously amputated; the other leg has no pulsations, but has normal color, and the only symptom complained of is pain in the calf, and at times, in the sole of the foot on walking. The patient does not seem benefited by any treatment, and his condition is characterized by remissions and exacerbations. Of those favorably affected, two improved so much that they returned to work and discontinued the treatment. Among the early and permanent effects obtained was increased warmth of the toes and foot. This was noticed in every case after about five or six treatments. Another striking improvement noticed was the fact that the patients can now walk without difficulty a much longer distance than they could before this treatment began. Some of them are on their feet the greater part of the day, and have no difficulty, although they were not able to use their feet this way for many months or years. The pain in the toes and soles of the feet either disappeared entirely or abated considerably, though some patients still complain more or less of pain in the calf of the leg. The color of the foot improved in almost every case in which the discoloration was at all marked. Some intensely cyanotic toes assumed a healthy pink hue after two or three weeks' treatment. The ulcerations present in two of our patients, though they have not yet been healed completely, are becoming shallower and smaller, and the pain which was very severe previously has disappeared altogether. There was no return of pulsations noticed in any of the vessels in which the pulse was not palpable at the beginning of treatment.

REPORT OF CASES

Case 1.—H. A., Russian Hebrew, aged 46, truck driver, eighteen months ago, was troubled by pain which appeared in the calf of the left leg and was soon followed by pain in the sole of the foot and great toe. The foot became cold and pale, and the symptoms grew worse, compelling him to give up work. Nine months ago, the femoral vein was ligated by Dr. H. Lilienthal, at the Mount Sinai Hospital. The pain disappeared after the operation, but reappeared two months ago, with all the other symptoms. The patient had been receiving treatments by baking all along, with no beneficial results. On examination, Sept. 3, 1916, the foot and leg were swollen and blue, the great toe was cold and showed evidences of impaired nutrition, the nail was distorted, and the color of a striking purplish blue. No pulsations were felt in any of the arteries of the foot or leg. The suction treatment was carried out regularly three times a week for from ten to fifteen minutes at a time. September 12, the patient was able to walk ten or twelve blocks without any difficulty, and the foot and toes felt much warmer. September 20, the great toe was of a good pink instead of the previous purplish blue. It felt warm, and the patient was able to attend to his business. He is still taking this treatment regularly, is on his feet the greater part of the day, does not complain of coldness, and has only an occasional painful sensation in the great toe, especially on change of weather.

Case 2.—I. B., aged 39, Russian Hebrew, tailor, fifteen years ago, was troubled by the great toe of his left foot, which became blue and cold, ulcerated, and was finally amputated. Eight years afterward, the same signs appeared in the right foot, and after seven years of suffering, this leg was amputated above the knee. Five months ago, an ulceration appeared on the second toe of the left foot. The toe became red, swollen and extremely painful, especially at night. Pulsations in the dorsal and plantar arteries of the foot were absent. Treatment was begun, Sept. 5, 1916. The patient felt much better after the first treatment, and slept well at night. September 12, he could walk several blocks without difficulty, and the foot felt warmer. September 30, the patient had no pains at all in his foot, the toe was not swollen, and the ulceration was shallower. At present, the ulcer is about half the size it originally was, there is no pain whatever, and the patient sleeps well and is able to walk a number of blocks without difficulty.

Case 3.—N. W., aged 49, storekeeper, was troubled with his veins for many years. Twelve months ago, pain appeared in the calf of one leg, soon followed by pain in the other. The pain occurred mostly when the patient walked, compelling him to stop frequently (intermittent claudication). Soon the feet and legs began to feel cold, and pain appeared in the inner side of the foot, in the sole, and at times in the toes of both feet. On examination, September 9, the feet were found pale, with a distinct bluish tracery of the veins. No pulsations in any of the vessels of the feet were perceptible, and they were cold to the touch. September 19, the patient felt much improved, could walk without difficulty from his home to the hospital (fourteen blocks), the feet felt warm, and there was no pain in the soles and inner side of the feet; but the patient still had an occasional pain over the base of the toes. He attends to treatment regularly. The feet have not changed color, they feel warm, and the patient can attend to his business. No pulsations are perceptible.

Case 4.—N. B., aged 40, Russian Hebrew, operator, was troubled about ten months ago with pain which appeared in the right foot and toes, and he had difficulty in walking. The foot and toes began to feel cold. Five months later, he was operated on for a bunion on the right foot, and two months elapsed before the wound closed. Since the operation, the toes, especially the great toe, had been blue, cold to the touch, and painful. There was also some pain in the sole of the foot. The pulse was not perceptible in the dorsalis pedis artery, but was present in the plantar arteries. Treatment was begun, Sept. 26, 1916. October 5, the patient felt much better, he had very little pain, could walk without difficulty, and the foot felt warm. He left then for the country. Because of the reappearance of the pain a week before, the patient returned from the country to resume treatment, November 3. This was kept up until November 28, when he returned to his work, the foot feeling warm, free from pain, and the color being good.

CONCLUSIONS

1. Admitting that many cases run a progressive course, the only treatment for which is amputation, we still firmly believe in conservative treatment for the majority of cases.

2. The various measures resorted to in the conservative treatment of this disease have proved, in the majority of cases, to be either of only temporary value or of no value at all in alleviating the symptoms.

3. The hyperemia suction treatment gives results unsurpassed by any other method available.

4. The beneficial effects observed are: increased warmth of the parts, improvement of the color, alleviation of pain, and more rapid healing of ulcerations.

5. Although occasionally a patient may not respond to this treatment, and some cases are too far advanced for benefit to be received by it, the improvement observed in the vast majority of cases is so evident that we firmly believe that this method deserves a definite place in the conservative treatment of thromboangiitis obliterans.

16 Central Park West—1536 Minford Place.

THE SELECTIVE ACTION OF SPIROCHETES

REPORT OF FOUR CASES OF FAMILIAL OPHTHALMOPLEGIA INTERNA, DUE TO CONGENITAL SYPHILIS *

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NEW YORK

CASE REPORTS

The following cases came under my observation about two and one half years ago:

The father was referred to me for treatment of a spastic hemiplegia, from which he had been suffering for about sixteen months. The paralysis came on gradually over a period of several months, during which time the patient had a number of convulsive seizures. After each convulsive seizure the paralysis became more profound, until the right side became completely involved. His speech also became affected. He had been a moderate user of alcohol and tobacco. He denied ever having had venereal infection. The family history was rather suspicious. His wife had had three miscarriages; one at eight, one at seven and the third at three months. These were followed by the birth of four children, now aged 13, 11, 9 and 7 years, respectively.

Physical examination revealed a poorly nourished middle aged man. There was a spastic hemiplegia on the right side. The pupils were irregular, unequal, and did not react to light. There was a sluggish reaction to accommodation. In the absence of an endocarditis, with no apparent renal disturbance, and the presence of a normal blood pressure, the diagnosis of cerebral syphilis was made.

Examination of the blood and spinal fluid revealed a ++++ Wassermann reaction. Globulin was present in excess. The cells, however, were not estimated.

I then examined the wife for evidence of conjugal infection. Although no active discomfort was complained of, I was able, on close questioning, to elicit a history of frequent attacks of moderately severe headaches, accompanied by dizziness and nausea. Her vision was failing, and at one time she had had a fleeting attack of diplopia. She had unequal, irregular pupils which were almost completely fixed to light and reacted sluggishly to accommodation. Superficial and deep reflexes were equal and active. Sensations were normal. There was no disturbance of gait. The blood Wassermann was ++++.

The presence of syphilis in the parents then led me to inquire into the condition of the children. The oldest child, P. H., had had snuffles and an eruption at birth, which lasted about one month. He had always been nervous and irritable and considered below par mentally; otherwise the history was negative. The third child, H. H., had an eruption at birth, but no snuffles. At the age of 7 he had an attack of convulsions, which were followed by spasticity and dragging of the lower extremities. The second child, I. H., and the fourth child, F. H., each gave a negative history.

In the oldest, second and fourth children, the pupils were widely dilated, unequal in size, irregular in outline, and did not react to light, accommodation, convergence or the instillation of physostigmin salicylate (a 1 per cent. solution) into the eye. The third child, H. H., in addition to these pupillary disturbances, had an active nystagmus, bilateral Babinski phenomenon, bilateral inexhaustible ankle clonus, increased knee and ankle jerks, and a well defined spastic gait. He also had about 2 diopters of swelling in the optic nerve heads. The teeth in the three older children, although not typically hutchinsonian, were highly suggestive.

The blood Wassermann was ++++ in the third child, doubtful in the two older children, and negative in the youngest. The second series of Wassermann reactions were made six months after the children had been receiving treatment, and were ++++ in all of the children. Subsequent examinations at six month intervals to the present time do not show any changes.

The presence of widely dilated pupils which react to light, accommodation, convergence or the instillation of miotics into the eye led me to the conclusion that we were dealing with a paralysis of the pupillary sphincter and the ciliary muscles: an ophthalmoplegia interna, probably of specific origin.

Antisyphilitic treatment was instituted in all of the cases. The mother and children received mercury in the form of inunctions daily, and potassium iodid in increasing doses (up to 10 grains in the children, and 20 grains in the mother), three times a day. The father received four intravenous injections of salvarsan, followed by weekly intramuscular injections of mercury salicylate, and potassium iodid by mouth.

This treatment has been continued for two and one half years. The father's condition has remained unimproved, while the mother's condition is somewhat better. She still suffers from an occasional headache; but increasing the iodid promptly relieves her. Her vision still remains poor, although there has been no further loss in the past two years.

The second and fourth child's pupils react promptly to physostigmin, convergence and accommodation, but are still a little sluggish to light. The oldest child, P. H., shows slight return of the reaction to physostigmin, less to convergence, and no return of reactions to accommodation or light reflex. The third child, H.H., shows slight improvement in his gait and nystagmus. The papillary edema has cleared up entirely. The pupillary phenomena, knee jerks, ankle clonus and Babinski, however, remain unchanged.

COMMENT

Ophthalmoplegia interna is the rarest form of pupillary disturbance found in congenital or acquired syphilis of the nervous system. It manifests itself clinically

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* Read in part and cases shown before the New York Academy of Medicine, Section on Neurology and Psychiatry, May 9, 1916.

as a paralysis of the intrinsic muscles of the eye. The pupillary phenomena may be unilateral or bilateral, the unilateral being encountered about twice as frequently as the bilateral. The phenomena consist of widely dilated pupils which do not react to accommodation, convergence or light reflex. Such pupils do not contract when physostigmin or other miotics are dropped into the eye. In the syphilitic cases, the pupils are, in addition, unequal in size and irregular in outline.

It is of interest to note that when the pupillary activity returned in my cases, during the course of antispecific treatment, the response to physostigmin was the first to appear. This was followed by the return of the reaction to convergence, next accommodation, and last of all light reflex. The same sequence was noted in three of the patients, two of whom have almost completely recovered their pupillary reactions.

The extreme importance of early recognition of these cases of latent congenital syphilis is evident. It is highly probable that some further involvement of the central nervous system would have occurred if treatment had not been instituted in these cases. It is also probable that such involvement may still occur despite the treatment.

The subsequent histories in this class of cases show that many of the patients are candidates for the juvenile types of tabes, paresis and other allied central nervous disorders. The only hope left for these unfortunate victims is early recognition of the danger to which they are exposed, and institution of the most intensive antisyphilitic treatment as soon as the condition is recognized.

Of the pathology of ophthalmoplegia interna, little has been written. The lesion is presumably nuclear. In syphilitic cases, it is most probably either a gumma or a degenerative process, due to endarteritic changes in the region of the third nerve nucleus.

The most common cause of ophthalmoplegia interna is syphilis of the central nervous system. Among the less frequent causes may be mentioned postdiphtheritic paralysis, trauma, and overstimulation with mydriatics, as atropin.

When a syphilitic infection occurs, the local spirochete inoculation is soon followed by a general infection.

Of the tissues which are equally accessible in a general infection, the most vulnerable will be the first attacked. At the same time this tissue heals, it develops a resistance against the infecting agent. In other words, it becomes less vulnerable, a property which the unaffected tissues do not as yet possess. This is illustrated by the definite line of invasion which we constantly find in a general syphilitic infection. It begins with the local site of inoculation, followed by invasion of the glands, mucous membranes and deeper tissues, each usually separated by periods of apparent perfect quiescence. Only exceptionally is the central nervous system invaded, and then this is usually the last tissue to be attacked.

Drs. Wile and Stokes of Ann Arbor demonstrated biologic changes in the cerebrospinal fluid in 63 per cent. of their cases presenting secondary syphilis. They concluded, however, that not more than 5 per cent. of these cases later gave destructive manifestations of central nervous syphilis.

The defensive property of a tissue which has healed may not be restricted to the particular strain of organism which called it forth, as von Krafft-Ebing has shown, by inoculating eight general paretics with virulent syphilitic material. In none of them did local reactions follow. Truffi, Ullman and Tomasczewsky have also shown in dogs that a similar local immunity exists in the different tissues to a second inoculation with the spirochete.

From the work of Reasoner, it would seem that there is little doubt as to the existence of distinct strains of the spirochete. He took twenty strains of the organism and experimentally produced the disease in rabbits. He found that definite strains produced definite lesions, and that these lesions could not be produced by any of the other strains of organisms.

Conjugal syphilis of the nervous system, manifesting itself either as tabes, paresis or cerebrospinal syphilis, is not as rare as its reports in the literature would indicate. Drysdale,[1] in a recent article, reviews some of the literature on the subject, and mentions cases by Laignel-Lavastine and Mercier, Ferenczi, Garnier and Sautenoise, and Junius and Arndt. In the discussion on his article, a number of other instances of conjugal cerebrospinal syphilis were mentioned. Bélières records three cases of general paresis and two of an allied nature, in which all the patients owed their contamination to the same woman. Beaussart quotes a series in which a syphilitic husband, free from nervous affection, had a wife who became tabetic, and a daughter who was a general paretic. After divorce, the husband remarried and his second wife also developed tabes. He also reports the case of a glass blower, A, who received a buccal chancre from a syphilitic fellow workman, B, through using his drinking cup. A and his wife died of general paresis; B died from general paresis. B's wife remained normal, but her lover afterward had tabes. In another group of Beaussart's, a man who had general paresis had a taboparetic wife. She had a lover who developed general paresis and whose wife showed pupillary changes. Morel Lavall records a series of five cases of general paresis with a common source of syphilitic infection. Pierre Marie, Bernard and many others have reported similar series. These instances could be multiplied many times, if all the cases encountered should be reported.

From the evidence deduced by the experiments of Reasoner, Truffi, Ullman and Tomasczewsky, we may assume that when the same lesions occur in persons infected with syphilis, these lesions are due to the same strain of organism. And when the same lesions occur in members of the same family, it is highly probable that they are due to the same strain of organism.

Hereditary susceptibility would here seem improbable, when we take into consideration the cases of conjugal syphilis reported by Drysdale, Bélières, Beaussart, Laignel-Lavastine and a host of others. In those cases allied lesions occurred in persons who were unrelated. They were probably infected, however, by a definite strain of spirochetes.

In my cases, we may assume that the wife received her infection from the husband. The occurrence in her, and in all the members of the family, of central nerve involvement strongly suggests a selective property of the infecting spirochete. Another striking feature in this group of cases is the slight and almost complete absence of invasion of other tissues preceding the involvement of the central nervous system.

CONCLUSIONS

1. Ophthalmoplegia interna is a rare condition; it may be familial.

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[1] Drysdale, H. H.: Conjugal Paresis, The Journal A. M. A., July 29, 1916, p. 340.

2. It may be the only objective evidence of congenital syphilis of the central nervous system.
3. All offspring should be carefully examined for latent syphilis when the parents are known to be infected.
4. When evidence of latent syphilis is found, treatment should be instituted; it must be continued until all clinical and biologic evidence of the disease disappears.
5. In my cases, the condition is due to a strain of spirochete which probably possesses a selective property for nerve tissue.

NOTE.—Later observation of these cases has disclosed some interesting facts. The father has developed frank paretic symptoms and has been committed to a state institution. In the oldest child, P. H., whose pupillary phenomena had begun to return, the pupils have again become completely immobile. He has developed marked weakness of the lower extremities, bilateral Babinski reflex, bilateral ankle clonus, increased knee and ankle jerks, and a slightly spastic gait.

Through the courtesy of Dr. B. Sachs, the two children with the spastic paraplegia were taken into his ward at Mount Sinai Hospital for arsenobenzol injections. They have received to date two intravenous injections of 0.2 gm. each. As yet, no improvement in their symptoms is discernible.

The cerebrospinal fluid, as well as two examinations of the blood, in these children and the mother, showed a + + + + Wassermann reaction.

1 West Eighty-Fifth Street.

The Drying of Vegetables.—The process of drying as a preservative process for vegetables is being rapidly extended, both as a matter of conserving food products that now go to waste, and as helping to solve transportation burdens. A new process, in use in several plants in this country, consists in using heated air at a lower temperature than is usually employed abroad, and insuring a thorough circulation of the air currents so as to reach every particle of the fruits or vegetables undergoing desiccation. The residual water is well inside 12 per cent., and the desiccating process does not injure the cellular membranes of the vegetable matter. Depending on the amount of water in the vegetables, the process may be completed within two and a half to five hours, about half the time of the foreign process. The products retain their fresh taste and full flavor when prepared for the table, and on account of their cellular structure being uninjured they regain their normal fresh appearance after being soaked in water a short while. A truck load of mixed vegetables dried by this method will weigh only a hundred pounds and fill a barrel. Of soup vegetables, a pound will make soup sufficient for sixty persons. It will be seen that for naval or military purposes, or for feeding large bodies of men at points distant from sources of supply, this method of preserving food products offers great advantages.

UMBILICAL POLYP

WITH REPORT OF A CASE

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Umbilical polyp is a remnant of the omphalomesenteric or vitelline duct. Normally on the fifth or seventh day after birth the umbilical stump drops off, and in a few days the remaining surface closes over. With umbilical polyp, the region of the navel remains bright red with a granular appearance following the separation of the stump. It bleeds easily, resists local treatment, and a painless, bleeding condition continues for months or years. Persistent weeping from a cord stump in infants is often due to a patent omphalomesenteric duct.

This granular looking surface is revealed by the microscope to consist of intestinal mucosa with villi, glands of Lieberkühn, goblet cells, muscularis mucosa, etc. The presence of intestinal mucosa is explained by the fact that in the early embryo the omphalomesenteric duct communicates with the digestive tract. At the beginning of embryonic life the yolk sac, which is spherical, communicates with the intestine by a wide opening. A little later the yolk sac becomes constricted from the embryo, but remains connected with the intestine by a narrowed portion known as the omphalomesenteric or vitelline duct. Finally the yolk sac becomes incorporated with the placenta, and the omphalomesenteric duct as a filament of cells runs through the entire length of the umbilical cord. Usually during fetal life the proximal part of the duct lying between the intestine and the umbilicus degenerates and disappears. In a small number of cases it does not disappear, but retains its lumen and continues to connect the intestine with the umbilicus.[1]

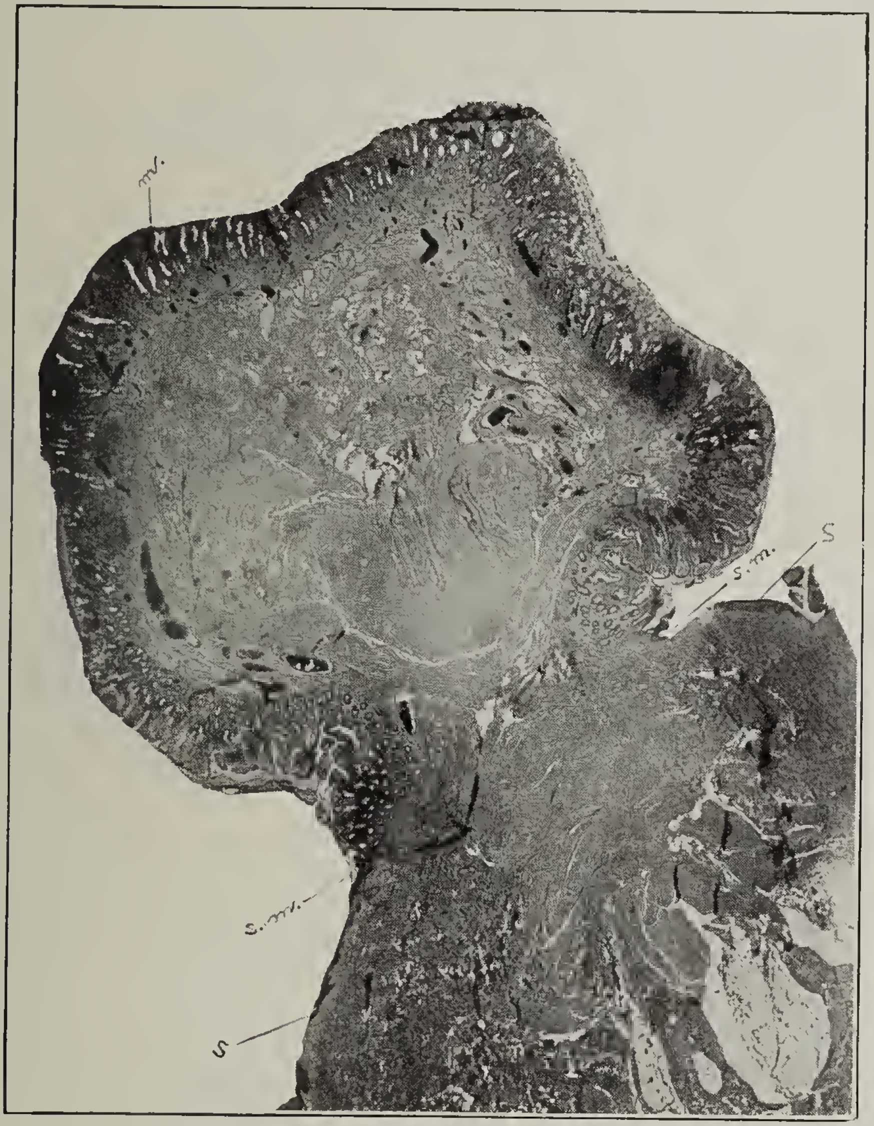

Fig. 1.—Longitudinal section of polyp; *s m*, line of junction between skin and mucosa; *m*, mucosa; *s*, skin.

The umbilical polyp may be closed or patulous. If patulous, fecal contents escape and a probe can be inserted through the fistula into the bowel. The amount of discharge depends on the caliber and tortuosity of the duct. Occasionally the opening may be so concealed in the umbilical depression that detection is difficult. In such cases one may be at a loss to explain the fecal discoloration and odor on the dressing. Through an omphalomesenteric duct of large size, the small bowel may prolapse.

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[1] The embryology of the omphalomesenteric duct is described and illustrated by Cullen, Thomas S.: Embryology, Anatomy and Diseases of the Umbilicus, Philadelphia, W. B. Saunders Company, 1916.

REPORT OF CASE

History.—A. B., a girl, aged 12 years, Italian, with negative family and previous medical history, was brought for treatment of a small growth at the navel which wept and bled so freely that it stained her underclothing, and seeped through and soiled her dresses. Her mother said that the condition had existed since birth, and that the "cord never healed." There was apparently no pain, and the lesion did not increase in size. It was inconvenient only because of the annoyance from the bleeding. The mother had never detected any fecal odor or discoloration on the dressings. In recent months the amount of bleeding had markedly increased.

Examination.—Filling the navel fossa was a circular bright red granular looking surface 1.75 cm. in diameter and elevated about 0.5 cm. above the surrounding skin. There were no impulse, no evidence of umbilical hernia and no weakness of the rectus muscle. On probing I found no communication leading from the external surface. The Wassermann and von Pirquet tests were negative.

Treatment.—A 4 inch elliptic incision around the umbilicus was made, and the polyp with the surrounding tissue was carefully dissected down to the sheath of the rectus muscle. At this juncture the structure narrowed to about 2 mm. On transverse section a patulous duct was found and a probe was inserted 5.5 cm. into the abdominal cavity. On account of the firm abdominal wall, no effort was made to dissect beyond the muscle sheath. The duct was ligated, and the stump touched with the actual cautery and buried beneath the rectus sheath. Recovery was uneventful. The parents were advised of a future possibility of intestinal obstruction.

Pathologic Report (by Dr. Benjamin T. Terry, director of the Brooklyn Laboratories of Pathology). — Macroscopically the specimen consists of a mass of skin measuring 2 by 2.5 cm. Projecting from this skin is a mass of grayish tissue 0.7 cm. in diameter. On section this mass is grayish, and appears to have a rich blood supply.

Microscopically, sections show skin from which a polypoid mass of tissue arises. The polyp is covered externally by a mucosa which resembles that of the small intestine. In the mucosa can be distinguished villi which show a cuticular border, glands of Lieberkühn, many goblet cells, a tunica propria, and a muscularis mucosa. Beneath the muscularis mucosa is seen connective tissue through which thick bundles of smooth muscle fibers run. Dilated blood vessels are numerous in the tunica propria, in the muscularis mucosa, and in the connective tissue below this. On each side of the polyp the mucous membrane comes in close contact with the epithelium of the skin. There is, however, no evidence of transition between the mucous membrane and the skin. The epithelium covering the skin is thin, but the skin appears normal. In some of the sections the central portion of the polyp is occupied by a large mass of fatty tissue which is so thin that on macroscopic examination of the slide the central portion seems to be almost hollow.

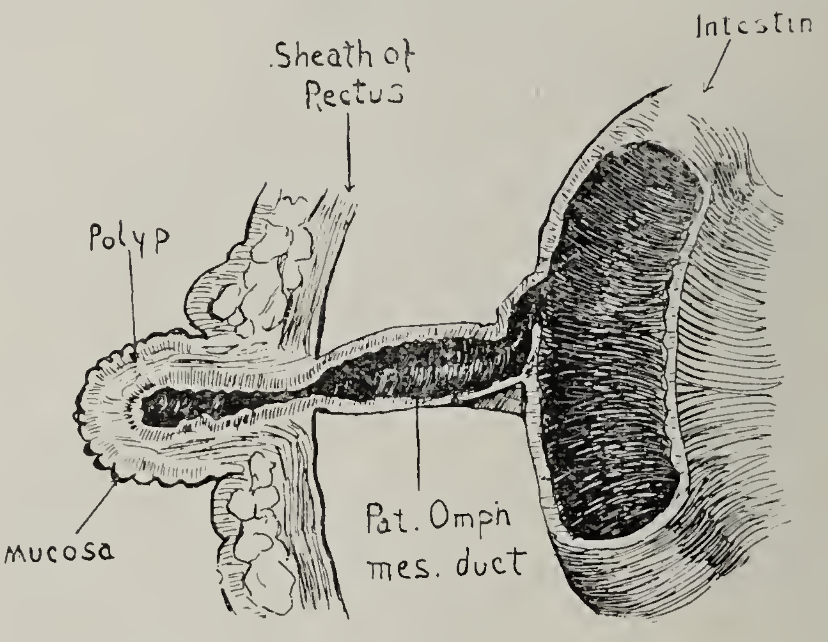

Fig. 2.—Umbilical polyp, sectional view; a similar condition is illustrated and described by Cullen, Figure 66, p. 121.

COMMENT

The method described above is the one most frequently employed in the reported cases. Since there is always a possibility of the polyp being attached to a Meckel's diverticulum, or connected with one, with subsequent danger of intestinal obstruction, probably the wisest thing to do is to dissect down to the attachment with the intestine, and if a Meckel's diverticulum is found, to tie it off at the intestinal junction.

PHLEGMONOUS GASTRITIS *

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The principal object in mind in taking up the subject of phlegmonous gastritis is that this subject is particularly rare and the cases reported in the literature very few. The earliest known description of a case is in a communication by Verandaeus in 1620. In 1839 Androl and Cruveilhier appear to have been the first to have observed the diffuse form. In the seventeenth and eighteenth centuries there are only three or four reports. In 1896 there appeared an admirable monograph by Leith[1] of Edinburgh in which he gave short abstracts of fifty-one cases which he had gathered from the literature. Later on, an assistant of Moynihan reviewed a part of the literature. In 1900 Max Jacoby[2] reported two cases that had come under his personal observation. He also reviewed all the cases then reported in the literature, numbering about sixty-four. He gives an exceedingly scholarly résumé of the etiology, pathology, symptoms and causes of the disease. All in all, his monograph is a classic.

In 1907 Cecil[3] of Johns Hopkins reported a case, and also gave a short outline of other cases reported in the literature since the review by Leith. In this thesis there is an endeavor to report a case and to review all the literature from the time of Cecil's report in 1907 up to Jan. 1, 1916. There are also in the bibliography references to a number of cases occurring in the literature between 1896 and 1907 which have not been quoted by Cecil. Up to the present time only a few more than 150 cases are reported.

During the years from 1904 to 1912 the subject received more or less attention from the German investigators. About that time phlegmonous gastritis was credited with three inaugural addresses before different hospital and college assemblies.[4]

The following is the report of a case that came under my observation:

History.—In the latter weeks of January, 1916, a laborer (night watchman and janitor) called me to his home. He was 63 years old and was living with his second wife. Four healthy children had been borne by the first wife. He had had an infected ear when a child, which resulted in a partial loss of hearing. Ever since he had lived in Lincoln (a period of three or four years) he had been subject to occasional coughing spells, when he raised some bright red blood. These occurred only once every three or four months. He had had some nasal catarrh for years. He had gained in weight during the last year. His habits were good; it was seldom that he touched alcoholics.

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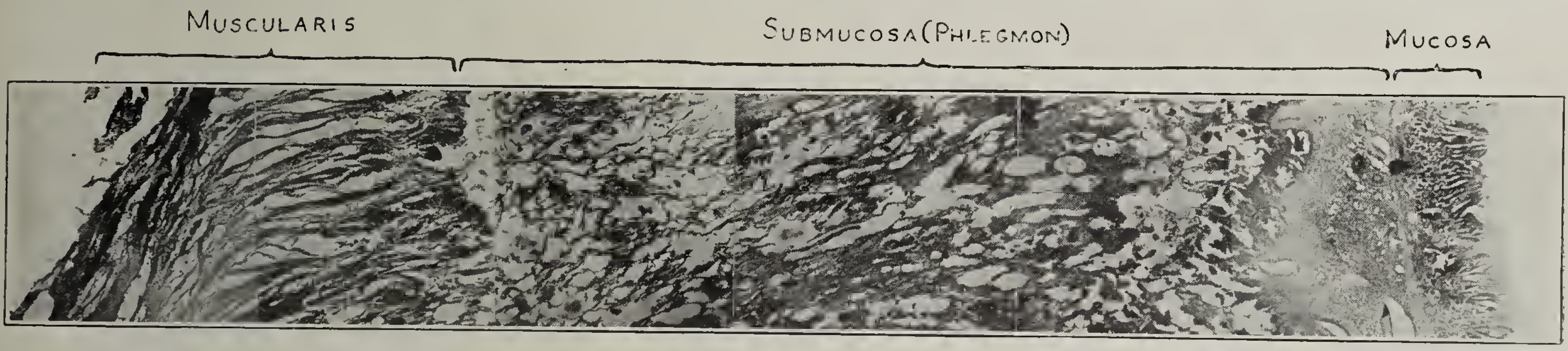
* On account of lack of space, this article is abbreviated in The Journal by omission of a review of the literature. The complete article appears in the author's reprints, a copy of which may be obtained on application to the author.

1. Leith, R. F.: Phlegmonous Gastritis—Its Pathology, Etiology, Symptoms and Treatment, Edinburgh Hosp. Rep., 1896, **4**, 51.
2. Jacoby, Max: Ueber Gastritis phlegmonosa, Königsberg, 1900.
3. Cecil, A. B.: Phlegmonous Gastritis, Johns Hopkins Hosp. Bull., 1907, **17**, 336.
4. Herrmann, Oskar: Ueber die Phlegmone der Magenwand, Munich, 1912. Mau, Heinrich A.: Ueber Gastritis phlegmonosa, Inaug. Diss., Kiel, 1904.

He complained of a general aching; his throat was sore; he coughed slightly, and had headache and backache. The temperature was moderately elevated. Physical examination revealed nothing more than an acutely inflamed throat. I concluded that he had a grippal infection, advised accordingly, and left him.

Almost a week later I was called to see him again. He had not returned to work in the meantime. He had had a slight chill the night before, and had vomited most of the night, and more or less in the morning. The vomitus was yellow; no blood was observed. He said that his bowels had moved somewhat, but he felt that the movement was not sufficient. He complained of some pain in the left epigastrium. An hour before I arrived he had retained some fluids. He was thirsty. His temperature was 102¼, the pulse, 120. Physical examination revealed a somewhat dry tongue, fairly well furred. There was some tenderness in the epigastrium, extending slightly to the left. There was some resistance in this area. No mass could be palpated. The remainder of the abdomen was soft. There was no distention whatever. The urine showed no abnormalities.

The next day I called again. The temperature was 102½, the pulse 114. There had been little vomiting, and no movement of the bowels. The patient looked ill; he was groaning with pain, was restless, and had slept very little. His face was somewhat pinched. The epigastric pain was more intense. The patient, however, could drink milk. The area of tenderness had extended downward and slightly to the right. There was a little resistance in the left hypochondrium, but the abdomen as a whole was absolutely soft.



Photomicrograph of section of stomach wall, showing extent of the phlegmon. Note scarcity of normal tissue between mucosa and muscularis; the space is practically filled by phlegmon. Note also the spaces in the muscularis where the muscle fibers are separated by seropurulent material.

A surgical consultant was called. We could not conclude what the difficulty was. A dose of castor oil was ordered, with instructions to save the stools if there were any.

The next day the consultant and I called again. Large fluid evacuations had occurred. The stools were not characteristic of any abnormalities. The epigastric pain was severe. The patient was groaning; he was restless. He had been a little delirious during the night. However, he had retained a fair amount of milk. The temperature was 102, the pulse 110, the urine negative.

That evening I called and the patient complained less. The next morning there was no distinct change. He had had a restless night. There had been some delirium; the tenderness was probably a little lower. That evening both the consultant and myself were called. The patient was groaning with pain, rolling about somewhat, he felt very ill, and was thirsty. The temperature and pulse were practically the same. The pain and tenderness had extended downward almost to the level of the umbilicus. There was some distention; the tongue was dry and furred. We felt that a peritonitis was extending from the upper abdomen downward. Its origin we did not know. We decided that an exploratory laparotomy was indicated. The patient was removed to a hospital, and an operation performed.

Operation.—It revealed a peritonitis most pronounced at and near the stomach. Almost the entire stomach was covered with a fibrinous exudate. The stomach was somewhat enlarged, and the walls felt very thick and boggy. The infection had evidently started at the stomach. There was no ulcer or cancer or any other pathologic condition that could be looked on as the original source of the infection. The abdomen was closed with drainage. There was a good recovery from the anesthesia, but the patient died in twenty-four hours.

Necropsy.—A partial postmortem was permitted, but not until after the body had been injected by the undertaker. The stomach was the chief point of interest. As a whole it was somewhat enlarged. It was more or less covered by a rather thick fibrinous inflammatory exudate. The veins were prominent and somewhat congested. The walls felt thick and edematous. At least two thirds of the stomach wall was involved. When the stomach was opened an ounce or two of a thin, yellowish fluid was found. The cut surface of the wall was an inch in thickness. Pus exuded from the cut surface, and an unusual quantity could be expressed. The mucous membrane was partially covered with a mucofibrinous exudate. The submucosa was markedly thickened. The thickness of the entire wall was due almost entirely to the condition within the submucosa. It was yellowish white, and an unusual quantity of pus could be expressed from this layer also. The muscular coat was somewhat thick and congested. The outer coat demonstrated an acute fibrinous peritonitis.

Microscopic examination revealed that the thickness of the stomach wall was due particularly to the infiltrate in the submucosa. There was probably a little round-cell infiltration in the mucous membrane, but it was difficult to tell on account of the character of the normal glands. In the submucous layer the structures were widely separated by the inflammatory exudate. It was difficult to find the blood vessels, which were also widely separated. Some vessels were thrombosed. The exudate was made up of round cells with some fibrin. The round cells were practically all polymorphonuclear. The blood vessels seemed dilated, and had a tendency to thrombose. In some areas the entire original structure was replaced by the infiltrate. The muscular layer was also invaded by the multinuclear round-cell infiltrate. The muscle bundles were also widely separated. The pancreas and the kidneys both showed an acute degenerative process. This was an important finding, as it showed the absorption of a rather severe toxin.

Bacteriologic examination was not made; streptococci, however, could be seen in the tissue section. No other organs were examined microscopically.

A pathologic diagnosis of acute, diffuse idiopathic phlegmonous gastritis, with acute peritonitis and acute degeneration of pancreas and kidney, was made.

PROGNOSIS

The prognosis is extremely bad. In all the cases reported in which the diagnosis of general phlegmonous gastritis was beyond question, there is mention of only one case which did not terminate fatally.

TREATMENT

The treatment is merely expectant. These cases have been attacked surgically. F. Koenig[12] succeeded in making a resection of the stomach in a case of true diffuse phlegmonous gastritis, with recovery. This is the only case of recovery on record. There are a number of other cases of successful operations reported, as those of Hemmeter, Bovec,[13] and others. In none of these, however, was a true phlegmon present, but on the other hand all were abscesses, or an infection extending into the tissue from an ulcer or cancer.

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[12] Koenig, Fritz: Ueber Magenwand phlegmone im subakuten Stadium und eine Heilung durch Magenresektion, Deutsch. med. Wchnschr., 1911, **37**, 631.

OVERLOOKED COMMON DUCT STONES *

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CHICAGO

The object of this paper is to direct attention to two conditions, the existence of which is not sufficiently well known if we wish to lessen the number of recurrences following operations on the bile passages. These conditions are:

1. Calculi may be present in the common or hepatic ducts without giving rise to the symptoms which we have always considered pathognomonic of calculi in these locations.
2. Even at operation when the common duct is palpated to determine the presence of calculi, they may be found in a certain percentage of cases even if our usual methods of palpation yield negative results.

By the expression "usual methods" I refer to the fact that the segment of the common duct which is almost invariably palpated is the supraduodenal portion. Calculi lying in the retroduodenal division, that is, just above the ampulla, are not palpable through the overlying duodenum unless they are of relatively large size or unless the mobilization incision of Kocher has been employed to expose the retroduodenal portion for direct palpation.

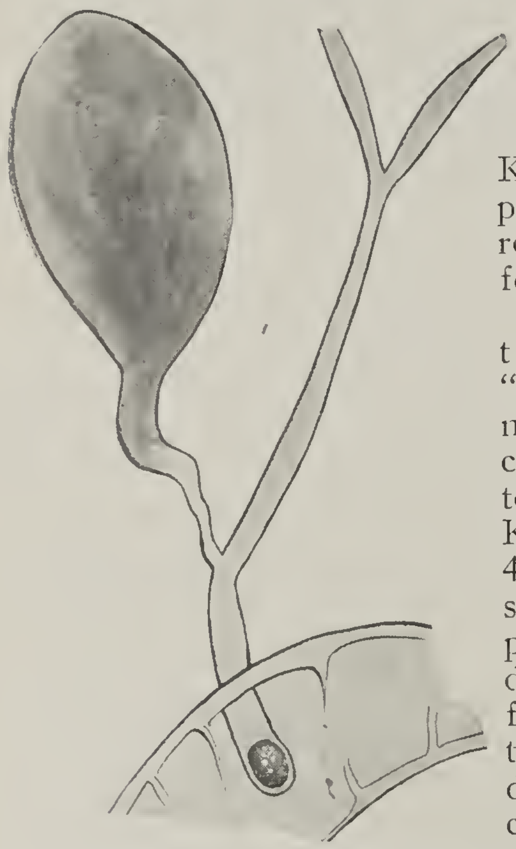

Fig. 1.—Removal of gallbladder with large calculus two years before by another surgeon. Recurrence of symptoms (pain with slight icterus) eighteen months later. Negative palpation of common duct but calculus size of navy bean found just above ampulla in retroduodenal portion of common duct at second operation.

I became interested in the question of the "overlooking" of common and hepatic duct calculi at operation, after reading an article by Kehr.[1] In seventeen, or 46 per cent., of thirty-six cases in which palpation of the common duct was negative, he found calculi in either the hepatic or the retroduodenal portions of the common ducts. The reason such calculi are often overlooked or rather why they are not felt is that they swim in the stagnant bile or lie just above the ampulla in the retroduodenal portion, which is not readily accessible to palpation. Kehr, in the paper referred to and in subsequent publications,[2] states that in about 20 per cent. of all of his cases the common duct calculi belonged to the latent class, that is, produced no symptoms, such as icterus, chills and fever, which we have always considered to be characteristic of such calculi.

During the past four years, in the course of a large number of operations on the biliary passages, I have explored the common and hepatic ducts in thirty cases in which palpation was negative. In ten (33.3 per cent.) of these, calculi[3] were found on exploration in spite of negative palpation. None of these thirty patients died, and I am confident that the mortality will not be increased in the hands of other surgeons if a rapid technic[4] for exploring the common and hepatic ducts is developed by the surgeon.

Of the four indications given by Kehr, three have seemed to me of especial importance, in the order named: (1) the presence of many small calculi in the gallbladder or cystic duct; (2) an enlarged, thick walled common duct; (3) the presence of chills, fever or icterus. To these I would add a fourth: recurrence of pain or symptoms of cholangeitis (chills, fever, etc.) after previous operations, such as drainage or removal of the gallbladder, or even after previous choledochostomies. In two of my ten cases with positive findings (although even my palpation had been negative), operation had been performed by other surgeons (Fig. 1).

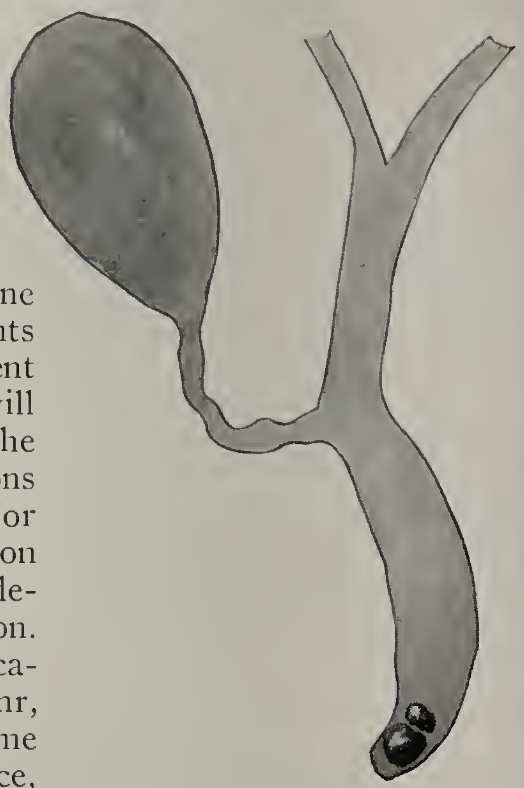

Fig. 2.—Cholecystostomy without finding calculi two years before by another surgeon. Recurrence of symptoms eighteen months later (pain, icterus, chills and fever). At second operation negative palpation of common duct, but two calculi the size of peas found at lower end (just above ampulla) of common duct.

In one of these, the gallbladder had been explored without finding calculi and then drained. Eighteen months later the patient began to have pain in the right hypochondrium with icterus, and I operated on him. The gallbladder walls were thick, but no calculi were found. The common duct was of the size of two adult thumbs, thin walled and negative on palpation. On exploration of the common duct, a calculus the size of a navy bean was found just above the ampulla.

In a second case the greatly thickened gallbladder containing a large calculus impacted at its neck had been removed by one of my colleagues. Two years later the patient began to have pain in the epigastrium, icterus, chills and fever. I found the common duct greatly enlarged, and although palpation was negative, two faceted calculi, the size of a navy bean, were found just above the ampulla (Fig. 2). In neither of these cases were any symptoms referable to the common duct calculi present at the time of the primary operation, and there has been no recurrence since the secondary one.[5]

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[13] Bovec: Suppurative Phlegmonous Gastritis, Am. Jour. Med. Sc., May, 1908.

* Read before the Elkhart County, Indiana Medical Society, Nov. 2, 1916.

[1] Kehr: When, During the Course of Gallbladder Operations, Shall We Open the Common Duct if Palpation is Negative? Arch. f. klin. Chir., 1912, **97**, 301.

[2] Kehr: Monographs on surgery of bile passages, 1913.

[3] In six cases the common duct calculi were of such size as to render it improbable that they would have passed into the duodenum spontaneously.

[4] The author's technic and the later work on the surgical anatomy of the region will be given in a second paper, which will be furnished on request.

The chief indication for opening the common duct in eight cases in spite of negative palpation was the presence of many small calculi in the gallbladder. In all of the eight cases of positive exploration after negative palpation the number of calculi in the gallbladder varied from twenty to 300.

In three cases (Fig. 3) the common duct calculi were the size of a pea, faceted, and fifteen in number. In the majority of the ten cases the calculi were found in the retroduodenal portion of the duct. In two cases a number of small calculi of the same size (Fig. 4) and composition as those in the gallbladder and common duct were either found in the hepatic duct or escaped in a perfect shower from this duct while the edges of the opening in the common duct were retracted. In one of these patients there has been a recurrence of symptoms in spite of a cholecystectomy and choledochostomy with removal of calculi from the common duct.

The articles of Poore,[6] Beer,[7] and Lewisohn,[8] have directed attention to the importance of intrahepatic cholelithiasis, and the three last cases are in all probability due to the formation of calculi in the intrahepatic bile passages and explain some of the cases of recurrence even after removal of calculi and drainage of the common and hepatic ducts.

In eight cases in which no previous operation had been performed, the principal symptoms were:

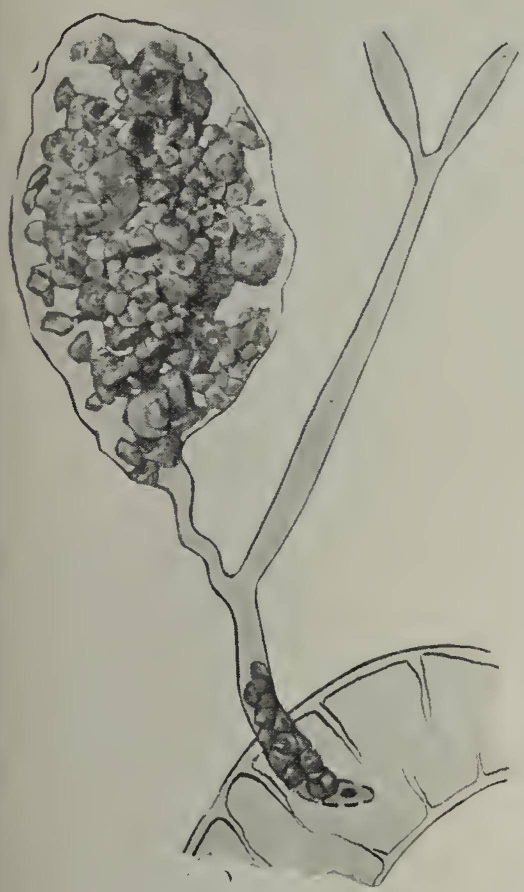

Fig. 3.—Typical findings in a case in which many small calculi were present in the gallbladder and palpation of the common duct was negative, but calculi the size of a pea were found embedded in thick bile at the lower end of the common duct (just above the ampulla).

1. Pain, for months to years, not to be distinguished from that due to the gallbladder.

2. Icterus, slight and only during attacks of pain in three cases. In one case there had been distinct icterus during one attack. In the remaining four cases there was no icterus at any time.

3. Chills and fever, present in only one case of the eight. The common duct varied in size from a little finger to a thumb. The pancreas was hard and enlarged in only three of the ten cases.

The systematic exploration of the common and hepatic ducts has not increased the mortality in my experience. The fact that symptoms pointing to common duct calculi were absent in the majority (six of ten cases) shows that we have a clinical group of silent or latent calculi which may escape palpation by the surgeon unless he is prepared to make a thorough exploration of the bile passages if the indications just given are present.

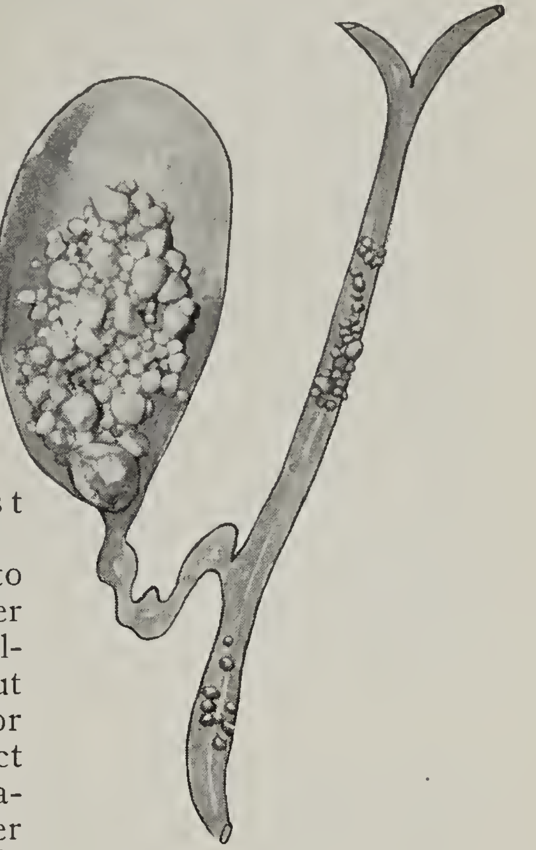

Fig. 4.—Case showing simultaneous presence of calculi in gallbladder, and the cystic, common and hepatic ducts; the last named illustrates how recurrences may be due to intrahepatic cholelithiasis. At operation, palpation of the common duct was negative but many calculi were found at the lower end and also many escaped in a shower from the direction of the liver.

The finding of calculi in the hepatic and common ducts in ten of thirty cases after negative palpation of the common duct shows how easy it is for one to overlook such calculi. With more thorough search for calculi in the common and hepatic ducts, our percentage of recurrences must rapidly decrease.

It is my practice to open the gallbladder first, and after the calculi have been taken out to use it as a tractor while the common duct is opened in its supraduodenal portion. After the common and hepatic ducts have been explored, the calculi removed and a T shaped drain inserted, a cholecystectomy is performed as the last step in suitable cases.

CONCLUSIONS

1. In 20 per cent. of cases of calculi in the hepatic and common ducts, either no symptoms indicative of their presence are found or they are overshadowed by those of an accompanying gallbladder condition.

2. In the past four years calculi have been found at the lower end of the common duct in ten of thirty cases in which palpation was negative.

3. Exploration of the common duct does not increase the mortality, and should be done whenever one of the indications given above is present.

4. Recurrence following operations on the gallbladder and common duct may be due to overlooked or newly formed calculi in the intrahepatic bile passages.

30 North Michigan Avenue.

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[5] Since reading this paper, I have removed three calculi, the size of a pea, from the common duct in a patient on whom a previous drainage and later removal of the gallbladder had been done by another surgeon. At the first operation a large number of small calculi were removed and the common duct found negative on palpation. The gallbladder was removed three months later on account of a biliary fistula due to a stone in the cystic duct. Jaundice and fever followed the second operation and three months later I found the common duct greatly dilated and one of the three calculi impacted in the ampulla of Vater.

[6] Poore: Surg., Gynec. and Obst., 1912, **15**, 634.

[7] Beer: Arch. f. klin. Chir., 1904, **74**, 301.

[8] Lewisohn: Ann. Surg., 1916, **63**, 535.

Danger of Quick Cure in Skin Diseases.—A cure, if possible, should be brought about as quickly as practicable. The belief of the laity that impurities are trying to get out, and that it is, therefore, dangerous to the general health to cure or to cure too rapidly, and which formerly found honest believers among physicians, is wholly without foundation. This view has been strongly supported purposely by advertising nostrums, and has likewise been a convenient cloak for medical advisers helplessly at sea in cutaneous therapeutics. On the contrary, the putting of the skin, an important organ and emunctory of the body, into a healthy state, will not only relieve the patient of an annoyance and worry, but conduce to his general well-being. The main difficulty, unfortunately, in many diseases is our inability to cure quickly enough.—Stelwagon, Diseases of the Skin, Ed. 8, 1916.

THE ROENTGENOGRAPHIC DEMONSTRATION OF THE SUBDURAL SPACE

ITS SIGNIFICANCE IN THE DIAGNOSIS OF INTRASPINAL LESIONS *

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Despite accurate diagnostic methods and careful study, tumors and other lesions of the spinal canal are by no means always found, at operation, at the level to which the physical examination points. There is, besides, a definite group of cases in which the diagnosis of intraspinal tumor is considered probable and in which the operative findings are negative or indicate the existence of spinal sclerosis. Finally, the presence of multiple tumors, situated at different levels of the spinal cord, cannot be established with any certainty before operation. In other words, the most painstaking neurologic examination, as at present constituted, falls short not infrequently in the determination of the presence of a spinal tumor and of its level, and in the diagnosis of multiple tumors at different levels.

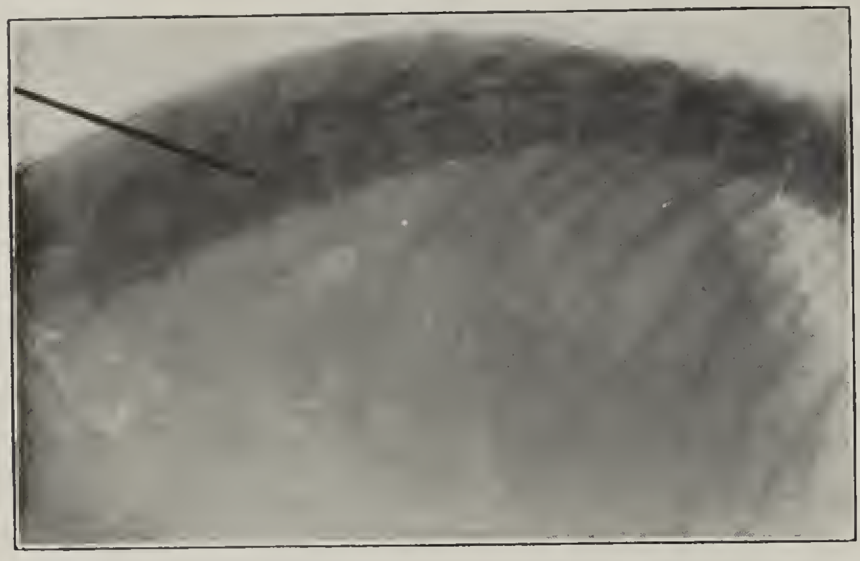

Fig. 1.—Outline of the dorsolumbar part of the subdural space by collargol.

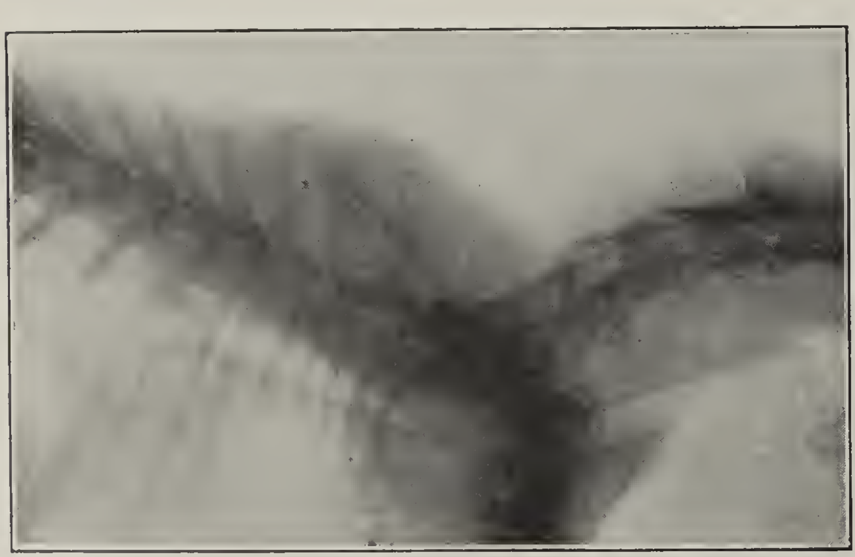

Fig. 2.—Outline of the cervicodorsal part of the subdural space.

As a result there are performed not a few unnecessary operations, or operations at incorrect levels. A method, therefore, was sought to aid in the accurate localization of all extradural, intradural or expanding intramedullary lesions— that is, of all lesions that encroach on the space occupied by the cerebrospinal fluid.

The method, as worked out in animal experimentation (dogs), consists in lumbar puncture done under full ether anesthesia, the evacuation of from 2 to 3 c.c. of cerebrospinal fluid, and its replacement by an equal amount of 10 per cent. collargol solution introduced by gravity. Anteroposterior and lateral roentgenograms of the spine are then taken. The roentgenograms are striking and uniform in the delineation of the subdural space. Except in the cervical region, the lateral are much clearer than the anteroposterior pictures. The roentgenogram is that of a sharply outlined strip on each side of the spinal cord. These strips or columns represent, of course, the cylinder of collargol-impregnated cerebrospinal fluid surrounding the cord; the roentgenogram, having been taken "on the flat," brings out in relief the strip of fluid on each side of the cord. Stereoscopic pictures would give a more rounded effect.

It will be noted (Figs. 1, 2 and 3) that the shadows outlining the subdural space are remarkably smooth and uniform in the normal animal, presenting only slight variation in diameter at different levels of the cord. They are entirely free from any sharp indentations. If a foreign body (in imitation of a tumor or any other compressing lesion) is inserted either extradurally or intradurally, the collargol outline of the canal either stops abruptly or is sharply indented, depending on the size of the foreign body. For examples, Figures 4 and 5 were taken one week after laminectomy in the lower dorsal region and extradural implantation of a thin sliver of laminaria. The dog was reanesthetized and collargol instilled. As corroborated by subsequent dissection, the parallel columns of collargol begin to converge a short distance below the moderately swollen foreign body, and come to a point a few millimeters above its upper end.

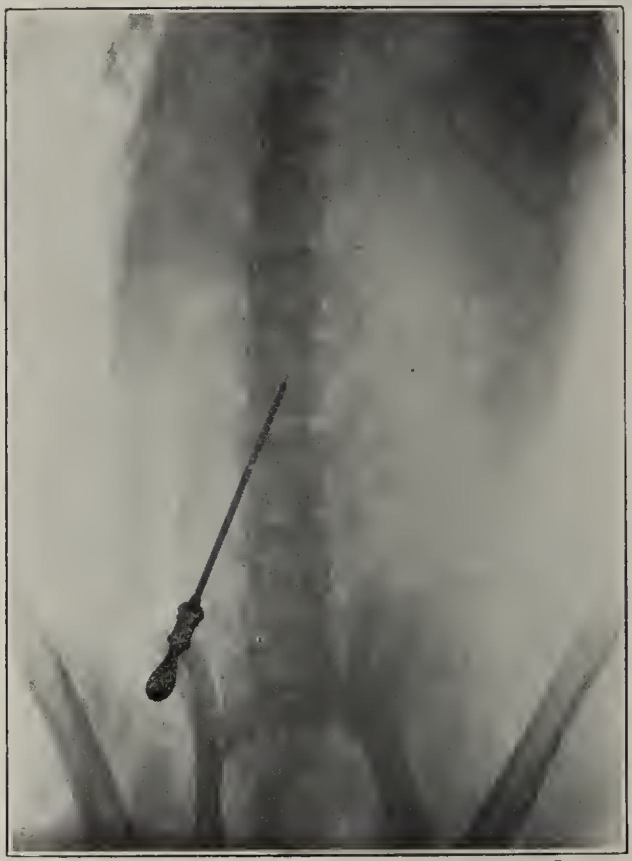

Fig. 3.—Outline of the lumbar subdural space, anteroposterior view.

Although not quite germane to the subject, a few observations of interest which appeared in the course of this work will be briefly noted: 1. Judging by the roentgenograms, the space occupied by cerebrospinal fluid posterior to the cord is normally wider than the anterior. If this exists in the human being it suggests

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* From the Department of Surgery, Columbia University, College of Physicians and Surgeons.

an explanation for the fact that most spinal tumors are found dorsal to the cord. 2. Collargol roentgenograms outline clearly not only the spinal cord proper but also the cauda equina. 3. The collargol solution was introduced by gravity with the dogs in the prone posture, and therefore was free to enter the cerebral subdural space in the absence of any artificial obstruction. As a result, striking outlines of the cerebral and cerebellar convolutions were obtained (Figs. 8 and 9).

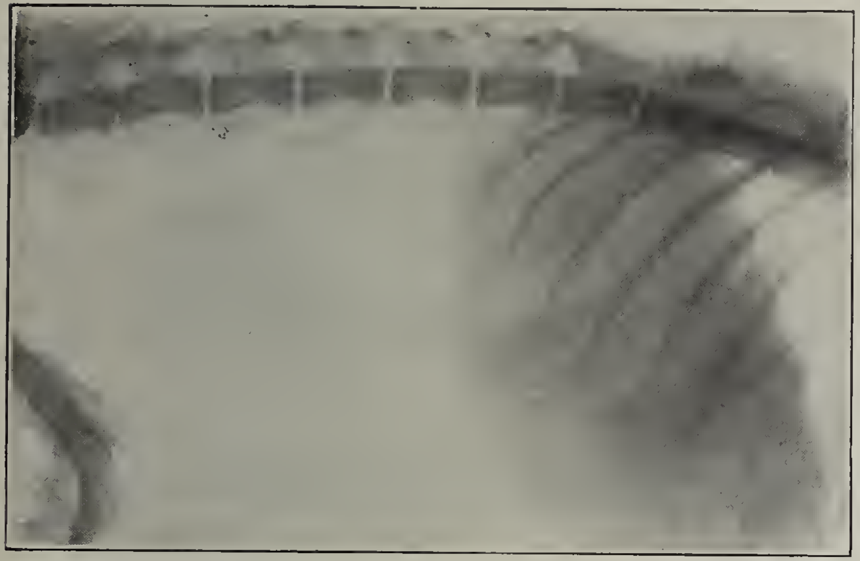

Fig. 4.—Laminectomy in lower dorsal region and extradural insertion of foreign body (laminaria), before collargol injection.

4. It is remarkable to note how small a quantity of collargol solution—as little as 2 c.c.—is required to outline the entire cerebrospinal space.

The introduction of collargol into the subdural space of dogs was followed by shock and convulsions in several instances. Twice it appeared to be fatal; that is, the animals never recovered from ether anesthesia. It is true that, in human beings, the flow of collargol into the cerebral subdural space would be prevented by placing the patient in the sitting or reclining posture, and by holding the funnel containing the solution no higher than the second or third cervical spine. Nevertheless (and despite the fact that the reports of its use in the treatment of meningitis do not suggest that it is dangerous) the intraspinal injection of collargol in human beings might be followed (as in the reported experiments) by serious manifestations and, therefore, cannot be advocated as a diagnostic procedure. In considering the application of the method to the human being it is certainly most desirable to employ a radioactive solution that gives greater likelihood of freedom from toxic or irritating effects. Thorium offers itself as such a solution. In the hands of Burns, who first described it is a substitute for collargol for roentgenography of the urinary tract, and of others, thorium has proved free from irritating or toxic symptoms. The roentgenograms are as clear and as sharp as those following the introduction of collargol. The questions of strength of solution, amounts, the probability or improbability of well defined pictures in the thicker spinal canal of the human being, etc., will be the subject of further investigation.

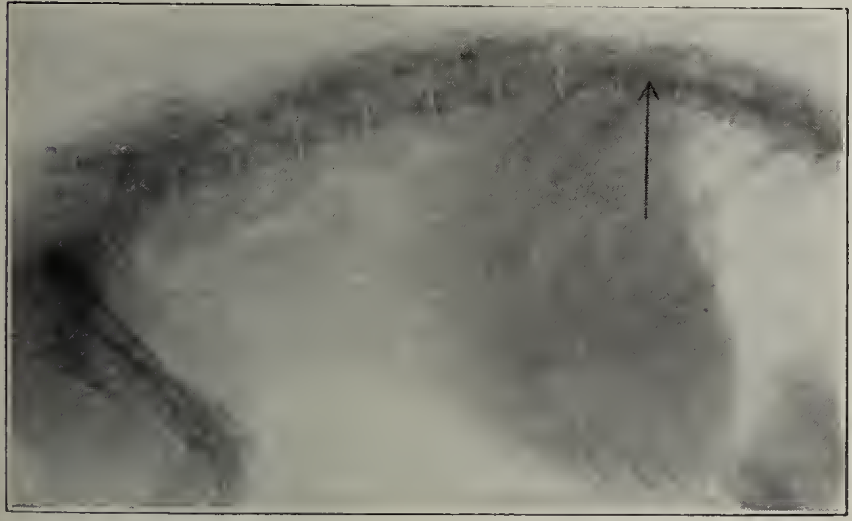

Fig. 5.—Collargol roentgenogram one week after extradural insertion of laminaria, revealing gradual narrowing of the subdural space and termination at the point indicated by the arrow; the outline of the cauda is indistinctly seen.

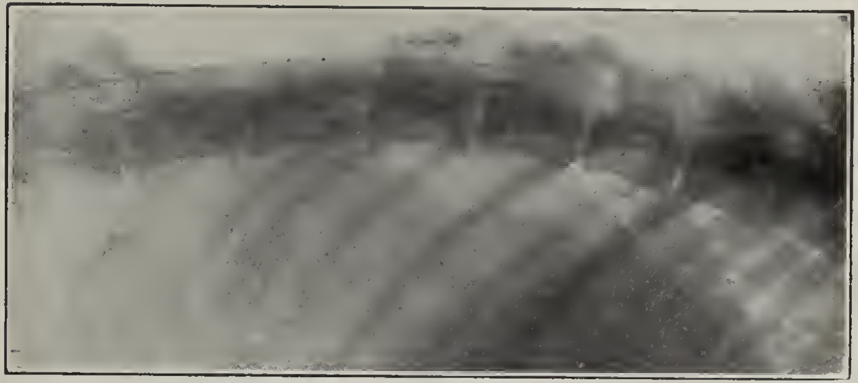

Fig. 6.—Lateral view of the effect of laminectomy and incision and suture of the dura, illustrating the use of the method for graphic study.

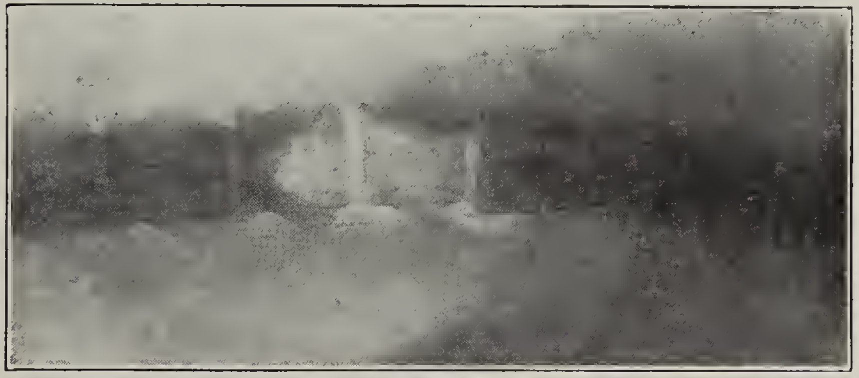

Fig. 7.—Anteroposterior view of the effect of laminectomy and incision and suture of the dura.

It may be added that it is my belief that in the intraspinal injection of relatively nonirritating or nontoxic solutions or suspensions of metals such as thorium may be found a method of treatment of various intraspinal lesions not amenable to surgical therapy. If this should prove to be the case there would be a great added advantage in the Roentgen demonstration and consequent control of definite local applications of the substance to the site of the lesions. In any event, it is

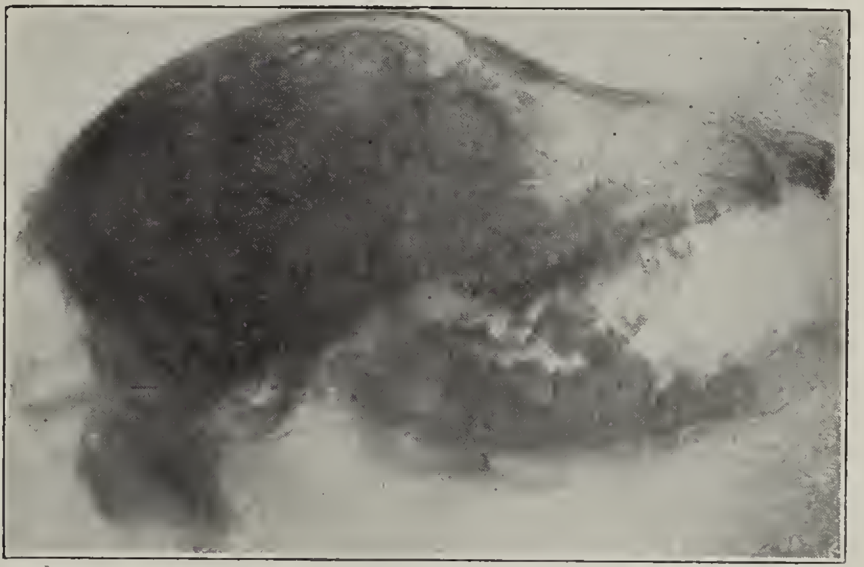

Fig. 8.—Outline of cerebral and cerebellar convolutions, lateral view.

conceivable that the solution of the drug to be introduced into the spinal canal for therapeutic purposes could be admixed with the thorium solution to determine if, and how, the drug in question reaches intraspinal lesions.

The roentgenographic demonstration of the subdural space offers the following possibilities:

1. Experimentally: (*a*) a graphic study of the entire subdural space and of the surface morphology of the brain and spinal cord; and (*b*) a graphic demonstration of the effect of various experimental procedures on the configuration of the brain or spinal cord.

2. In the human being: (*a*) the demonstration of the exact situation of any intradural or extradural lesion encroaching on the spinal cord, or of any expanding intramedullary lesion; (*b*) the demonstration of multiple intraspinal lesions; (*c*) the demonstration of the absence of any encroachment on the cord; (*d*) a study of the effects of various operative procedures on the spinal cord or canal; (*e*) demonstration of local therapeutic application of drugs to intraspinal lesions, and (*f*) a graphic study of the normal and abnormal surface anatomy of the brain and spinal cord in the cadaver.

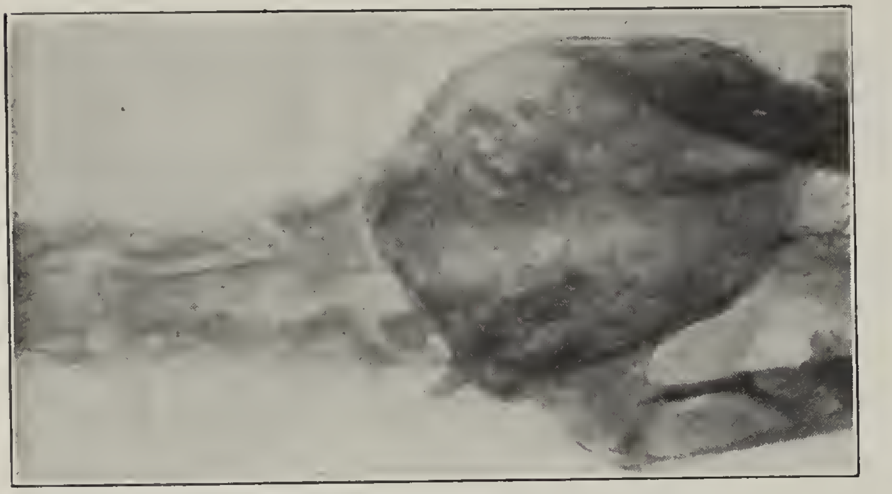

Fig. 9.—Outline of cerebral and cerebellar convolutions, viewed from above; the subdural space is seen; the definition of the convolutions is more clearly seen in the negatives.

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THE IMMUNE REACTION TO TUBERCULOUS INFECTION *

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One of the most important of Koch's observations revealed the fact that guinea-pigs already infected with tuberculosis respond to a second injection of tubercle bacilli quite differently than do normal guinea-pigs to a first injection. Following on this came the discovery that tuberculin produces an effect on diseased persons or animals which is different from that seen in the uninfected. These facts have led to the belief that the disease produces a constitutional alteration of such character as to modify the reaction of the organism to the causative agent or its products. To use the expression introduced by von Pirquet, the infected body becomes allergic. The cause of this alteration in reaction, in accordance with general conceptions derived from the study of immunity, is generally attributed to the production of specific antibodies. Such antibodies have been found in the blood in tuberculosis, and display various properties, such as agglutinative power, or complement binding capacity, when brought into contact with the tubercle bacillus or its derivatives. There is, therefore, some ground for the belief that circulating antibodies may be the essential factors, not only in the general reactions, but also in such a specific local response as the tuberculin reaction of von Pirquet. Opposed to this conception is the fact that the allergic condition, the altered reactivity, cannot, according to most observers, be transferred from an infected to an uninfected animal by means of the transfer of blood.

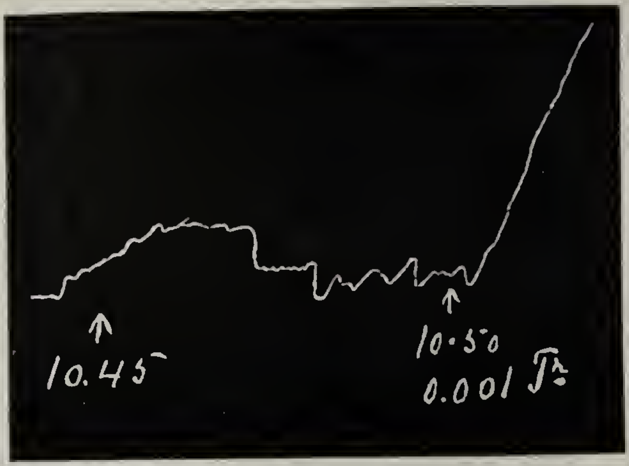

Fig. 1.—Reaction of uterus of tuberculous guinea-pig to 0.001 c.c. of tuberculin.

The alternative belief has also been expressed, that the cells, and not the blood, carry the antibodies which are responsible for the altered reaction in tuberculosis. There is no direct experimental evidence in support of this theory. Bail,[1] indeed, by an indirect method, obtained results which he interpreted to mean that the cells possess antibodies, but his findings have not withstood the test of criticism.

In order to gain additional information, it seemed necessary to resort to methods different from those hitherto applied to the study of this problem. When tuberculin is injected intravenously, intraperitoneally or subcutaneously, into the living animal, it is evident that the resulting reaction may be due to substances either in the cells or in the blood, or in both; nor is there any way of separating these factors in the living animal. If, however, a tissue is removed from the body, it is clear that the reaction of the cells may be studied quite independently of that of the circulating fluids. In anaphylactic investigations, it is customary to employ this device by removing the uterus of the

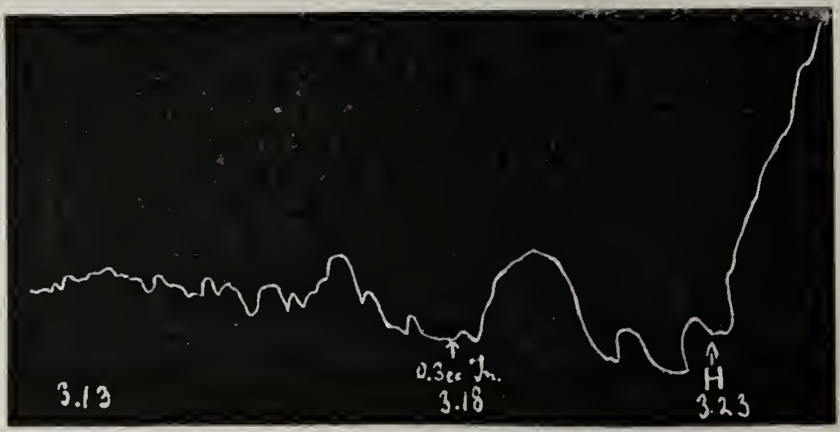

Fig. 2.—Reaction of uterus of normal guinea-pig to 0.3 c.c. of tuberculin. Histamin (at *H*) was added to test activity of muscle.

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* From the Department of Experimental Medicine, Cornell University Medical College, New York.

[1] Bail: Ztschr. f. Immunitätsforsch., 1909-1910, **4**, 409.

sensitized animal, suspending it in some suitable solution, such as Locke's fluid, and then determining the effect of the antigenic substance on its muscular contractions. It has been regularly found that the antigen in minute amounts stimulates a prompt and violent response of the muscle, whereas the normal uterus fails to manifest any effect whatever. A permanent record is obtained by registering the uterine contractions by means of a writing lever on a revolving drum. The present paper reports on the application of this method to the study of guinea-pigs infected with tuberculosis.

Without entering into a detailed discussion of the technic and of the data obtained, it may be stated that the uterus of an infected guinea-pig at some stage of the disease quite frequently presents a distinct contractile response to tuberculin in amounts which are without effect on the normal organ. The reaction is prompt and sharp, exactly as in the anaphylactic experiment. The accompanying tracings illustrate the striking difference between the normal and the tuberculous animals. The first tracing shows the effect of 0.001 c.c. of old tuberculin[2] on the uterus of a guinea-pig infected nine weeks previously with tuberculous sputum. The second tracing shows the effect of 0.3 c.c. of the same tuberculin on a normal uterus. It is quite evident that the former presents a prompt, pronounced, and prolonged contractile response, whereas the latter indicates only slight, if any, effect on the muscular tone. The dose of tuberculin was 300 times greater in the latter experiment. Not in every instance do tuberculous guinea-pigs possess a uterus which responds to tuberculin in this degree of dilution; but the normal organ practically never responds in this manner to less than 0.1 c.c. Thus it is clear that the uterine muscle cells of the diseased animals have a tendency to react in a characteristic and unmistakable fashion to tuberculin, and may therefore be said to be sensitized thereto.

If these results are interpreted in accordance with the data obtained in the past few years from the general study of anaphylaxis, they permit of certain definite inferences. In the first place, it may be assumed that the specific response in tuberculosis, as in serum anaphylaxis, is due to the presence of those substances described as antibodies. On the basis of this assumption, it is clear that these antibodies must be considered to be cellular, or "sessile," since it is only on this theory that the response of the isolated organ can be explained. It is not to be supposed that the uterine cells are the only ones of the body which contain the specific antibodies. In fact, it is highly probable that many, if not all of the tissues of the body are similarly altered by tuberculous infection, although the methods at present available do not permit of a demonstration of this fact. If this be the case, it seems highly probable that the various types of altered reaction referred to in the introductory paragraph of this paper, whether local or general, are to be explained on the basis of cellular sensitization to the agent of the disease and to its products. The details of the mechanism of these reactions, as well as of the partial immunity of the infected animal, will, perhaps, be found to correspond to analogous conditions in general anaphylaxis.

1000 Park Avenue.

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[2] Obtained through the courtesy of the Research Laboratories of the New York City Board of Health.

THE EFFECT OF SOAP ON TREPONEMA PALLIDUM

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I believe it is generally recognized that extragenital lesions obtained innocently through the barber's manipulations or utensils are of relatively rare occurrence. As to the incidence of other infections contracted from this source, I am not prepared to say. The preventive measures which the average barber employs are not such as should disturb the equanimity of the ordinary domesticated bacterium or spirochete. Even admitting that the organism of syphilis has but little resistance, there would seem, at first sight, many loopholes which this squirming, wriggling organism might take advantage of.

Zinsser and Hopkins[1] have shown that the *Treponema pallidum* may live eleven and one-half hours on wet towels exposed to room temperature and daylight. In a slide prepared for dark field examination and kept under somewhat similar conditions (room temperature and daylight), motility will persist for a number of hours.

Testicular juice rich in treponemata was obtained, according to the method given in a previous article,[2] from rabbits having fresh experimental lesions of the testicle. Only specimens containing from ten to twenty-five organisms to a field were used in this work. A solution of soap was prepared in distilled water, as strong as possible without solidification on cooling. (Ivory soap was first used but later discarded for the more nearly sterile shaving creams which come in the collapsible tubes. Of the latter preparations, both Johnson's and Colgate's were employed. No difference could be observed in the results obtained from any one of the three soaps.) Equal parts of testicular juice and soap solution were then quickly and thoroughly mixed and placed in focus on the dark field. For this, from fifteen to thirty seconds was required. In no case was I able to find a motile spirochete. Rarely were there more than one or two in a field, and frequently none, and those present rapidly disappeared. Those found were usually swollen and distorted out of their normal shape except in some cases in which they seemed to be adherent to the glass.

Three controls were made: the undiluted testicular juice, a mixture of equal parts of testicular juice and physiologic sodium chlorid solution, and a mixture of equal parts of testicular juice and sterile distilled water or tap water. In neither of the latter two was there any immediate appreciable effect, and in both mixtures motility could be observed for at least four hours while exposed to room temperature and daylight. In another series the soap solution was prepared in physiologic sodium chlorid solution, but the effect on the organisms was apparently identical with the distilled or tap water solutions.

In order to see if possible what had taken place, slides were prepared of the same testicular juice or serum, and while they were under observation in the dark field, soap solution was allowed to run in from the side. The resulting currents prevented much continuous observation of any one organism unless attached to something. Those coming into contact with the stronger soap solution lost their motility at once, and became swollen and distorted and much reduced in number. Those nearer the center of the cover glass which received only the attenuated solution, as shown by the absence of marked currents, became unusually restless, writhing and twisting and apparently trying to tie themselves in knots or, as one of my confrères expressed it, "acting as if they had the colic." Of those exposed to the action of the diluted soap solution, some became swollen and distorted while motion persisted, and others retained almost their normal contour. Farther in, where the soap dilution had not penetrated, the normal contour and motion were retained.

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* From the Department of Pathology, Army Medical School.

[1] Zinsser, Hans, and Hopkins, J. G.: The Viability of the Spirochaeta Pallida in Diffuse Light at Room Temperature, The Journal A. M. A., June 6, 1914, pp. 1802-1803.

[2] Reasoner, M. A.: Some Phases of Experimental Syphilis, The Journal A. M. A., Dec. 16, 1916, pp. 1799-1805.

For purposes of comparison, the same experiment was carried out, a solution of mercuric chlorid (1 : 1,000) being used. Following a mixture of equal parts of the mercuric chlorid solution and testicular juice, no motile organisms could be found. There was not so much reduction in the number of organisms or so much swelling and distortion. They became granular and straightened out, and settled to the bottom. After the lapse of half an hour, they could be recognized as a sort of a granular straight line, but were fewer in number. When the solution was allowed to float in from the side, the organisms seemed to die more quickly throughout the slide, as one would expect, but did not evince the same symptoms of distress as with the soap solution.

The results of these experiments were sufficient to convince me that the organisms of syphilis will not live in the presence of a solution of soap of even a considerable degree of dilution, and that a lather, such as used in shaving, is sufficient, when brought in contact, to cause their immediate death. It is possible that some of the initial lesions on the face which have been ascribed to the barber may have been transmitted by a towel wet only in water, which towel has served to convey the infection from another patron or perhaps the barber himself. Another possibility is that the person, immediately after shaving and while still having many minute abrasions on the face, has submitted himself to osculatory salutes from an infected prostitute. It would seem that a solution of soap or lather, such as is used in shaving, should have some value as a prophylactic measure against syphilis, but, probably for several reasons, not equivalent to the mercurial preparations now in use.

State Commission's Physical Training Program.—The military commission appointed by the New York legislature for physical training in the public schools, composed of Major-Gen. John F. O'Ryan; State Commissioner of Education John H. Finley and Dr. George H. Fisher, secretary of the physical department of the Y. M. C. A. International Committee, has reported a constructive program of health education. A trained man as supervisor of physical training in every town of 5,000 or more, and in every union free school district, with supervised recreation, and the encouragement of health habits are some of the features of the plan. A syllabus on physical training has been prepared and sent to school superintendents and teachers throughout the state. It provides for daily medical inspections by the teachers for the most elementary classes, and sixty minutes a week gymnastic drill for more advanced classes. The physical work for lower classes is in the form of a two-minute setting up drill at the beginning of each class period. The recreational requirements are four hours a week, one under the supervision of school officials and the other three by equivalents in home or community activities.

SOME HOSPITAL PROBLEMS *

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The investigation and classification of hospitals, as now proposed by several agencies, is important, and promises good for both medicine and surgery.

Never have there been so many good surgeons as now, never has surgery been so well done, never have the results been more brilliant. It would be equally true to say that never has there been so much ill advised operative interference, with such disastrous results, as now.

Of the factors which make for good surgery, the modern, well equipped, well managed hospital takes first rank. Here is found every aid and incentive to better and yet better work; but well equipped as it may be in things material, the hospital which places its wards and its operating rooms at the disposal of all alike is a menace to the community. I refer to the open hospital as usually conducted in communities of from 3,000 to 100,000 inhabitants. Any criticism or suggestion I may make will be confined to such hospitals and will not refer to large city hospitals or to hospitals connected with medical schools. The open hospitals permit any practitioner to assume the gravest responsibilities within their walls, place their facilities at his disposal, and even provide him with a camera obscura which protects both him and the hospital from criticism and, too often, from well merited censure.

While it is true that the internist must face the most difficult and perplexing problems, yet there will always remain this difference between the internist and the surgeon: The internist's sins are those of omission, while the surgeon's sins too often are the sins of commission. Of the good done by surgery, I shall say nothing. Of the harm done in the name of surgery, there is no need to say much. How often we have listened to the story of repeated operations, the first perhaps poorly done, or wide of the mark, with a progressive aggravation of symptoms! We have all heard of the young married woman whose pelvis has been "cleaned out" by some operator. The open hospital is responsible for most of such work done in the name of surgery. I know of such a hospital with fifty beds, to the wards and operating rooms of which a hundred general practitioners of medicine have the privilege of bringing their patients. My informant reported this particular hospital as a closed hospital. When asked to name one physician within a radius of 25 miles who is denied the privileges of the hospital, he was unable to do so. He compromised by insisting that the hospital is not wide open, although he did not explain how it could be opened wider. That all the physicians in a given community are doing good work, within or without a hospital, is not claimed by any one.

THE STAFF

It has been said that "the staff makes the hospital," or, "as is the staff, so is the hospital." While practically true, these statements do not apply to the open hospital, because most open hospitals either have no staff at all, or have a nominal staff which meets "once in ten years," or "when a row is on." The great characteristic of the usual open hospital staff is an all pervading inertia, the most effective barrier to progress, and an utter failure to grasp the prime function of a hospital staff.

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* President's address, read before the Western Surgical Association, St. Paul, Dec. 15-16, 1916.

As I said in a former paper, written after investigating the hospital situation in a midwestern state: What is the chief function of a hospital staff? "The answer is very simple. The chief function of a hospital is to educate itself, individually and collectively, better to discharge the duties and obligations incurred by its members in accepting staff appointments. To serve its purpose, a staff must hold frequent meetings, at which not only hospital problems, but more especially medical problems must be discussed. Interesting cases must be presented for consideration. As failures are often more instructive than successes, these should be reported for free discussion. It is especially important that the causes of 'accidents' be thoroughly investigated and the responsibility fixed. Staff members should make frequent visits to medical centers, and every member making such a visit should present whatever is worthy for the benefit of his fellows. The operating room should be open to staff members and assistants at all times, and all operations should be bulletined. A weekly staff conference should be the rule in every hospital. As many members as possible should be invited to study interesting cases in the wards. Necropsies should be bulletined, and pathologic specimens carefully studied. In this way the experience of each staff member will become larger. It might be well for the staff to organize itself into a current medical literature club, the better to keep abreast of the times, and also to have its members present synthetic reviews on various topics, thus taking an active part in medical society work. With the improvement of the staff individually and collectively as the prime motive in staff organization, increased staff and hospital efficiency, and better service to the patient will be sure to come."

All this may seem elementary to those connected with great teaching and research hospitals, yet I failed to find one open hospital in the Middle West in which the staff either realized its opportunities or profited by them, along the lines suggested. Real progress will not be possible in these hospitals until staff members realize their delinquency, and become fired with a desire and an ambition to improve themselves. To feel the spirit of progress, and to feel the need of improvement are the all important first steps which will lead to better things. Unfortunately, this spirit is still unborn in the great majority of open hospitals in the Middle West.

ROENTGENOLOGIC AND LABORATORY SERVICE

The introduction of a good Roentgen-ray apparatus, and the establishment of clinical laboratories have acted as soporifics rather than as stimulants. It matters not that the ambitious operator reads into roentgenograms, even in bone cases, whatever his fancy may suggest; or that the laboratory reports are amateurish, or their interpretation anything but correct. Only recently I heard the president of a county medical society, in his retiring address, say, "With the x-ray and the laboratory, we are all equal; all of us can do our own work; consultants are no longer necessary."

Nothing can be hoped from men who blindly follow laboratory diagnoses instead of doing independent thinking. The day has not yet arrived, and never will arrive, when the Roentgen ray and the laboratory will make all men equal.

THE PUBLIC AND THE OPEN HOSPITAL

The evils of the open hospital of today do not appear to be self limited; there is no promise that they will be corrected from within; their eradication seems to demand some powerful influence from without. Publicity is the only efficient weapon. Once fully cognizant of the relative merit of different available hospitals, the public will make its influence sharply felt, to the advantage of the better hospital. If the hospitals of a given community are not high grade, the sick of that community, whenever possible, will seek relief in better hospitals, wherever they may be.

Evidence that the public is taking notice is furnished by the situation in one Middle West community: A religious organization built a hospital, accepting contributions from nearby practitioners, with the distinct understanding, it is said, that the hospital would be open to all physicians for the care and treatment of patients. One of the contributing practitioners, again, "it is said," made a contribution so much larger than any of the others that he was elected surgeon to the hospital. The surgical patients of the other practitioners were not accepted unless the hospital surgeon assisted at the operation, and received half of the fee. The hospital management, appealed to by the disconcerted practitioners, sustained the hospital surgeon. The courts will now be asked to decide whether a hospital board, after accepting contributions with the understanding that all practitioners be accorded equal privileges, may select one man to do all the surgery.

A successful hospital in one of the old middle states pays its surgeon a fixed salary; he resides in the hospital, and does all the general surgery.

THE RESTRICTED HOSPITAL

These two instances are the antitheses of the open hospital. Closed hospitals may be undemocratic, they may not promise the best for either the profession at large or for the general public; but somewhere between them and the wide open hospital there will be found a plan which will give every properly trained and right minded man an opportunity to work out his destiny, and which will protect the community. The open hospital must be transformed into a restricted hospital, and by a method that is fair — such a one as this: When a properly trained but untried licensed practitioner asks to use the operating room, the answer will be: "Yes, but like every other man operating in this house, you will bulletin your operation the evening before. The superintendent of the hospital and one or more staff members may be present. You are on trial, but so long as you have any privileges here, you will have all the privileges. You are welcome in the operating room when others operate, and at the weekly staff conferences. If your work is satisfactory, you may come again, and after a few years you may be elected to staff membership. But if your work is not satisfactory, why, we shall regretfully inform you that we have no unoccupied beds. This is not a closed hospital, but it is a restricted hospital."

I believe that the remedy is in sight, and that the next few years will witness much better work done in the type of hospital under consideration. The agencies which will bring about the desired change are several. As stated above, publicity is the most efficient weapon. A hospital management or a hospital staff which fails to react to ordinary stimuli will promptly take notice when the standing of the hospital in the community is menaced. Investigation and classification of hospitals, as planned by the American College of Surgeons, promises splendid results. I know that even the possibility of such action by the college has been productive of good.

THE HOSPITAL FIFTH YEAR

Another agency which cannot fail to make its influence felt, perhaps even more sharply than the American College of Surgeons, is the hospital fifth year, soon to be required by both medical schools and state examining boards. Minnesota, Pennsylvania, New Jersey, North Dakota, Illinois and Rhode Island have already taken definite action. The hospital fifth year not only will have a beneficent influence on the candidate for the degree and for the state license, but also will make it necessary for both medical schools and state boards to know whether or not the work done in a given hospital entitles it to recognition. The schools and the state boards must investigate the hospitals seeking interns. These keen-eyed young interns will report back to the medical school, and, possibly, to the state board. Their influence on the hospital will be most salutary.

THE NURSES' TRAINING SCHOOLS

Many hospitals, however, do not employ interns, and these will not be influenced by the hospital fifth year, or by the medical schools. The American College of Surgeons can reach them, but there is one other opening which will enable state boards to investigate and largely control them. All of these hospitals have training schools, and every graduate of the training school must present herself before the state board for examination, to secure her certificate of registration. This gives the board the opportunity and the right to acquaint itself with the work done in the school, to know whether the young women seeking recognition have been properly instructed, or whether they have been chiefly useful as revenue producers, by being assigned as special nurses to private patients, at 15 or 20 dollars per week, and this while still on probation. I have known this to be done, not once but repeatedly. I have known a young woman to write her parents during the third month of her training, while still a probationer, that she was getting along famously, having been assigned to "special" duty, and all this in a hospital pretending skilled service to the sick, but really conducting its training school for revenue.

I should like to say, "As is the training school, so is the hospital," because a good training school in a poor hospital is unthinkable, and the converse holds equally true. The state boards cannot classify hospitals, because the friends of a discredited hospital would immediately rise in arms, would term the action of the board arbitrary and unfair, and would soon set in motion political machinery embarrassing to the board, or to those members of the board considered responsible. But the board can inspect the training school, and carefully examine all applicants for state license. Should candidates be sent back for three or six months' additional preparation, neither the hospital itself nor its friends could protest without directing attention to the shortcomings of the training school.

It sometimes happens that a young woman, early in her course in training, comes to a realization of the fact that the instruction she is receiving is far from satisfactory. Let her try to gain admission to some other school, even if willing to forfeit the time already spent in training, and she will apply to many before attaining her object, if she succeeds at all. She will be requested to present a satisfactory certificate from the head of the school in which she is a pupil, and begin again as a probationer. The second requirement is not so objectionable; in fact, in many cases it is entirely reasonable; but an "honorable discharge" is not always to be had for the asking. The candidate for admission to the training school is on trial for three months, and at the end of this time she may be received or may be sent away. Would it not be fair that she be given a certificate at this time, stating that her probationary period has been satisfactory, and be granted the option to remain or to seek training elsewhere? These credentials might not be accepted by other schools; but they would be equivalent to an "honorable discharge," and enable her to enter another school without being required to ask her principal for a certificate of character and class standing, difficult to obtain should work be crowding and nurses none too plenty, or an exodus of nurses feared. More likely, she would be branded as a disloyal discontent, and the desired credentials refused. To be accused of disloyalty and discontent covers a multitude of virtues, in a training school pupil.

It is manifestly unfair to compel an inexperienced but intelligent young woman to spend three years in an inferior school just because she made a poor selection at the outset. The present arrangement is much in favor of the poorer hospitals and poorer schools. Their pupil nurses simply cannot get away, even when willing to forfeit all the time already spent in training. At my request, a young woman wrote twenty-five letters to as many different hospital training schools, asking for admission, and stating that she had spent one year in a local school, but that she felt she was not receiving the training she desired. Twenty-five replies were received, but not one school would accept her. The usual answers were, "We do not accept pupils from other schools," "We will not consider your application at all so long as you are in another school," or "You must first secure an honorable discharge from the school you are now attending." In no school would there be a vacancy for months. She had started wrong, and there was nothing to do but remain where she said she had begun. Only a few days ago, a hospital director, a physician, expressed himself thus on this point: "The record and standing of every nurse ought to be in writing, and given her whenever desired. As matters now stand, the intelligent, ambitious girl who comes to a realization of the fact that the training she is receiving is very inferior will not be received by another school, as the necessary papers will most likely be denied her, especially if other trainers are apt to follow."

In this great democratic country of ours, only the young woman in a training school is subjected to such thraldom. It is not fair. Of all women, none are quite so helpless as the pupil in a training school. Of all women, few are more autocratic, few more relentless, than the average head of the training school. It is time that a more liberal spirit should make itself felt in behalf of the young woman in training. The American Hospital Association might well consider this matter.

CONCLUSION

The investigation and classification of hospitals by the American College of Surgeons, by medical schools and by state boards, and the careful investigation of training schools by state boards are the agencies which will make for better service in hospitals.

To the foregoing there must be added a wholesome sentiment inculcated by leading medical men. Recently, in a Chicago clinic, I heard a refreshing statement by the teacher, who said: "We do not want our graduates to consider themselves specialists, we do not care to have them know how to do a given operation, but we want them to recognize surgical conditions, we want them to know how to make a diagnosis. If they wish to be surgeons, we want them to take additional training." There is a world of promise in words such as these. Young men taught in this manner must have a finer conception of their responsibilities.

In regard to the education of the surgeon, I wish to endorse all that has been said by Finney, Haggard, Jackson, and others; but I wish to emphasize especially conscience and honesty — not that these two essential attributes have been passed over lightly by any of the gentlemen named, but because they cannot be mentioned too often. No matter what his professional qualifications, the surgeon without conscience and honesty is poor, indeed.

TORSION OF THE OMENTUM

REPORT OF CASE

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I was called in consultation by Dr. G. M. Austin, Sept. 1, 1916, and from him obtained the subjoined history:

"W. H. J., man, aged 66, married, laborer, was taken sick, three days before, with nausea and vomiting. When walking he had a cramplike pain in the midline below the umbilicus, which lasted part of the morning and then became general, but was more acute on the sides than in the epigastric region. On the next day the patient still had pains in the flanks and vomited mucus. The temperature was 102 F.; the pulse was 85; the face was flushed. At 3 p. m. there was no tenderness over the stomach, but it seemed a little more tender over the region of the appendix. That night he obtained some rest from Dover's powders. Headache and severe backache were two prominent symptoms."

On examination, I found the patient's abdomen distended with gas, and, in the region of McBurney's point, considerable pain and tenderness. On palpation I was able definitely to localize a tumor mass in the right side anterior to the kidney and extending down to the appendix region. The bowels had moved earlier in the morning from a purgative saline. The patient was prostrated and had the appearance of a man in a desperate condition.

The patient stated that he had had the usual diseases of childhood. Twenty years ago, while working as an off-bearer in a saw-mill he had been seized with a sudden pain in the abdomen, accompanied with gaseous distention. The attack lasted a week. He had had an attack of pneumonia five years ago. For the last five years or more, the patient had not been well. In the region of the appendix there had been more or less pain, uneasiness and a bound down sensation. He never had had any attacks simulating acute appendicitis. For the last two months there had been a pain in the region of the right kidney, posteriorly. It was quite severe at times and no relief was obtained by lying down. The patient complained of a sudden sharp pain in the right hip which was relieved when he assumed the recumbent position. He stated that these pains did not affect his appetite, nor was he constipated. His wife informed me that for more than a year his bowels had been too loose. The patient had not done two days' work during the past five years. He had been a moderate user of tobacco, whisky and beer for years, but was not a drug addict. The family history had no bearing on the case.

The patient was fairly well nourished, but the muscles were flabby from inaction. He was 5 feet, 7¾ inches tall and weighed 156 pounds. The skin was clear and no bodily deformities were present. The nervous, cardiovascular and renal system and the special senses, for all practical purposes, were negative. The pin test revealed a hyperemia over the region of the appendix, but not hyperesthesia. Our diagnosis was acute appendicitis. We advised immediate operation, to which the patient promptly consented. Not being willing to go to the hospital, we were compelled to operate on him at his home. While taking the anesthetic he passed great quantities of gas from the bowels.

Operation and Result.—An incision was made over McBurney's point and through the sheath of the rectus parallel to the muscle fibers. The outer margin of the muscle was freed and retracted inward and the tissues beneath it incised. A small quantity of straw colored fluid escaped from the abdomen.

Next the appendix was drawn up through the incision which showed that our diagnosis was wrong; the trouble was not in the appendix. Passing two fingers upward and backward, I encountered the tumor mass which was felt before operation. I could not get my fingers under the mass or find a line of cleavage, as can be done with an abscess in this region. For exploratory purposes, therefore, the incision was enlarged upward and I was then able to get my fingers in and beneath the tumor mass.

The cecum was attached firmly to the abdominal wall as far inward as the incision through the peritoneum. The mass was wedged between the ascending colon, parietal wall and the attached cecum below. It separated easily and gave a peculiar crepitant sensation to the examining fingers. At first I thought that I had encountered a hypernephroma; but as it was withdrawn it was observed to be a strangulated portion of the great omentum. The strangulation was certainly due to torsion, as there was simply a wide open mouth at the top of the pocket in which the strangulated portion was found. The omentum was twisted contraclockwise six times. The twist was evidently due to the peristaltic action of the ascending and perhaps also of the transverse colon. The strangulated mass was dark, and no doubt in a short time would have become gangrenous. The rest of the abdominal viscera was negative. The wound was closed in the usual way and the patient made an uneventful recovery.

COMMENT

Torsion of the omentum is comparatively rare. Nearly all the reported cases have been associated with inguinal hernia.

In this case the omentum occupied a pocket above an adherent cecum, and as a result of peristaltic action of the ascending colon, the accessory omentum became strangulated by torsion.

The use of Battle's incision should be generally employed in appendix work in order to avoid injuring a cecum attached to the anterior parietal wall.

Torsion of the omentum has never been diagnosed before operation. This shows the need of more reliable methods of diagnosis of abdominal troubles.

Sources of Milk Infection and Typhoid.—Milk supplies are, in general, exposed to typhoid infection in proportion as they are exposed to contamination with human discharges, and in proportion as these discharges are likely to contain typhoid bacilli. Other things being equal, the likelihood that typhoid bacilli may be present in some of the discharges with which a milk supply may become contaminated is proportionate to the number of persons in dangerous contact with the milk supply. We may consider as in dangerous contact not only those persons who actually handle the milk, but all whose discharges might in any way infect the supply.—W. H. Frost, M.D., *Public Health Report*, Dec. 1, 1916.

A MILK-BORNE EPIDEMIC OF TYPHOID FEVER DUE TO THE USE OF POLLUTED WATER

WITH FIVE FAILURES OF TYPHOID IMMUNIZATION

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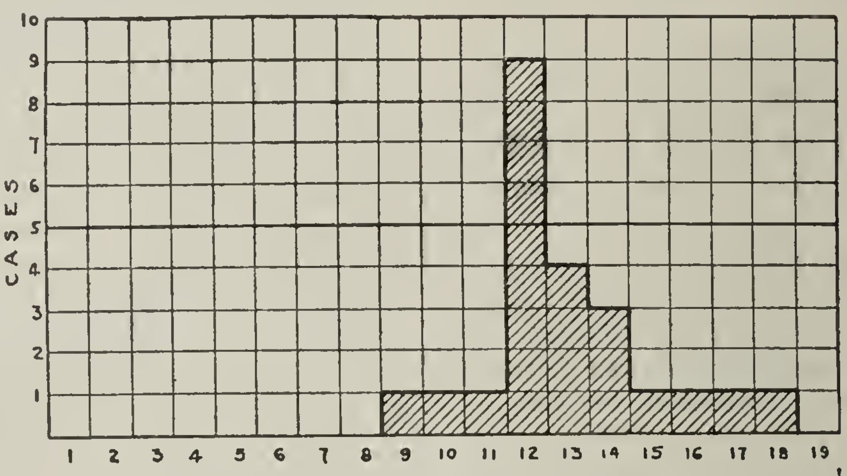
An explosive outbreak of twenty-three cases of typhoid fever directly traceable to a milk supply occurred in Colusa, Calif., in May, 1915. The interesting factors were:

1. The small number of cases, twenty-three, considering the large number of persons exposed to infection, 643.
2. That of the cases, 70 per cent. were in children, one 13 months and two 16 months of age.
3. The failure of typhoid vaccine to protect completely five persons exposed, four of whom were children, the average age being 9 years.

THE OUTBREAK

In the first case reported, symptoms were noted, May 9. The maximum number of cases occurred, May 12, and the last case, May 18. There were no deaths, and the mildness of the disease was striking in the vaccinated persons. Eighteen cases in this epidemic gave positive microscopic Widal reactions, and in the remainder agglutination was complete with motility present. These were frank clinical cases of typhoid.



Incubation period and occurrence of cases; May 1 is probable date of infection of milk supply.

Epidemiology.—The city of Colusa is supplied by two dairies, but all the typhoid patients, as stated by the health officer, Dr. C. A. Poage, and later verified, obtained their supply from one. Investigation showed that the entire milk supply of this dairy was distributed solely through a substation separated by miles from the dairy proper. The dairy itself was of a type far better than the usual rule of dairies in like rural communities. There were two milkers employed, one of whom gave a history of having had typhoid four years previous to the outbreak. He had been employed as a milker for three years in this dairy. Repeated examination of urine and feces from this man as well as the other were negative. His blood, microscopically and macroscopically, failed to agglutinate a known highly agglutinable strain of the typhoid bacillus. The water supply checked bacteriologically was also negative. Investigation of the substation acting as the sole distributor for the parent dairy revealed some interesting data. All bottles and containers were cleaned and filled there, the work being done by one man. Examination of the urine, feces and blood of this man were completely negative for typhoid. The water supply of the substation consisted of a dug well from 20 to 30 feet deep situated in a yard near a lot about 25 feet from an open privy of easy access to the public, on practically the same ground level. Bacteriologic examination showed this water to be dangerously polluted. Though all milk bottles and containers were first washed in the well water heated to a variable degree, they were subsequently rinsed in water direct from the well and in most instances filled with milk without any previous draining. Further inquiries have proved this method of washing containers to be the rule on most dairies seen, the theory being that cold water used after warm enables them to obtain clear glassware.

AGES OF PATIENTS

Age	Number of Cases
Thirteen months	1
Sixteen months	2
Six years	4
Seven years	2
Eight years	1
Nine years	2
Eleven years	1
Twelve years	4
Seventeen years	1
Eighteen years	1
Over twenty years	4

The probable date of the infection of the milk supply was on or about May 1. This opinion is based on the fact that one of the families in which cases occurred ceased to take milk from the dairy at that time.

Vaccine Failures.—Of the large number of persons exposed to infection, only seventeen had been previously vaccinated against typhoid. In five of these so inoculated within a year, the vaccine used, the Gay-Claypole sensitized sediment suspension manufactured by the California State Board of Health, failed to protect. It was of great interest to note the extreme mildness of the attack in those vaccinated. The question as to why typhoid vaccine does not always protect seems to be a matter of conjecture. When one considers that four of the five failures were in children averaging 9 years of age, one could easily from these cases question the dose splitting of vaccine immunization according to age. It is my opinion that children should receive adult doses. In the administration of the preventive Pasteur treatment for rabies in the state hygienic laboratory, it has been my invariable rule to give adult doses to children bitten, with seemingly good results.

Other reasons for failures may be that in some persons the number of doses is not sufficient to immunize, and the time limit usually set before further vaccination entirely too long.

COMMENT

The origin of the infection of the cases in this epidemic was the milk produced by a dairy and distributed through a substation, the infection occurring on the premises of the latter owing to the use of cold polluted water in rinsing utensils and glassware. No evidence was obtained which showed that the infection came from a typhoid carrier, but the evidence does not entirely rule out this possibility, as carriers are usually intermittent.

Cleansing of milk bottles with water which has not been bacteriologically examined should be condemned, and it is obvious from this epidemic that a safe milk supply can never be obtained without direct bacteriologic supervision of dairy water supplies.

Again, this epidemic points out the crying need of commercial pasteurization properly supervised and carried out. The Richmond epidemic[1] was an overwhelming argument for pasteurization as a logical safe procedure. There is no doubt that a bacterial count as a standard for the cleanliness and sale of milk is insufficient protection against such outbreaks as this. The sense of security a low count gives is fallacious when one considers the many pathogenic organisms which may be present in milk and yet not demonstrable in a bacterial count alone.

Ordinarily, a milk epidemic is explosive in its outbreak, as this was, the infection being carried to all users of a given supply at practically the same time, thus causing a relatively large number of them to develop the disease simultaneously. Usually, in epidemics of this type, the number of cases is large; but the approximate opposite occurred here. Only a small proportion of the users of the infected milk developed the disease.

The sudden concentration of the contamination of the water with typhoid, as demonstrated by the evidently infinitesimal quantities of the infected water left after rinsing, and the consequent possible escape from infection by a large number of bottles may account for the small number of cases.

Taking into consideration the report[2] of the California State Board of Health on typhoid fever in California for 1909-1914, the average annual death rate per hundred thousand from typhoid in Colusa County was 64.7, the highest average county rate in the state. The state rate as a whole for this period was 11.1. This milk-borne epidemic is the first recorded in this county, and the influence of milk as a disseminator of typhoid, as shown by this small outbreak, would not seem to affect to any appreciable extent the total typhoid incidence, yet it demonstrates fully the potential danger of milk and adds another argument to the propaganda for better supervision of milk supplies.

SPOROTRICHOSIS: REPORT OF A CASE

Charles L. Seitz, M.D., Evansville, Ind.
Pathologist, the Walker Hospital

R. L. Sutton, who has probably seen more cases of sporotrichosis in this country than any other person, says: "There are many busy practitioners who have never even heard of sporotrichosis. For this reason, I believe that all recognized cases of the affection should be reported, during the next few years at least, in order to disseminate as widely as possible a knowledge of its characteristic symptomatology." With this idea in view, I wish to put the following case on record, the third, I believe, which has been reported from this state:

W. B., man, aged 25, florist, came under observation, Aug. 5, 1914. May 31, 1914, he punctured his left thumb with a rose-thorn. Some time afterward the thumb became sore and inflamed, and some pus was evacuated from it. About two weeks after this, soreness developed in the left axilla and he had great difficulty in raising the arm on account of the stiffness and pain. He consulted a physician at this time who considered the pain to be rheumatic. Soon after this, several hard nodules resembling boils, but only slightly painful, developed on the radial surface of the left forearm, and others continued to develop, so that when first seen there were more than twenty nodules extending from the thumb up the outer and anterior surfaces of the forearm, across the front of the bend of the elbow, and then along the inner aspect of the upper arm, thus following the course of the lymphatics from the thumb. The nodules varied in size from that of a pea to that of a large marble, they were dusky red, and tenderness was absent or slight, being most noticeable in the more recent nodules. Some were superficial and were located in the skin; others were in the subcutaneous tissue. In the region of the extensor tendons of the thumb, in the wrist, and in the region of the biceps tendon, considerable deep, diffuse induration was present. In view of the characteristic clinical picture, a tentative diagnosis of sporotrichosis was made, which was confirmed by further examination. At this time, one nodule near the middle of the upper arm presented slight fluctuation, and when it was incised, a small quantity of viscid, grayish-yellow pus was evacuated. Microscopic examination of this pus revealed no organisms of any kind, but cultures on plain agar and bouillon gave pure cultures of the sporothrix after about ten days. The cultures varied considerably, some showing mostly mycelium and others mostly spores. Subcultures from the primary cultures gave visible growth in a shorter period, in two or three days. Several nodules developed after the patient came under observation, and these were of a brighter red and were more painful than the older ones.

The sporothrix was also later obtained in pure culture from several other nodules, which softened and were incised.

The patient was given potassium iodid in 15 grain doses three times daily for three days. In the meantime there developed an acute urethritis with extension to the posterior urethra, and at his request the medicine was discontinued because he thought it increased the irritation in the urethra. He was then given hexamethylenamin, 7½ grains four times daily, and this was continued for several weeks. It is an interesting fact that the patient under this treatment made steady progress toward recovery, and in less than three weeks, recovery was complete. A number of the nodules underwent softening and spontaneous opening, followed by prompt healing, while others disappeared without softening.

REPORT OF VACCINATION EXPERIMENT AT STATE HOSPITAL FOR NERVOUS DISEASES, LITTLE ROCK, ARK.

C. W. Garrison, M.D., Little Rock, Ark.
State Health Officer

As there has been some agitation in the state as to the method of vaccination, the following experiment was carried out at the State Hospital for Nervous Diseases, Little Rock, by the courtesy of E. P. Bledsoe, M.D., superintendent:

Twenty-five persons were selected who showed no evidence of previous successful vaccination, and, Nov. 16, 1916, oral vaccination, consisting of one tablet of vaccininum daily for seven days, was administered, this being the time purported to immunize by this method of vaccination. On the eighth day these twenty-five persons, excepting the one who developed smallpox while taking vaccininum, were vaccinated by scarification or the regular method of vaccination, with the following results:

Of the twelve persons vaccinated by Dr. C. A. Arkebauer, by scarification, there were ten positive and two negative; and of the twelve vaccinated by Dr. Pat Murphy, there were ten positive and two negative, and one person developed smallpox before all vaccininum tablets had been administered.

In the foregoing experiment Dr. Scott C. Runnells, Homeopath, of Little Rock, directed the administration of vaccininum. It may be seen that twenty out of the twenty-four persons purported to have been immunized by the oral, or vaccininum, method had successful vaccination by the scarification method subsequently. Consequently, this proves conclusively the inefficacy of the former method of vaccination.

The Author of the Mendelian Law.—Gregor Mendel, peasant boy, monk and abbot of Brunn, an experimental botanist whose work in his cloister garden laid the foundation of that exact knowledge of heredity which is new being extended in many directions, was born July 22, 1822. He died in 1882.

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[1] Geiger, J. C., and Kelly, F. L.: Pasteurization of Milk Supplies as a Protection Against Typhoid Fever, The Journal A. M. A., Jan. 22, 1916, p. 263.

[2] Monthly Bulletin, California State Board of Health, April, 1915.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 913)

AMYLOID KIDNEY

The amyloid kidney was described as a separate entity by Rokitansky seventy-five years ago. It is now considered an amyloid degeneration occurring in chronic nephritis, particularly when the nephritis results from some chronic infection. It is found in the nephritis of chronic suppuration, and it may occur in tuberculosis of the lungs, bones and intestine, in syphilis, in malignant growths, and in some blood diseases, such as leukemia. The urine may remain normal in quantity or may be diminished. It is usually pale, of a specific gravity from 1.010 to 1.020, with large quantities of albumin, and the typical waxy looking hyaline casts.

ARTERIOSCLEROTIC KIDNEYS

In this form of nephritis the fine renal vessels show the characteristic changes of sclerosis. The kidney withers[94] as contrasted with granular kidney, the latter being caused by a slow irritative process, though both kinds of kidney trouble show focal distribution. In granular (contracted) kidney there is localized arteriosclerosis entirely separate from any general arteriosclerosis, while in senile (arteriosclerotic) kidney the disease of the kidney vessels is a part of the general arteriosclerosis. Senile kidney, though insufficient for added work, physical or dietary, and often insufficient in general infections, in ether anesthesia, and in other temporary conditions, may be entirely sufficient for a long time when the patient leads a calm, uneventful life.

It must be understood that the kidneys grow old with the rest of the body; hence a senile contracted kidney is not pathologic, unless it occurs at too early an age. This type of kidney is accompanied by slight albuminuria, casts, and often by a diminution in the amount of urine.

Numerous varieties of acute, subacute and chronic parenchymatous and diffuse nephritis may develop in senile kidneys, as they are very susceptible to infection. Elderly men whose kidneys may be only slightly impaired but in whom an enlarged prostate may cause damming back of the urine may suddenly develop uremia. Unless seriously contraindicated, such an enlarged prostate should be operated on, and life may thus be prolonged, even though the kidneys are arteriosclerotic.

EDEMA

In kidney disease the water and the solid constituents of the blood are more or less increased. The blood vessels being thus overfilled, the irritants in the blood stimulating the arterioles to contraction, and the heart becoming hypertrophied, the blood pressure rises. Eventually the increased permeability of the capillary walls causes the water and salts to be exuded into the surrounding tissues. The tissues most affected by such exudates are those in which the external or surrounding pressure is the least, that is, those which are most dilatable, and those situated where the circulation is the least forceful owing to the distance from the heart, or where the return circulation is sluggish. It has recently been shown by Underhill and others[95] that in chronic nephritis the blood vessel walls may not readily pass nutriment to the tissues or absorb waste products and water from the tissues.

It should be recognized that in circulatory disturbances of the kidney vessels, either central or local, edema of the kidney substance may occur, and that after death the kidneys may be heavy with this infiltration.

Fischer's acid theory of edema has not been generally accepted; consequently, the forced feeding of salt and alkali is not indicated. A large amount of sodium bicarbonate may produce edema by causing chlorid and water retention, especially when as much as 20 gm. or more a day of sodium carbonate are given. This fact has been noted when large amounts of alkali have been employed in diabetes.[96]

Pearce[97] showed that in uranium experimental nephritis the administration of much water caused edema, and that arsenic caused edema in chromate nephritis. He concluded that three factors operated in producing edema, namely, injured kidneys, vascular insufficiency, and too much water in the blood. Hess[98] reports, from a study in the medical clinic of Vienna, that injury to the blood vessels is an important factor in dropsy.

As far back as 1902, Hatcher and Sollmann[99] found that chlorids were greatly diminished or absent in the urine in infectious diseases, and of course were entirely absent in salt starvation. The disappearance of the chlorids from the urine does not cause any great change in the other urinary constituents. They believe retention of chlorids in infection shows that the body requires more sodium chlorid than it is receiving from the diet; hence, as the patient should receive about 15 gm. a day, they suggest the addition of salt in a nearly salt-free diet, such as a milk diet.

An insufficient salt diet such as is so frequently employed during fever, causes a resorption of chlorids from the tissues into the blood. As Sollmann and others have shown that sodium sulphate injected intravenously causes a disappearance of the chlorids from the urine, cathartic salts, especially sulphates, apparently should not be given in edema or when circulation is poor. Serious consequences are frequent when such treatment is given in cardiac failure.

As previously stated, Fischer's theory of edema in nephritis has not been generally accepted, and the treatment he advises, based on his theory, may often be dangerous.[100] Some support of his treatment and some suggested limitations have been offered by Lowenburg.[101]

During health, and in fact during life, very slight changes in the reaction of tissues occur. To keep the blood alkaline, or better, "neutral," according to

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[94] Allbutt, C.: Brit. Med. Jour., April 15, 1911, p. 853.

[95] Bogert, L. J.; Underhill, F. P., and Mendel, L. B.: Studies of the Permeability of Cellular Membranes, I, The Regulation of the Blood Volume After Injections of Saline Solutions, Am. Jour. Physiol., 1916, **41**, 189; II, The Action of Saline-Colloidal Solutions upon the Regulation of Blood Volume, ibid., p. 219; III, The Influence of Alkaline-Saline Solutions upon Regulation of Blood Volume, ibid., p. 229.

[96] Levison, L. A.: The Occurrence of Edema from Large Doses of Sodium Bicarbonate, The Journal A. M. A., Jan. 23, 1915, p. 326.

[97] Pearce, R. M.: The Production of Edema, Arch. Int. Med., June, 1909, p. 422.

[98] Hess: Ztschr. f. klin. Med., 1915, **82.**

[99] Hatcher and Sollmann: Am. Jour. Physiol., Dec. 1, 1902, pp. 139-154. Sollmann: Ibid., pp. 155-174.

[100] Fischer, M. H.: The Treatment of Nephritis and Allied Conditions, The Journal A. M. A., May 31, 1913, p. 1682; Relation Between Chlorid Retention, Edema and "Acidosis," Jan. 23, 1915, p. 325.

[101] Lowenburg, H.: Efficiency of Sodium Chlorid in the Therapeutics of Bright's Diseases, The Journal A. M. A., Nov. 28, 1914, p. 1906.

Adler and Blake,[102] the bases "chiefly bicarbonate and alkaline phosphate, must equalize the acid substances at all times. The function of the bases of the blood is to transport acid, and to help to maintain the proper concentration." If more acid were introduced into the system than could be neutralized, acid intoxication would result. The stronger the acid chemically, the more readily it combines with the base. Hence in certain pathologic conditions stronger acid than carbonic acid may be produced and attach itself to all the available base, so that this is insufficient to carry carbonic acid from the tissues to the lungs. Many serious symptoms result, culminating in coma, due to acidosis. This occurs typically in diabetes when beta-oxybutyric and diacetic acids develop. As not all the ammonia in acidosis is converted into urea, some of it directly neutralizes the extra acid, and the amount of this ammonia combined with acids excreted into the urine is an index of the degree of acid intoxication.

In edema caused by circulatory insufficiency the withholding of salt may not be beneficial, while the consumption of an added amount of salt, provided the ingestion of water is reduced to a minimum, may assist in removing the edema by increasing the water requirement of the blood. While in the edema of circulatory insufficiency the blood may thus be stimulated to pick up the transudates of liquid, in nephritic edema accompanied by inability of the kidneys to excrete salt, the addition of salt to the diet increases the edema; it must therefore be withheld in order that the circulation may gradually remove the exuded liquid. If the kidneys are able to throw off salt, no harm may be done by allowing the patient to have it, or by giving him more water.

The reason for diverse findings and reports concerning the advantages of a salt-free diet in edema is probably that in many instances there was circulatory disturbance and passive congestion of the kidney in which salt not only might not be detrimental, but in conjunction with digitalis might be of great benefit in removing the edema. However, in real nephritis with edema and high pressure, salt is injurious and water should be imbibed only in small quantities.

Physiologically, we need about 2 gm. of sodium chlorid daily to keep up the sodium chlorid equilibrium of the tissues. The greater portion of this substance is eliminated by the kidneys in from twenty-four to forty-eight hours, while the remainder is excreted by the skin, and intestines, and by tears. In most cases of real nephritis the salt excretion is retarded, and it may be greatly retarded. The rate of elimination may vary so that a period of retardation may be followed by a day or two of increased rapidity of excretion as the kidneys temporarily improve. Extensive retention of sodium chlorid is usually followed by edema, which lessens or disappears if the elimination of salt is again begun.

It has been shown that the bromin ion affinity is greater than the chlorin ion affinity; hence when bromids are administered during kidney insufficiency, the bromin may be excreted at the expense of the chlorin, the chlorids being retained. If the kidneys are seriously impaired, both chlorin and bromin may be retained.

It is self-evident that although edema in nephritis may not be entirely due to the inability to eliminate salt, a salt-free diet, for a short time at least, is distinctly advisable. If a salt-free diet is too long continued, the patient may suffer either from insufficient formation of hydrochloric acid in the stomach or from the lack of sodium chlorid in the tissues. Hence, after a period of salt-free diet, a small amount of sodium chlorid should be allowed daily, perhaps as much as 2 or 3 gm. Of course in nephritic edema the drinking of water should usually be restricted, even when the urine is scanty. When this precaution is taken, there will naturally be a loss in weight. A nephritic patient should be weighed frequently. If in spite of a limited diet and a limited ingestion of water the patient does not lose weight, an internal edema with retained sodium chlorid is the probable cause. Elimination of salt from the diet will reveal whether or not the ability of the kidneys to excrete salt may be improved; it may be that they will again excrete it in sufficient quantities and for a prolonged period, even in chronic nephritis. Bread should be made without salt; saltless butter should be used, as ordinary salted butter contains about 1 per cent. of sodium chlorid; fruits contain no salt; milk contains only a trace of salt; cheese is ordinarily salted, varying in amount up to nearly 3 per cent.; eggs contain only a trace of salt.

Magnus-Levy[103] states that muscle contains the least sodium chlorid of the body tissues, namely, 0.1 per cent. Connective tissue is the richest in sodium chlorid, and contains from 0.3 to 0.4 per cent. The entire body in a healthy man contains 130 gm. of salt, and the intake with an ordinary diet is from 15 to 20 gm. a day. If a normal person eliminates salt entirely from his diet, he generally loses weight.

Protein food requires more water in its metabolism and excretion than do other foodstuffs, but less food is consumed if water is not drunk with the meals. While a salt-free diet is most efficacious in diffuse nephritis with edema, it may also be of some value in edema of cardiac insufficiency, and in cirrhosis of the liver. Sometimes a large exudate, such as a pleuritic or peritoneal exudate, may be absorbed on a salt-free diet. Occasionally edema may not occur when sodium chlorid is retained.

(To be continued)

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[102] Adler, H. M., and Blake, Gerald: The Retention of Alkali by the Kidney with Special Reference to Acidosis, Arch. Int. Med., April, 1911, p. 479.

[103] Magnus-Levy, A.: Dehydration by Dietetic Measures, The Journal A. M. A., Dec. 17, 1910, p. 2139.

Report of Harvard Cancer Commission.—The fourth annual report of the Huntington Memorial Hospital for Cancer Research and of the Laboratories of the Cancer Commission of Harvard University for 1915-1916 shows that the hospital and the commission are making the most of their present facilities. It is said, however, that in order to employ the full resources of the commission a new and separate laboratory building adjacent to the hospital, with accommodations for the departments of pathology, biophysics, biochemistry and genetics, and facilities for the outpatient department of the hospital, is sorely needed. A fund of at least $100,000 will be required for this purpose. The majority of patients referred to the hospital have inoperable or recurrent cancer and receive radium and Roentgen-ray treatment along with other palliative measures in the hopeless cases, though a larger number of cases than in previous years were given surgical operative treatment in the hospital. Patients with lymphoma, nevus, keloid, and many superficial lesions like keratosis, precursors of cancer in neglected cases, have also been treated with radium, of which the hospital now has 1 gram. A course for the training of laboratory nurses has been developed, one of the graduates being now with the Harvard Unit in France. A social service worker has been appointed and has rendered valuable assistance in the study of end-results in the patients who have been treated in the hospital.

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SATURDAY, MARCH 31, 1917

COMPENSATORY PROCESSES IN DELAYED GROWTH

The suppression of growth in the young is a phenomenon familiar to physicians. Attempts to cope with it frequently awaken a feeling of utter inability. Interference with growth may be due to a variety of causes, among which those of an inherited or congenital character usually represent the irremediable type. Not infrequently a retarded growth is merely the outcome of a temporary undernutrition brought about by disease; sometimes it represents the results of malnutrition through errors of diet chargeable to environment, poverty or human ignorance.

Experience shows that the detriment of a brief period of suspended or inadequate growth need not be permanent. With recuperation from disease or with a return to wholesome conditions of living a speedy restoration of size may follow, so that no permanent impairment of form or stature will remain. There has been some debate as to how long in the life cycle the ability of the organism to renew or complete its growth is retained. Obviously human data are not easy to secure in this field. At best they represent scattered statistical fragments of varying values. Extensive recent investigations on animals have clearly shown that the growth impulse, or capacity to grow, can be retained and exercised at periods far beyond the age at which growth ordinarily ceases. Osborne and Mendel[1] have found that even after prolonged periods of suppression of growth, full size may subsequently be attained without apparent impairment of the individual. In suitable cases the size or age at which the inhibition of growth is effected does not alter the capacity to resume growth. Even when the suppression of growth is attempted for long periods at a small size (body weight), the restoration may be adequate when a suitable diet is furnished. The period of growth may be greatly prolonged by inadequacies in the diet, so that growth becomes slow without being completely inhibited. Though the time of reaching full size is thus greatly delayed, growth, as expressed by suitable body weight, can ultimately be completed even during the course of long continued retardation.

The possibility remains that, in the course of suppressions and renewals of growth, disproportionate retardations or renewals in the development of individual organs may arise; so that although the body as a whole seems to recover from disturbances of growth, and stature and weight are apparently ultimately unaffected, nevertheless upsets in the normal correlations of tissue masses might arise. Stewart[2] has, indeed, pointed out that there are variations in the relative weight of different viscera during maintenance without growth. The weight of some is said even to increase under such conditions, presumably at the expense of others. We might well expect cellular or other permanent tissue rearrangements under such conditions. A lingering effect of these changes in certain organs might come about without any evidence of it in the gross form of the body. The compensatory processes of the organism, however, are far too perfect to permit a permanent maladjustment of its component structures. The latest experimental researches of Stewart[3] at the University of Minnesota show that the marked tendency of the body as a whole to recover its weight after a period of maintenance without growth is likewise characteristic of the various organs and parts. The abnormal proportions produced by underfeeding rapidly disappear on generous refeeding, so that practically normal relations are restored in most cases within a short time. The readjustment evidently involves a modification of the growth curves of many of the various organs and parts of the body during the early refeeding periods. Thus those organs and parts which lose weight during maintenance grow again more rapidly than the body as a whole, whereas those which gain weight during suppression of growth show a tendency to lag behind until the normal balance is restored.

THE SIGNIFICANCE OF VARIABILITY IN GROWTH DURING SCHOOL YEARS

The hygiene of school life has begun to receive consideration from both educators and physicians. Increasing sums are being spent on the problems of the health of schoolchildren; and greater and better facilities for health conservation work are being demanded every year. Sound teeth, perfect vision, correction of physical deformities, adequate nutrition, improved resistance to infection and greater freedom from disease are desiderata which every fair-minded citizen must join in obtaining as a matter of ultimate public advantage.

Education is a preparation for life, and should not neglect any desirable feature of development, whether physical, moral or intellectual. A present difficulty in this work is the lack of suitable criteria of the efficiency of the methods employed. Certain improvements can be directly ascertained by medical inspection; others are as yet vouched for only by a sort of personal estimate. Growth is the most conspicuous manifestation of the period of school life. It seems likely, therefore, that whatever will contribute to the more accurate analysis or measurement of growth in its varied manifestations will contribute to the formation of the much desired impersonal judgments as to the status of our schoolchildren at any age or stage of development.

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[1] Osborne, T. B., and Mendel, L. B.: The Resumption of Growth after Long Continued Failure to Grow, Jour. Biol. Chem., 1915, **23**, 439.

[2] Stewart, C. A.: Proc. Am. Assn. Anat., December, 1915, p. 75; Anat. Rec., 1916, **10**, No. 3.

[3] Stewart, C. A.: Growth of the Body and of the Various Organs of Young Albino Rats After Inanition for Various Periods, Biol. Bull., 1916, **31**, 16.

Hygienically suitable or unsuitable environments doubtless leave some mark, temporary or permanent as the case may be, on the record of growth. But growth cannot be measured or evaluated with absolute mathematical precision because of the factor of variability. T. Brailsford Robertson[1] of the University of California has clearly indicated the significance of this. In any fortuitously selected group of animals or human beings, he says, the individuals comprising the group will be found to vary in greater or lesser degree from the type or average which the group collectively represents. When a large proportion of the individuals comprising the group differ from the average to a considerable degree, we say that the group or type is highly variable; when the converse holds good, that is, when few of the individuals comprising the group depart widely from the average, we consider the group or type to be but slightly variable. It is evident that if a measure of variability can be conveniently obtained, it represents a factor or group of factors which may conceivably be affected by environmental or physiologic conditions in a distinctive manner. In comparative studies of growth under varying environmental or dietetic conditions, a knowledge of the variability of the organisms studied is essential in order that we may determine the deviations from the average which may be regarded as normal, and those which on the contrary must be regarded as abnormal and attributable to the experimental conditions under which we have placed the individuals which display them.

If, then, we desire to obtain a reliable criterion of abnormality, we shall do well to select for our purpose the measurement which is normally found to be least variable, since relatively small deviations from the normal are in that case fraught with significance which does not attach to similar deviations from the normal displayed by a more variable characteristic. Robertson has lately made extensive studies of the physical dimensions and welfare of large numbers of schoolchildren of the various schools in the city and environs of Oakland, Calif. Here he has found that the rate of growth in weight of schoolchildren of both sexes increases from the seventh to the fifteenth year, and variability in weight undergoes a parallel increase during this period. There is a decided tendency for maxima of variability to coincide with maxima of yearly increment in weight. The stature of schoolchildren during this period increases at an almost uniform rate, and the variability of stature is correspondingly uniform. The variability of stature is much less than the variability of weight, from which we may infer that as a criterion of abnormality the measure of stature is more reliable than that of weight, while as a sensitive indicator of the effects of environmental, physiologic or dietetic fluctuations, provided statistical methods of investigation are employed, the measure of weight is to be preferred to that of stature.

Robertson has found that increasing unfavorability of environment results in a parallel increase of deficiency in weight and stature. It is a strikingly significant fact, also, that as the favorability of the environment decreases, the proportion of medical care extended to the children, as indicated by the percentage of removed adenoids, also decreases; while the degree of medical neglect, as indicated by the percentage of unremoved infected adenoids, undergoes a parallel increase. Such studies exemplify the kind of careful statistical analysis to which some of the problems of the hygiene of school years must presently be subjected.

THE "OPEN DOOR" IN CHINA

Some days ago the newspapers of the country received a press bulletin sent out by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington. The bulletin was marked "Confidential — Released for Use of Morning Papers of Monday, March 19, 1917." It dealt with "American Remedies for Chinese Ailments" and was a brief introduction to "Special Consular Report, No. 76," issued by the bureau and entitled "Proprietary Medicine and Ointment Trade in China." In due time the special report was received and from it we quote somewhat freely:

> "Hygiene is practically unknown among the Chinese. . . ."
>
> "No country offers a richer field for the proprietary medicine trade than China."
>
> ". . . the selling of patent medicines has proved to be successful *largely, if not wholly, to the extent that well-planned advertising creates a demand,* and thus ultimately gives the manufacturer *maximum returns* with a *minimum expenditure.* . . ."
>
> "It is positively asserted by one American who reaped a rich harvest of orders after a good publicity campaign that with sufficient advertising *anything at all within reason* can in time be profitably introduced to the Chinese trade."

Bear in mind that the quotations just given, certain parts of which we have emphasized by italics, are not taken from a circular sent out by the "patent medicine" interests, nor from an advertising agency trying to drum up trade for the Orient, but are from a report issued by the Department of Commerce of the United States. Says the report:

> "Through judicious and persistent advertising the natives are gradually being educated to the necessity of paying some

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[1] Robertson, T. B.: Studies on the Growth of Man, IV, The Variability of the Weight and Stature of School Children and Its Relationship to Their Physical Welfare, Am. Jour. Physiol., 1916, **41**, 547.

intelligent attention to their various ailments and are responding remarkably well."

Less euphemistically this might be expressed thus: If you advertise persistently enough and skilfully enough you can get the Chinese to swill your tonics and swallow your pills with as much readiness as do the Occidentals. Again:

> "There is room for all kinds of proprietary-medicine preparations in China, provided, of course, that such medicines are reasonably efficacious for the ills for which they are recommended."

Not too efficacious, of course, but "reasonably efficacious"! "Reasonably" is good! But American "patent medicine" manufacturers are warned that if they expect to get a foothold in China their nostrums must be, at least, "reasonably efficacious" for "the Chinese are perhaps more critical than any other nation, and are very sensitive about spending money without adequate returns." As the proportion of Chinese who recover from passing indispositions with treatment, without treatment or in spite of treatment, is probably as high as that obtaining among other nationalities, they can, doubtless, be fooled into believing that they have received "adequate return" from their self-drugging as easily as the rest of mankind is fooled.

We learn further from this interesting report that while the Chinese prefer medicine in tablet or pill form, nevertheless "several liquid medicines have met with success, notably palatable tonics with medicinal properties." Is China dry, too? "Palatable tonics with medicinal properties" — how familiar!

"It is highly important to avoid too much exaggeration, as the average Chinese is phlegmatic and sensible," says the report. Here the American "patent medicine" maker may possibly "fall down." It is as difficult to conceive "patent medicine" advertising that avoids exaggeration as it is to visualize the hole in a doughnut that has been eaten. But it is not "exaggeration" but "too much exaggeration" that is to be avoided. The ubiquitous "patent medicine" almanac and the indispensable testimonial are both recommended by the Department of Commerce to those nostrum exploiters that wish to gain a foothold for their products in China. "Testimonial advertising has met with success in China," says the bulletin, "and many spontaneous letters of gratitude are received daily by leading 'patent medicine' firms" in that country. The almanac suggested for Chinese trade in this Special Consular Report should be in "the form of a scroll." Such almanacs are very popular, "since the Chinese are eager to have a pictorial calendar in their homes all year round for the purpose of discovering 'lucky' or 'unlucky' days for weddings, funerals, and other affairs." As such almanacs are "usually displayed in a conspicuous place in the home all through the year" there is "no doubt that this form of advertising is one of the best that can be devised." The "favorite design" for such almanacs, we learn, "used to be an illustration of an old classic tale." But the Orientals are not as peculiar as Bret Harte would have us believe, for "now the Chinese prefer a girl picture"!

Physicians who visited the Panama-Pacific International Exposition in San Francisco may remember the exhibit of the Propaganda department of The Journal on the nostrum evil and quackery. When the exposition closed this exhibit was turned over to the Health Division of the Lecture Department of the Young Men's Christian Association in China, which has used it to splendid effect in China. The Journal received a letter from one of the secretaries of the Lecture Department in Shanghai thanking the American Medical Association for its gift, in which the writer said:

> "It [the exhibit] will find a marvelous opportunity in the needy country of China to initiate the campaign such as you have so effectively begun in America against the frauds and quacks that are preying on our people. In China, where superstition on medical subjects is rank, where ignorance is prevalent among a large class of the population, where there is but a minute beginning toward modern Western medical practice, we find a soil prepared for the quack medicine vendors, such as is probably not surpassed in any other part of the world, and already patent medicine advertisements have become among the most prominent in all parts of the country."

This was written over a year ago, but it is almost prophetic in forecasting the extension of the nostrum evil so enthusiastically fathered by Special Consular Report No. 76, issued by the Department of Commerce of the United States government.

THE BEHAVIOR OF THREE ORGANIC ACIDS IN THE BODY

The three organic acids, oxalic, tartaric and citric, or certain of their salts, in varying, though small quantities, all form a part of commonly used foods. Oxalic acid is properly looked on as a poison. No suspicion of harmfulness has attached to the salts of tartaric acid beyond what might be charged to the use of cream of tartar or Rochelle salt. Although magnesium citrate acts as a mild laxative, sodium citrate is dispensed as the more palatable equivalent of sodium bicarbonate, and citric acid prepared from the juice of limes or lemons is appreciated as a harmless refrigerant and substitute for lemon juice. Perhaps the comparative reputations which they bear for toxicity or innocuousness, respectively, are after all not inherent in these individual somewhat related organic acids, but are rather the expression of varying dosage. Very dilute hydrochloric acid is readily tolerated in large volumes as a component of the gastric contents, whereas a few drops of the concentrated acid are intensely irritating and harmful. A small amount of common salt as a constituent of most meals is repeatedly being ingested without concern; but a concentrated solution of sodium chlorid brine may promptly exhibit aperient effects.

Oxalic, tartaric and citric acids have certain chemical properties in common. Each precipitates calcium; and as this seems to be an important aspect of the toxicity of oxalates, it might be expected that a common chemical mechanism would produce comparable results. Yet this is not always a safe guide. Methyl and ethyl alcohols, which are similar in many of their properties, behave differently in the organism, the ethyl alcohol being far more easily oxidized within the body and thus excluded from the possibilities of doing further harm. Hence it has a lesser toxicity in contrast with the same doses of the less readily destroyed methyl alcohol.

The poisonous character of even small doses of oxalates is so well known that it requires little further comment here. Many regard the question whether oxalic acid is oxidized at all in the body as still open. The increment of oxalic acid in the urine following increased intake even in the small amounts that occur in some of the green vegetables brings evidence of its resistance to oxidation. The tartaric acids likewise appear to be less readily destroyed in the body than many other organic compounds. Little attention was directed to any harmful results produced by them until Underhill's discovery of the tubular nephritis following administration of tartrates.[1] The degree of renal injury can be modified by the reaction of the diet; and the dosage of such a tartaric acid compound as Rochelle salt required to elicit detectable signs of kidney lesions is not small. It has been argued that the latter fact excludes all possibility of harm so far as tartrates form a part of ordinary diets and even of ordinary therapeutic doses of them. This is at least debatable in the absence of more extensive observations. In any event, tartrates are no longer to be looked on as absolutely inert from a physiologic point of view. Perhaps the old cream of tartar therapy will at length be abandoned or subjected to more rigorous critique in respect to latent dangers.

Despite these uncertainties about the tartrates, citric acid and sodium citrate have borne a satisfactory reputation for inertness in the sense of freedom from harmful manifestations in the body. Citric acid is reputed to be burned up completely in the organism. Janney[2] has administered 15 gm. of sodium citrate to man without detecting any in the urine; and after doses of 25 gm., only insignificant traces appeared. He states that 30 gm. of citric acid have been administered without apparent harm along with 60 gm. of sodium bicarbonate. Sodium citrate is widely used at present in human therapy as a substitute for the less palatable bicarbonate.

These features of citric acid have now been substantiated in a general way by the detailed experiments of Salant and Wise[3] of the Bureau of Chemistry in Washington. They show, however, that even citrates may manifest toxicity, provided the dose is large. But the action of citrate is acute. As was expected, it is evident that citrates are decomposed or destroyed in the body more readily than either tartrates or oxalates. When citrate was given intravenously, subcutaneously or by mouth, no after-effects were observed. Neither sugar nor albumin was present in the urine, which was examined for several days after toxic doses of citrate were administered. Symptoms developed rapidly, especially after large doses, and ended in recovery or death within a few hours.

The behavior of citrate and tartrate to increasing harmful doses also shows that their action is not the same. A partial tolerance can be developed for tartrates. According to Salant and Wise, the greater toxicity of the tartrate may be accounted for by the rate of oxidation of the two salts, citrate probably being more readily destroyed in the body than tartrate. The action of these salts in this respect is similar to that of ethyl and methyl alcohol. It has been shown that the acute toxic dose of methyl alcohol is larger than that of ethyl alcohol, the oxidation of the former being slower and incomplete. According to Pohl, methyl alcohol is oxidized to formic acid and formaldehyd, which are more poisonous than the original substance. Quoting the Washington investigators, perhaps tartrate undergoes a similar transformation in the body, the products of decomposition being more toxic than the salt from which they are derived.

It may seem uncanny to some persons to associate the acids of foods like the grape and lemon in common daily use with drugs and poisons. There is, however, nothing incongruous in this. We are learning to apply quantitative measures to benefit and harm. The organism can manage limited amounts of foods and certain nonfoods without detriment and usually with advantage. It is possible to overstep physiologic limits of intake of even the most readily assimilable nutrients, such as sugar or protein. The organism then excretes the unused products, and perchance suffers. There are limits of tolerance for simple foods as well as for organic acids. The differences are essentially quantitative, and we must learn the measure of what the human body can either use or endure.

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[1] Underhill, F. P.: The Influence of Sodium Tartrate upon the Elimination of Certain Urinary Constituents During Phlorhizin Diabetes, Jour. Biol. Chem., 1912, **12**, 115. Underhill, F. P.; Wells, H. G., and Goldschmidt, S.: Tartrate Nephritis, with Especial Reference to Some of the Conditions under Which it May Be Produced, Jour. Exper. Med., 1913, **18**, 322; A Study of Renal Secretion During Tartrate Nephritis, ibid., p. 347.

[2] Janney, N. W.: Die Ammoniakausscheidung im menschlichen Harne bei Zufuhr von Harnstoff und Natron, Ztschr. f. physiol. Chem., 1912, **76**, 99.

[3] Salant, W., and Wise, L. E.: The Action of Sodium Citrate and Its Decomposition in the Body, Jour. Biol. Chem., 1916, **28**, 27.

The Estimation of a Scholar.—The first thing naturally when one enters a scholar's study or library, is to look at his books. One gets a notion very speedily of his tastes and the range of his pursuits by a glance round his book shelves.—O. W. Holmes, The Poet at the Breakfast Table.

Current Comment

THE SUPPLY OF SALVARSAN

Three weeks ago we called attention[1] to an impending shortage of salvarsan. At that time there was evidence that many physicians were unable to obtain the product. Mr. Herman A. Metz wrote to The Journal stating that his firm had a supply of salvarsan and neosalvarsan ample for normal requirements for several months. He said, further, "By the time our supply of the foreign product is exhausted I will be ready to deliver salvarsan and neosalvarsan made in this country according to Ehrlich's method and patents." More recently it was announced that arrangements had been made with Dr. Jay Frank Schamberg of the Dermatologic Research Laboratories of Philadelphia to supply hospitals and dispensaries, through Mr. Metz, with arsenobenzol "at the rate of $2.50 and $2.20 per ampule for the 0.6 and 0.4 gm. sizes, respectively," salvarsan and neosalvarsan to be supplied to physicians presumably at the higher cost. No doubt the charge that salvarsan and neosalvarsan have been bought and hoarded for speculative purposes, even by certain physicians, is well founded. The salvarsan manufacturers, of course, are justified in guarding against this; but in doing so they should not carry the matter so far as to prevent any physician from obtaining the legitimate supply he needs. The Journal will be glad to be kept informed as to whether or not physicians are receiving the product in sufficient quantities to supply actual requirements. Meanwhile, we can but repeat that it is an unfortunate condition that permits one individual or firm to have such absolute control of an important medicament.

THE FALLACY OF INTERNAL VACCINATION AGAINST SMALLPOX

As the brief report by Garrison[2] on internal vaccination shows, there are, strange as it may be, some persons who believe that the taking of vaccininum or vaccine matter into the stomach will protect against smallpox. The result of the experiment reported by Garrison proved the utter failure of this method — of twenty-five persons given vaccininum by mouth, twenty were subsequently proved to be unprotected, as they were vaccinated successfully by the ordinary or scarification method. This was a foregone conclusion because medical science and experience know of no other successful and practical way of inducing the changes in the body which result in protection against infection, than by introducing the vaccine material directly into the tissues or the blood. This is true of all forms of protective inoculation—inoculation against typhoid, against cholera, against plague, etc., as well as against smallpox. In no laboratory experience and in no army or navy anywhere in the world is the so-called internal vaccination or introduction of the material into the stomach practiced. The farmer does not protect his hogs against hog cholera by letting them eat a somewhat modified hog cholera virus. The simple reason for this universal practice of introducing the vaccine material directly into the tissues is that when introduced into the stomach in health, the material is broken up and digested and deprived of its specific properties before it is absorbed. Ignorance and prejudice die hard.

BASE HOSPITALS FOR THE ARMY

In the news columns is an account of the progress which has been made in the organization of base hospitals under the direction of the American Red Cross. Several points are worthy of mention in connection with this movement. The first is that for over a year the details of this movement have been going on quietly and without excitement or hysteria. When it is considered that thirty-four hospitals have been organized and twenty-three of them completely equipped, that this involves the selecting, enrolling and training of over 800 physicians and surgeons and the selecting of a total personnel of nearly 7,000 persons, it will be realized that the medical profession has for some time been doing its share in the national preparedness movement. The function of these base hospitals should be clearly understood. They are not intended for operation in the cities in which they are organized, but are mobile units which can be sent on short notice to any desired location. They are not intended for operation in the field in close connection with troops or near the firing line, but are designed to serve as base hospitals receiving the wounded from the field hospitals, as do the base hospitals in Europe. Probably fifty such units capable of caring for an aggregate of 25,000 sick and wounded soldiers can be completed with little difficulty. With such an equipment, in addition to the regular medical and surgical service in the army and navy and the various ambulance corps which are being organized, it is safe to say that the United States is today better prepared to care for the sick and wounded in any possible war than it ever has been before in its history.

Coal Mine Fatalities in 1916.—According to a compilation by Albert H. Fay of the Bureau of Mines, during 1916 there were about 2 per cent. less fatalities in and about the coal mines of the United States than in 1915. This reduction occurred although the amount of coal mined increased in that period about 12 per cent. The number of fatalities reported during the year was 2,225 as compared with 2,269 for 1915. The actual number of men employed during the year is not known, but on the basis of the figures for 1915 the fatality rate per thousand men employed was 3.03 in 1916 as compared with 3.09 in 1915. The number of mine disasters in 1916 was eleven, with an average fatality for each of five, the same as in the years 1915 and 1914. The number of killed was 154 in 1916 as compared with 262 in 1915, 316 in 1914 and 464 in 1913. The decrease in fatalities, though not large, is the result of agencies and measures employed to reduce accidents, among which may be mentioned the general use of safety lamps in doubtful mines, the introduction of permissible explosives, humidifying dusty mines, first aid and rescue training, which results in saving lives, the enactment of accident compensation laws, and, as the bulletin says, the spirit of cooperation on the part of all concerned.

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[1] Another Shortage of Salvarsan, The Journal, March 10, 1917, p. 785.

[2] Garrison, C. W.: Report of Vaccination Experiment at State Hospital for Nervous Diseases, Little Rock, Ark., The Journal, this issue, p. 979.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Personal.—Dr. Fosdick Jones, Denver, has been called for duty with the American Ambulance, Neuilly, France.——Dr. George B. Packard, Denver, has been elected president; Dr. Melville Black, vice president, and Dr. Thomas E. Carmody, secretary-treasurer of the Denver Children's Hospital, which was recently opened with accommodations for 100 patients.

FLORIDA

Hospital Notes.—The construction of the Flagler Hospital, Jacksonville, will be commenced at an early date. The single building plan has been adopted as more adaptable to the needs of the city than the unit system. The initial expense incurred will be at least $125,000.——Tampa physicians are planning a seventy-room hospital to be known as the William Pitt Lawrence Hospital.

State Board of Health Schools Centralized.—Hon. F. J. Fernside, Palatka, president of the state board of health, has recommended to the governor the creation of a state bureau of charities and correction to have charge of indigent crippled children, reform schools for the deaf, dumb and blind, state hospitals for the insane and possibly convicts. He also recommends the amendment of the present school inspection law giving the state board of health full supervision over this work and permitting the appointment of inspectors without the restrictions which the present law contains.

ILLINOIS

Public Health and Welfare.—The Illinois Public Health and Welfare Association, made up of the governmental and extra-governmental health agencies of the state, will hold its first annual meeting at Springfield, April 12 and 13. The program embraces public health and medicosocial work, and the meeting will serve as a combined conference of health workers and school for health officers. Dr. G. T. Palmer, Springfield, is president, and Mr. Paul Hansen, Springfield, is secretary.

Chicago

Fraternity House Quarantined.—The Delta Tau Delta Fraternity House at the University of Chicago is the third fraternity house of this institution to be quarantined on account of scarlet fever.

Diphtheria.—The health department of Chicago reports that diphtheria is steadily increasing. During the first twenty-one days of March there were 720 cases with fifty-two deaths, and during the week ending March 23, there were 259 cases, or nearly double the number reported during the similar week of 1916.

Infantile Paralysis.—Two mass meetings under the direction of the Association for the Prevention of Infantile Paralysis were held at the Cort Theater, March 23 and March 30. These meetings were in connection with the city-wide movement to enlist the aid of Chicago women against infantile paralysis.

Banquet and Presentation.—In the celebration of the tenth anniversary of his directorship of mechanical physiology at the University of Chicago, fifty pupils of Prof. Anton Julius Carlson who took higher degrees under him presented him with a Sigma Xi key jewelled with diamonds at a banquet given in his honor at the Windermere Hotel, March 24.

MARYLAND

General Hospital Fund.—The first two days of the campaign for the Maryland General Hospital fund netted $43,427.53 toward the $150,000 which is required for the hospital.

Meetings.—The Thirteenth National Conference on Child Labor under the auspices of the National Child Labor Committee was held at McCoy Hall, Baltimore, March 23 to 25.——A special meeting of the Baltimore City Medical Society was held at the Faculty Building, March 23, when an address on "Universal Compulsory Military Training and Service" was made by Hon. Sidney Ballou, former judge of the supreme court of Hawaii. Motion pictures on "The Army and Navy" were shown.

Doctors for Milk Bill.—The milk ordinance, requiring pasteurization and bottling, which is pending in the city council, was endorsed by Dr. J. H. Mason Knox, president of the Babies' Milk Fund Association; Dr. William T. Howard, Jr., assistant commissioner of health, and Marion B. Hopkins, city chemist, at a recent hearing held before a committee of the city council. At present forty-three pasteurized dairies sell 65 per cent. of the milk used in the city; the remainder being sold loose by small dealers.

MASSACHUSETTS

Cutter Lecture.—The Cutter Lecture on preventive medicine and hygiene will be delivered at the Harvard Medical School, April 3, at 8:15 p. m., by Dr. Ludvig Hektoen, director of the Memorial Institute for Infectious Diseases, Chicago, and will be on "A Discussion of Poliomyelitis in the Light of Recent Observations."

Research Fellowship and Food Poisonings. — Several research fellowships in the Department of Preventive Medicine and Hygiene at Harvard are available for the scientific investigation of food poisoning. The work may at the same time be credited toward the Doctor of Public Health degree. Candidates should apply to Dr. Milton J. Rosenau, Harvard Medical School, Boston.

Framingham Citizens Cooperate.—The citizens of Framingham are cooperating with the community health station, established at Framingham. An exclusion committee has been appointed to protect Framingham from any unusual increase in new families from outside, who having sick members may think it advantageous to move to the city in view of the intensive health work being done there.

Personal.—Dr. William E. Deeks has been appointed a lecturer on tropical medicine in Harvard University.——Dr. Henry P. Walcott, Boston, has been reappointed a member of the Metropolitan Water and Sewerage Board.——Dr. Thomas B. Smith, Lowell, has been appointed medical examiner of the Fifth Middlesex District, succeeding Dr. Joe V. Meigs, deceased.——Dr. Timothy Leary, Boston, has been reappointed medical examiner and Dr. William H. Watters, Boston, associate medical examiner for Suffolk County.

Harvard Medical Lectures.—The free public lectures given under the auspices of the Faculty of Medicine of Harvard University, at the Medical School, Longwood Avenue, Boston, at 4 o'clock on Sunday afternoons during April will be as follows:

April 1: "Fleas and Other Insect Parasites in Their Relation to Public Health," Dr. C. T. Brues.

April 8: "Accident and Injury; First Aid" (with demonstration of simple methods and materials), Dr. J. Bapst Blake.

April 15: "Urinary Troubles in Elderly Men" (to men only), Dr. Paul Thorndike.

April 22: "Some Facts and Fancies About Heart Disease," Dr. W. H. Robey.

NEW YORK

Antidrug Bill.—The Whitney antinarcotic bill was endorsed by representatives of the New York State and New York County Medical societies and of the Medical Economic League at a hearing, March 22. The bill provides for a free supply of drugs for addicts and for the registration of addicts. Some objection was made to the triplicate order blank system of checking narcotic drug distribution. This part of the bill is under consideration with a view to evolving some plan which will not work undue hardship on practicing druggists.

Prevention of Disease.—The course of public lectures on "Public Health and Preventive Medicine" which is being given under the auspices of the Albany Medical College, at the State Educational Building, Albany, Wednesday afternoons at 5 o'clock will be as follows during April:

April 4: School Inspection, Dr. William A. Howe, State Medical Inspector of Schools.

April 11: Anaphylaxis Against Bacterial Proteins, Dr. Hans Zinsser, Professor of Bacteriology, College of Physicians and Surgeons, Columbia University.

April 18: The Disinfection of Water, Mr. G. E. Willcomb, Chemist, Bureau of Water, Albany.

April 25: Subject to be announced, Hon. Alden Chester, Justice of the Supreme Court.

Physician Secures Reinstatement.—The eight year fight waged by Dr. W. B. Reid, Rome, to secure reinstatement in the Oneida County Medical Society is said to have been ended, March 14, by the handing down of a decision by the Appellate Division, Third Department, affirming the findings of

Justice William Ross in favor of Dr. Reid. The Oneida County Medical Society, in 1909, charged Dr. Reid with unethical conduct in advertising and exploiting in the public press a surgical operation which he had performed. The board of censors, after an investigation, presented an adverse report and Dr. Reid was expelled. He appealed to the state medical society, which reversed the ruling of the county society. Dr. Reid was reinstated, May 25, 1912, but charges were again preferred against him five days later. Dr. Reid then secured a temporary injunction; this was dismissed and the dismissal was affirmed by the Appellate Division on the ground of premature action. July 14, 1914, he was again expelled, without, as he claimed, any new charges having been brought. He again appealed to the state society, which at its annual meeting in April, 1915, referred the matter to the board of censors, which dismissed the appeal. Dr. Reid then carried the fight against this expulsion to the courts and Justice Ross decided in his favor, whereupon the Oneida County Medical Society carried the case to the Appellate Division.

New York City

Personal.—Dr. Benjamin F. Knause has been appointed full time borough chief for Brooklyn by the department of health.——Dr. S. Dana Hubbard has been assigned to the full time position of borough chief of the Bronx.

Harvey Society Lecture.—The last of the Harvey Society Lectures will be given at the New York Academy of Medicine, April 7, when Prof. William H. Howell of Johns Hopkins University will speak on "The Coagulation of the Blood."

Annual Meeting of Beth Israel Hospital Association.—The new Beth Israel Hospital, to be erected at Livingston Place and East Seventeenth Street, will include departments for the relief and prevention of heart disease, and for the after-care of infantile paralysis victims. There will be an enlarged maternity ward and improved pathologic and bacteriologic laboratories. A fund has been established by Mrs. Isaac L. Rice to send the needy sick to the country until they have recovered. Treatment was given 93,237 patients during the past year, nearly all free of charge. Nearly 2,000 patients were refused because of lack of room.

NORTH CAROLINA

State Society Meeting.—The Medical Society of the State of North Carolina will hold its annual meeting in Asheville, April 17 to 19, with headquarters at the Battery Park Hotel. Dr. Charles J. O. Laughinghouse, Greenville, is president of the society.

OHIO

Base Hospital at Toledo.—The Lucas County Academy of Medicine has passed favorably on the establishment of a base hospital in Toledo. The trustees of the Commerce Club of Toledo have pledged $30,000 for the equipment of this hospital.

Specific Disease Clinic.—Seven clinics for the diagnosis of specific disease are to be operated by Cleveland in connection with the city dispensaries. The patients will be given advice regarding the treatment of their particular ailment and will be referred to physicians. Those who are unable to pay will be given treatment at one of the free dispensaries.

State Medical Association.—The Ohio State Medical Association will hold its annual meeting in Springfield, May 14 to 16, under the presidency of Dr. Harmon B. Gibbon, Tiffin. Dr. Montgomery V. Patton is chairman of the committee of arrangements. During the meeting, a mass meeting will be held in the interests of public health, at which Dr. William Colby Rucker, assistant surgeon-general, U. S. P. H. S., will deliver the principal address.

Personal.—Dr. Walter A. Haldy, Cleveland, has returned after three months' work with the German Red Cross.——Dr. John E. Monger, Greenville, has succeeded Dr. Norton W. Bland as registrar of the State Bureau of Vital Statistics, Columbus.——The summer home at Snyderville of Dr. Emory F. Davis, Springfield, was destroyed by fire, March 4.——Dr. Harry L. Rockwood, superintendent of the Warrensville Sanatorium, has been appointed chief of the Bureau of Tuberculosis, Division of Health of Cleveland and medical director of the Warrensville Sanatorium.——Dr. Carl Mulky, Knoxville, Iowa, has been appointed assistant superintendent of the Warrensville Sanatorium.

Cincinnati

Cincinnati Physicians in England.—Drs. James S. Brummett, Robert Carothers and Benjamin H. Lamb are all on duty at British war hospitals in the north of England.

Laboratory Dedicated.—The clinical laboratory, donated to the Cincinnati General Hospital by Charles D. Boldt, was dedicated, March 7, Dr. Christian B. Holmes accepting it on behalf of the city. The medical staff of the hospital gave a dinner to Mr. Boldt.

Hospital Staff Reorganized.—The attending staff of the Good Samaritan Hospital has been entirely reorganized. Several of the members have been dropped and eight new members have been appointed. The officers of the staff are Dr. Charles L. Bonifield, president; Dr. Robert Carothers, vice president, and Dr. Clement C. Fihe, secretary.

PENNSYLVANIA

Scranton Schools Quarantined.—On account of the indifference said to have been displayed by local health authorities, Health Commissioner Samuel G. Dixon has closed the schools of Scranton.

Physician Wins Suit.—In the suit brought by Dr. Arthur D. Cowdrick, Clearfield, against the New York Central System, in which he claimed damages on account of being delayed at a railroad crossing by a freight train for from forty-five to fifty minutes, as the result of which rheumatism developed, and which was decided in his favor in the county court, the decision has been upheld by the supreme court.

Philadelphia

Personal.—Dr. Charles S. Hirsch has been elected urologist to the Jewish Hospital.——Dr. George A. Brown has been elected to succeed Dr. John T. Powers, resigned, as resident physician of Girard College.

Newbold Lecture.—Dr. Arthur T. McCormack, Bowling Green, secretary of the Kentucky State Board of Health and state sanitary inspector, delivered the first Mary Scott Newbold lecture in the College of Physicians, March 29, on "The Threat of National Inefficiency from Ill Health."

Changes in State Militia.—Recent changes in the state militia include Dr. Harvey M. Righter, commissioned lieutenant and passed assistant surgeon in the naval militia, and Dr. William M. Sylvis, first lieutenant, M. C., N. G. Pa. The resignations of Lieuts. William W. Van Dolsen and Charles B. Kendall, M. C., have been accepted. Major Frederick O. Waage, M. C., has been relieved from duty with the First Infantry and assigned to duty at headquarters division.

Health Course for Women.—The public lecture course for women on "Health Problems of Every Day Life," which commenced, January 31, will include the following lectures during April:

April 4: "The Care of the Teeth," Alice Norton, D.D.S., Chief of Dental Clinic.

April 11: "Health of School Children," Ellen Culver Potter, M.D., Clinical Professor of Gynecology; Medical Inspector of Public Schools.

April 18: "Conditions and Care in Old Age," Arthur A. Stevens, M.D., Professor of Materia Medica, Therapeutics and Clinical Medicine.

Woman's Court Opened.—The first women's court in the United States was opened, March 24, at Twelfth and Wood streets. The entire first floor of the building is devoted to the court room, where the women will be tried and where their cases will be studied by social workers and physicians for mental and physical defects. A medical clinic and a mental clinic have been provided under the direction of Dr. Frances C. Van Gasken of the Women's Medical College, and opportunity will be given to women physicians to work in these clinics.

CANADA

Report of Provincial Health Board.—The Manitoba Board of Health in its annual report suggests the division of Manitoba into health districts, each in charge of a trained whole time medical officer; that a voluntary association of the health officers of the province be organized; that the remuneration of the health officer be based on the population of the district under his control, and that health returns and vital statistics receive better attention. Of 5,000 children examined in the public schools, 1,260 were found to require medical or dental attention.

Personal.—Dr. Charles White, Woodstock, Ont., who has been medical director of the Tuberculosis League Hospital, Pittsburgh, has been appointed director of the voluntary relief work of the health service of the French War Department by the Boston Committee for French Work.——Dr. Adam H. Wright, Toronto, has been reappointed chairman of the Ontario Board of Health for 1917. The other members of the board are: Drs. A. A. Weageant, Ottawa; Thomas E. Kaiser, Oshawa; James R. Roberts, Hamilton; William H. Howie, Sudbury, and Henry R. Casgrain, Windsor. Lieutenant-Colonel Casgrain is overseas.——Dr. Armstrong, Kingston, Ont., has been appointed house surgeon of the Regina (Sask.) General Hospital in succession to Dr. de Martini.——Gen. Guy Carleton Jones, C. M. G., has returned to Ottawa. His appointment as inspector-general of the Canadian Medical Services in Canada, England and France, has been gazetted.——Col. Herbert A. Bruce, Toronto, has landed in England.——Capt. Adam F. Menzies, C. A. M. C., gold medallist of Manitoba Medical College, was severely wounded last December. He was a house surgeon in the Winnipeg General Hospital when he went overseas a year ago. Recently he was awarded the Military Cross for conspicuous gallantry and devotion to duty.——Dr. John L. Chabot, M. P., Ottawa, has been promoted to lieutenant-colonel.——Capt. E. C. Wilford, C. A. M. C., returned to Canada a short time ago from Tseliutsing, China, where he has been for the past eight years as a medical missionary.——Lieut.-Col. William M. Hart, C. A. M. C., Regina, Sask., was a prisoner in Germany for several months. He is now attached to the Granville Special Canadian Hospital, Ramsgate, England. Major Robert Wilson, C. A. M. C., is also attached to that hospital.——Captain Scrimgeour, V. C., C. A. M. C., Montreal, is now at the headquarters of the Canadian Medical Services, London, England. He is now examining officer for the medical board.——Lieut. Francis J. Ellis, C. A. M. C., is medical officer at the 77th Battery Depot at Regina, Sask.——Capt. Fred R. Nicolle, Chatham, Ont., has returned home on sick leave. He contracted trench fever at the front and was in a hospital in England for some months.——Capt. Aubrey H. Davies, R. A. M. C., Vancouver, B. C., formerly in practice in Delhi, Ont., is surgeon on the hospital ship *Guilford Castle* plying between East African ports and Capetown.——Dr. Fred Adams, epidemiologist of the Toronto Board of Health, has left for overseas service.——Capt. James H. Hamilton, C. A. M. C., Revelstoke, B. C., medical officer of a Kootenay Battalion, after passing through the battles of the Somme, was injured while in billet and has been invalided to Canada.——Major David B. Bentley, C. A. M. C., Sarnir, Ont., is reported ill in England.——Dr. Walter L. Barlow, Frederick A. L. Lockhart, Frank S. Patch, A. R. Pennoyer, and Edmond M. von Eberts, Montreal, are members of a committee of management of the Montreal General Hospital, which will establish a fund for the training of young medical men to be known as the "R. P. Campbell Memorial Fund."——Dr. James D. Curtis, St. Thomas, Ont., has been appointed to a position on the surgical staff of the Workmen's Compensation Commission of Ontario. Dr. Curtis was chief surgeon for the Michigan Central Railway in Canada, and has recently returned from England, where he served a year with the Royal Army Medical Corps.

GENERAL

Pathologists and Bacteriologists to Meet.—The annual meeting of the American Association of Pathologists and Bacteriologists will be held in the New York Academy of Medicine, New York, April 6 and 7.

Dismissed the Service.—The *Army and Navy Journal* of March 17 states that after trial, P. A. Surg. Charles P. Lynch, U. S. Navy, having been found guilty of absence from station and duty, after his leave had expired, was dismissed the service.

Immunologists to Meet.—The fourth annual meeting of the American Association of Immunologists will be held, April 6 and 7, under the presidency of Dr. Richard Weil. The sessions will all be held at the New York Academy of Medicine, with the exception of that on April 6, at 11 o'clock, which will be held at the Rockefeller Institute, Sixty-Sixth Street and Avenue A.

Tuberculosis Work in France.—Dr. Hermann M. Biggs, commissioner of health of New York State, who has been investigating the tuberculosis problem along the French western front, has prepared a report which was presented to the Rockefeller Foundation, March 23. It is stated that Dr. Biggs recommends to the foundation the immediate institution of relief measures in France. It is also stated that relief measures to be effective should be started before the war ends.

The Work of the Rockefeller Board.—The Rockefeller Foundation announces that its appropriations for the year ending Dec. 21, 1916, amounted to $8,249,088. Of this amount, $2,590,000 has been for war relief; $611,557 for the work of the International Health Board, and $1,068,147 for the China Medical Board. The foundation has assisted the medical schools established under American auspices in that country and is formulating plans for the building of medical colleges of the first rank in Shanghai and Peking.

Public Health Propaganda.—Surg. J. O. Cobb, Chicago, U. S. P. H. S., has been detailed to deliver lectures on "Activities of the United States Public Health Service" before the various medical colleges in the city of Chicago.——P. A. Surg. Edward R. Marshall has been detailed to deliver similar lectures in the various medical colleges in the city of New York.——P. A. Surg. James R. Hurley has been directed to give a course in first aid to the Public Health Service Unit of the United Service Section of the American National Red Cross.

Bequests and Donations.—The following bequests and donations have recently been announced:

University of California, for the purchase of an opthalmologic library of 486 volumes for the University of California Medical School, a donation of $1,500 from Mrs. Alexander F. Morrison.

Hanover (Ind.) College, a donation of $20,000, by Dr. Harvey W. Wiley, Washington, as a memorial to his parents, Mr. and Mrs. Preston Wiley.

Dr. Carl W. Brown, Bremen, Ohio, after the payment of about $2,000 in bequests and the erection of a monument to cost not less than $2,000, the residue of the estate, valued at $11,500, by the will of James E. Lane.

Military-Medical Lectures.—The following officers have been detailed to deliver courses of lectures at the colleges named in addition to their details on previous orders:

Maj. Harry L. Gilchrist, M. C., Western Reserve University, Cleveland.

Maj. Guy V. Rukke, M. C., University of Wisconsin, Madison.

Capt. Arthur N. Tasker, M. C., Columbia University, College of Physicians and Surgeons, and Cornell University Medical College, New York.

Capt. John R. McKnight, M. C., Indiana University, School of Medicine, Indianapolis.

Lieut. Henry F. Lincoln, M. R. C., Bowdoin Medical School, Portland, Maine.

Contagious Diseases at Naval Training Station.—Coincident with the large increase in numbers of recruits received from various recruiting stations, there have been a number of cases of contagious diseases at the Great Lakes Naval Training School. Since January 19, there have been twenty-four cases of meningitis with a mortality of 46 per cent., 124 cases of measles, a considerable number complicated by pneumonia, with nine deaths, and ninenteen cases of scarlet fever with no deaths. Prompt measures have been taken to control these infections, the most effective being the erection of a large number of tents whereby overcrowding has been obviated. The epidemics are now apparently under control, as there has been a falling off of the number of new cases for some days past.

Charity Conference.—The forty-fourth annual National Conference of Charities and Correction will be held in Pittsburgh, June 6 to 13, in nine sections, each of which will consider a special field. The division of children will be under the direction of Wilfred S. Reynolds, Chicago, and George B. Mangold, St. Louis; the division on community problems will be in charge of Robert A. Woods, Boston, and William J. Norton, Cincinnati; the division of correction will be presided over by Thomas Mott Osborn, Sing Sing, N. Y., assisted by George S. Addams, Cleveland; the division of the family in the community will be under the charge of W. Frank Persons, New York, and Mary C. Goodwillie, Baltimore; the health division will be presided over by Dr. C. E. A. Winslow, Yale University, assisted by Dr. Henry M. Bracken, Minneapolis; the public charity group will be under the chairmanship of A. L. Bowen, Springfield, and Gertrude Vaile, Denver, and the division of rural social problems and social insurance will be under the guidance of John N. Gillett, Grand Forks, N. D., Warren N. Wilson, New York; Max Senior, Cincinnati, and John B. Andrews, New York.

Red Cross Hospitals Organized.—As a part of the general program for preparedness, the American Red Cross has been organizing a series of base hospitals in the larger cities, using one of the leading hospitals in each case as a center. This movement, which was begun over a year ago, has been making steady progress. Twenty-nine base hospitals have so far been organized, twenty-two of them being completely equipped. Of these, seven are in New York, the parent hospital and director in each case being as follows, the star indicating those for which the money for equipment—$25,000—has been subscribed:

No. 1. Bellevue Hospital,* Dr. George David Stewart, 61 West Fiftieth Street.

No. 2. Presbyterian Hospital,* Dr. George E. Brewer, 16 East Sixty-Fourth Street.

No. 3. Mount Sinai Hospital,* Dr. N. E. Brill, Mount Sinai Hospital.

No. 8. New York Post Graduate Hospital,* Dr. Samual Lloyd, 12 West Fiftieth Street.

No. 9. New York Hospital,* Dr. C. L. Gibson, 72 East Fifty-Fourth Street.

No. 15. Roosevelt Hospital,* Dr. Charles H. Peck, 30 West Fiftieth Street.

No. 16. German Hospital,* Dr. Frederick Kammerer, 51 East Sixty-Sixth Street.

Four hospitals have been organized in Chicago. They are:

No. 11. St. Joseph, St. Mary and Augustana hospitals,* Dr. Albert J. Ochsner, 2106 Sedgwick Street.

No. 12. Northwestern University Medical School,* Dr. F. A. Besley, 106 South Michigan Avenue.

No. 13. Presbyterian and County hospitals,* Dr. A. D. Bevan, 122 South Michigan Avenue.

No. 14. St. Luke and Michael Reese hospitals,* Dr. L. L. McArthur, 122 South Michigan Avenue.

In Boston, three base hospitals have been organized, as follows:

No. 5. Harvard University,* Dr. Harvey Cushing, Peter Bent Brigham Hospital.

N. 6. Massachusetts General Hospital,* Dr. F. A. Washburn, Massachusetts General Hospital.

No. 7. Boston City Hospital,* Dr. J. J. Dowling, Boston City Hospital.

In Philadelphia, two hospital units have been completed to date. They are:

No. 10. Pennsylvania Hospital,* Dr. R. H. Harte, 1503 Spruce Street, Philadelphia.

No. 20. University Pennsylvania Hospital, Dr. Edward Martin, 1506 Locust Street.

In Cleveland, Detroit, Baltimore, Rochester, N. Y., St. Louis, Milwaukee, Wis., Buffalo, New Orleans, Cincinnati, Minneapolis, Pittsburgh, Kansas City, Mo., and Denver, one base hospital has been organized in each city, the hospitals and directors being:

No. 4. Lakeside Hospital,* Cleveland, Dr. George W. Crile, 1021 Prospect Avenue.

No. 17. Harper Hospital,* Detroit, Dr. Angus McLean, David Whitney Building.

No. 18. Johns Hopkins Hospital, Baltimore, Dr. Winford Smith, Johns Hopkins Hospital.

No. 19. Rochester, N. Y., Dr. John M. Swain, 457 Park Avenue.

No. 21. Washington University Medical School,* St. Louis, Dr. Fred T. Murphy, 5738 Coates Avenue.

No. 22. Milwaukee County Hospital,* Milwaukee, Wis., Dr. C. A. Evans, 809 Wells Building.

No. 23. Buffalo General Hospital,* Buffalo, Dr. Marshall Clinton, 556 Franklin Street.

No. 24. Touro Infirmary,* New Orleans, Dr. Rudolph Matas, 2255 St. Charles Avenue.

No. 25. Cincinnati General Hospital, Cincinnati, Dr. Joseph Ransohoff, 19 West Seventh Street.

No. 26. Minnesota State University, Minneapolis, Dr. Arthur A. Law, 420 Syndicate Building.

No. 27. University of Pittsburgh Medical School, Pittsburgh, Dr. R. T. Miller, Diamond Bank Building.

No. 28. Christian Hospital, Kansas City, Mo., Dr. J. F. Binnie, 1334 Rialto Building.

No. 29. Denver City and County Hospital, Denver, Dr. Henry Sewall, 1360 Vine Street.

The plan of organization followed is that outlined by Col. Jefferson R. Kean, Director General of Military Relief of the American Red Cross. It provides for a base hospital organized in accordance with the regulations of the Medical Department of the U. S. Army. Each base hospital consists of 500 beds and a personnel of 196, consisting of twenty-three physicians, two dentists, two laboratory assistants and one Roentgen-ray operator. On the medical staff are one medical director, two administrative officers, one quartermaster and one adjutant, nine surgeons and seven medical men, there being an assistant surgical director, an assistant medical director and an assistant laboratory director for each group. The personnel also includes one chaplain, fifty nurses, twenty-five nurses' aids, eighty male employees and fifteen civilian employees. The $25,000 subscribed for equipment provides beds, operating-room furniture and supplies, laboratory equipment, instruments, dressings and everything necessary except blankets, which are furnished by the government. These base hospitals are entirely separate from the ambulance service, which is organized separately. Each base hospital has organized a woman's committee for furnishing linen, dressings, hospital garments, etc. The hospitals so far organized are mainly in cities of the East and North, the movement having apparently not as yet developed fully in the South and West. There are a number of other cities in which base hospitals could be organized, such as San Francisco, Los Angeles, Seattle, Louisville, Ky., Portland, Ore., Atlanta, Ga., and Birmingham, Ala.

Of the navy base hospitals, five have been organized, namely:

No. 1. Brooklyn,* Dr. W. B. Brinsmade, Casino Mansions, Hicks and Montagu Streets.

No. 2. Lane Hospital, San Francisco, Dr. Stanley Stillman, Leland Stanford University.

No. 3. Los Angeles, Dr. Rea Smith, Brockman Building.

No. 4. Philadelphia, Dr. A. B. S. Ashhurst, 811 Spruce Street.

No. 5. Rhode Island Hospital, Providence, Dr. George A. Matteson, 382 Brook Street.

Of these, only the No. 1 hospital at Brooklyn has so far completed its personnel and equipment. The need for navy base hospitals is not so great as for army hospitals, as the navy is not subject to as rapid expansion.

FOREIGN

Sick Prisoners of War Interned in Denmark.—The *Ugeskrift for Læger* of Copenhagen states that by the first of April the Russian, German and Austrian authorities will have sent to Denmark 2,400 prisoners of war suffering from internal diseases, disease of the cardiovascular or nervous system, kidneys or lungs. The initiative for the plan is due to a Russian Red Cross physician who wished to provide better conditions than are possible in a prisoners' camp for those with internal disease. The Russian and Teuton authorities conferred with a Danish committee appointed for the purpose, including Professors Faber and T. Madsen, and the health resorts at Hald in Jylland and at Horserød in Sjælland were selected for the purpose. It is deemed more convenient to keep them separate in this way from the populace, instead of distributing them around among hotels, etc., as is being done in Switzerland.

Deaths in the Profession Abroad.—**E. Cervera,** a leading surgeon of Madrid and chief of the Instituto Rubio since the death of its founder, aged 62.——**J. Courmont,** professor of hygiene at the University of Lyons, and author of textbooks on microbiology and general pathology, aged 52. Since the beginning of the war he has had charge of the hygiene of the whole Lyons district, and was organizer and consulting hygienist for the entire front. It is said that his overwork was responsible for the fatal cerebral hemorrhage.——**E. Rapin,** a prominent physician of Geneva, Switzerland, aged 84. He took a leading part in public health matters and has published many works on different medical topics. His last communication, 1907, was on familial angioneuroses, based on forty-two cases personally observed. It attracted considerable attention, as he included such a long list from hay-fever to localized edema among the angioneuroses.

WAR NOTES

Personal.—Dr. Kenneth Taylor, formerly of St. Paul, has been appointed director of the Robert Walton Goelet Research Laboratories which are housed in the Doyen Hospital, Paris.

Ambulance Section Leaves for Front.—Section 17 of the American Field Ambulance, composed of students of the Leland Stanford Jr. University, San Francisco, left for Paris, March 16, for the front.

Red Cross Alliance.—An alliance between the Brazilian Red Cross and the American Red Cross has been proposed in a letter received, March 11, by Miss Mabel Boardman from Dr. L. DeOliveria, Botelho, founder of the Brazilian Red Cross. Under the proposed alliance the Brazilian Red Cross, in case of necessity, would offer its personnel and other resources for use by the United States.

Smallpox in Germany.—In a speech made by Socialist Deputy Hoffmann in the Reichstag, March 22, he is said to have stated that there are 30,000 cases of smallpox in Germany and that the disease is spreading rapidly. This report, which has been repeated by newspapers in Austria, has been denied by the German authorities, who admit that there have been 135 cases of smallpox in Berlin alone, with eleven deaths.

Physicians' Expedition Must Return to Their Bases.—The American Physicians' Expedition, under the direction of Dr. Edward F. Nippert, Cincinnati, has returned to its base at Deutsch Eylau to continue its work.——The American Physicians' Unit, operating under the direction of the German-Austrian Aid Society, Chicago, has returned to Graudenz.——The American Unit Station at Naumberg has discontinued its work there and has donated its equipment to the municipality.

Ambulance News.—The American Ambulance Field Service in France has received a gift of $30,000 for the purchase of a full section of twenty-two ambulances with the necessary repairs, care, field kitchens, etc., as a memorial to the late

Dr. Charles Goddard Weld, Boston. The donors are the mother, widow and daughter of Dr. Weld.——Funds for the purchase of another Boston section of ambulances are being raised by the local executive committee, and other sections will be sent to France as funds are collected.——It is reported that four more sections of the American Field Ambulance will be offered to the French army in April.

Naval Medicine.—At a meeting of the Medical Society of London, February 12, Surg.-Gen. Humphry D. Rolleston delivered an address on "Naval Medicine," in which he spoke of the exceptionally good health in the Grand Fleet, which was due, in his opinion, to the comparative isolation of the fleet and especially of the Grand Fleet; to the quarantine precautions in drafting from the shore establishments to the fleet; to the instruction given by the medical officers to the ships' crews on personal hygiene, with especial reference to venereal disease and alcoholic excess; to measures for the mitigation of the effects of the monotony entailed by awaiting events, and to improvements in the ventilation of the ships.

LONDON LETTER

London, March 5, 1917.

The War

THE MEDICAL SERVICE

In Parliament, the minister in charge of the army estimates, Mr. Forster, stated that nothing in the war is more striking than the triumph of science over disease, wholly upsetting the experience of former wars. One of the most remarkable phenomena is the almost total disappearance of typhoid fever, which in former wars had decimated our armies even more effectually than the efforts of the enemy. That was the more surprising when one considered the vast numbers of men, their density on the ground, and the poisoned condition of the soil, especially in France. The latest weekly returns of the number in hospitals suffering from typhoid fever is: France, 4 cases; Saloniki, 9; Egypt, 3, and Mesopotamia, 8, a total of 24. The number of cases of typhoid fever among British troops in France up to November 1 last year was 1,684; of paratyphoid, 2,534, and of indefinite cases, 353, a total of 4,571. In the South African War, nearly 60 000 patients were admitted to hospital, and there were 8 227 deaths. Thus four times as many died from this disease in South Africa as there were cases in France up to November 1. The admission ratio of typhoid fever among the troops in France who had not been protected by inoculation is fifteen times higher than among those who had been inoculated, and the death ratio is seventy times higher. At home during the past year a system of convalescent hospitals, command depots and orthopedic hospitals has been developed and extended. Arrangements have been made with the ministry of pensions by which the problem of the training and the treatment of the discharged soldier will be more effectively dealt with, and arrangements are being made to link up the treatment of the military hospitals with that afforded to discharged soldiers on the outpatient system. The strain on the medical department of providing accommodation for the sick and wounded from the various fronts overseas has been great, and valuable assistance has been received from voluntary hospitals. The system of utilizing the services of the members of the voluntary aid detachments has been highly successful. These women serve abroad in large numbers, and are highly appreciated by the general body of the nursing profession. The system of voluntary aid detachment hospitals has been invaluable in linking up the military medical system with a large number of sympathetic workers among the civil population. The great resources of the British Red Cross have been ungrudgingly placed at the disposal of the medical department on many occasions. A special committee had been recently established by that society, on which are representatives both of the war office and the ministry of pensions, for dealing with certain classes of disabled soldiers, such as neurasthenics, epileptics, and others requiring institutional treatment. This further strengthens the link between the military hospitals and civil institutions. The venereal rate in the army today is no higher than it was in ordinary time of peace. The absence of statistics for the general population in the days before the war renders it impossible to say whether the total number of cases of venereal disease in the army is higher than in the corresponding portion of the civil population of corresponding age. Every effort is being made to reduce the rate still lower than it was. The National Council for the Prevention of Venereal Disease has given great assistance by providing lecturers especially chosen to lecture to troops in camps and barracks. These lectures have been largely attended and much appreciated by the soldiers.

THE PHYSICAL TREATMENT OF DISABLED SOLDIERS

The Section of Balneology and Climatology of the Royal Society of Medicine appointed a committee to investigate the physical treatment and training of disabled soldiers in France and England. After two years' work an important report has now been published. Physical treatment is asserted to be the thing most needed to prevent the formation of an army of cripples. At the British spas, large numbers of wounded have been treated by waters and baths with good results. At many military hospitals and convalescent camps, physical treatment is also being carried out. But the vocational reeducation of disabled soldiers has been in many instances carried out without medical supervision, and not associated with any concurrent physical treatment or with any systematic measurement of the patient's disability and progress. The committee does not regard this as satisfactory. On the other hand, excellent reeducational work under medical supervision has been already accomplished at the military orthopedic hospital at Shepherd's Bush and at certain of the command depots. In France, under both the French and Belgian governments, the arrangements for industrial, intellectual and agricultural reeducation are being continually extended, and are in every case under medical direction. Importance is attached by French experts to the combination of reeducation with physical treatment. The committee agrees with this, and thinks that physical treatment should in the great majority of cases be provided as an integral part of reeducation, and that the determination of a man's capacity for work ought not to depend on casual observations, but on the results of the periodic measurement of his progress by instruments.

The committee makes the following recommendations: 1. A service of physical treatment consisting of hydrotherapy, electrotherapy (including roentgenotherapy), mechanical treatment, medical gymnastics and massage should be made available at the earliest possible date for all soldiers needing it who are disabled by war. 2. Centers of physical treatment, comprising all the foregoing methods, should be established throughout the country on an adequate scale, and wherever possible in association with general hospitals, so that other forms of special treatment and diagnosis may be readily available. 3. At such centers there should be a uniform system of measurements and records. 4. Centers of reeducation and centers of physical treatment should be closely associated. 5. All centers of physical treatment should be under medical direction, with periodic inspection, and physicians who are experts in the various departments of physical treatment should be appointed to the staff. 6. At the centers first established, instruction in methods of physical treatment should be provided for the use of physicians, medical students and assistants.

Conjunctivitis from Cats

At the Royal Society of Medicine, Mr. Arnold Lawson reported three cases of conjunctivitis due to the habit of fondling cats. A girl, aged 15, had a pet Persian cat which she fondled a great deal. One day after burying her face in its fur, her eyes became suffused, and she had a severe sneezing fit. Next day the eyes were swollen, and a purulent discharge was exuding. The nostrils were also swollen, and purulent sanguineous matter was issuing from them. Cultures made from the discharge and from the cat's fur showed *Staphylococcus aureus* in abundance. Recovery took place under treatment. The second patient was a boy, aged 14, who suffered from swelling of the left eye and the cervical glands which a local physician diagnosed as mumps. It did not run the usual course of mumps; there had been no fever or pain. When seen by Mr. Lawson a fortnight later there was a brawny swelling over the parotid and in the neck, and the lids of the left eye were considerably swollen, with inflammation of the conjunctival surface of both tarsi. A mucopurulent discharge was exuding from the furrows of the swollen tissues. Tuberculosis seemed improbable on account of the rapidity of development. The boy had been in the habit of walking about with his pet Persian cat perched on his left shoulder and cuddling it. The treatment consisted in cutting, scraping, and swabbing with 2 per cent. silver nitrate. Six weeks' treatment was required, and the swelling of the glands did not subside for three months. The scrapings were cultivated, and revealed *Streptococcus longus, Streptococcus brevis* and *Staphylococcus albus*. A dog in the house and the cat were examined, and the latter was proved to be the culprit. The third, and most severe case, occurred in a girl aged 5 years. She developed mucopurulent conjunctivitis of a mild type after nursing a favorite cat, which divided its attention between the house and a cowshed. After a time the cervical glands were involved in a serious degree. The upper lid showed an exuberant mass of cock's-comb granulations, especially on the retrotarsal tissue. Mr. Lawson suspected conjunctival tuberculosis. He cut and scraped away all the infected parts, and treated the residue with mitigated silver nitrate stick. An excellent recovery ensued after three small operations in the course of the next three months. There had been no recurrence in eyes or glands. A pathologist, Mr. Browning, pronounced the infection to be due to the bovine type of tubercle bacillus. Scrapings injected into a guinea-pig resulted in rapid wasting and death within a fortnight.

PARIS LETTER

Paris, March 8, 1917.

The War

PROLONGED GENERAL ANESTHESIA WITH ETHYL CHLORID GIVEN IN REPEATED SMALL DOSES

Dr. Cazin reported to the Society of Surgeons of Paris the excellent results which he has had from the use of ethyl chlorid as an anesthetic when treating extensive wounds, and when making dressings that ordinarily were very painful. Cazin prefers the simple compress to all other apparatus used in connection with this form of anesthesia, because it is practical. He extolled highly the value and safety of this method. Malherbe and Boureau have applied 6,275 ethyl chlorid anesthesias, including infants a few months old and adults of every age, in which there was not a single complication. Cazin has operated with ethyl chlorid for an hour to an hour and a half with excellent results.

HEMOPTYSIS OF PARASITIC ORIGIN IN SOLDIERS FROM THE FAR EAST

Salmon and R. Neveu called the attention of the Medical Society of the Hospitals of Paris to a condition which is mistaken for tuberculosis. This affection, a pulmonary distomatosis, is but little known in France, although it is common in the Orient. At present, large numbers of troops composed of men from the French colonies in the East are operating in France and, undoubtedly, some of them, at least, are infected with these distomas. If so, they may serve as infection foci, their sputum being the infectious agent. For these reasons, and because of the frequency with which hemoptysis is caused by the long distoma (*Paragonimus westermanni*) and to prevent the dissemination of these diseases, Salmon and Neveu sound this note of warning. They call attention to the ease with which the condition may be recognized by making an examination of the sputum, and finding in it blood and the eggs of the *Paragonimus*. They propose (1) that in all cases of bronchitis occurring among the Annamites or the Indo-Chinese troops the patients be, without delay, sent to a base hospital; (2) that all Asiatics who are suffering from a stubborn bronchitis, with a rusty sputum or hemoptysis be isolated immediately, and that they be furnished with sputum cups which are kept properly sterilized.

PRESENCE OF ARSENIC IN CHEMICALS AND IN FOODS

MM. Kohn-Abrest and Bouligaud have made an investigation of the industries resulting from the war and in which the chemicals used by manufacturing pharmacists and in food products might have contained arsenic. They informed the medicolegal society that it is difficult, if not impossible, to obtain hydrochloric acid which is free from arsenic. Because of the presence of arsenic in glucose, bakery goods may contain this poison.

Dr. Chassevant stated that it is impossible to obtain glucose which is free from arsenic, and therefore the use of a sugar solution in therapeutics may be fraught with danger. He proposes to use in such solution an inert sugar which would be equally useful.

THE "LEAVE OF ABSENCE TO WORK" FOR THE WOUNDED

The undersecretary of state for the sanitary service of the army has decided to give a "leave of absence to work" to some of the wounded to improve their condition. These men are permitted to work in a national industry. Consultation will be held twice a month in each physiotherapeutic center of certain regions, when the authorities will select the men to whom this measure is applicable. These men will be given leave of absence to return home and engage in their habitual occupation. While working in this capacity they will be under the supervision of the gendarmerie.

ALLIED SURGICAL CONFERENCE

The first Allied surgical conference will be held, March 15, in the museum of Val-de-Grâce, under the presidency of the minister of war.

Association News

THE NEW YORK SESSION

Garage Accommodations

The local Committee on Arrangements for the New York annual session of the American Medical Association submits the following table of garages, together with the prices for storing and caring for machines. Undoubtedly a large number of Fellows will go to New York by automobile, and it is hoped that this list will be of service in making reservations for the care of machines, and also in giving in general the prices which prevail for storage and service in New York.

GARAGE RATES FOR A. M. A. ANNUAL SESSION

Garage and Address	Overnight Storage		Weekly Storage	
	Without Service	With Service	Without Service	With Service
Aeon Garage Corportion, Broadway and 76th	$1.00	$2.00 to $2.50	$7.00	$10.00 to $12.00
Aetna Garage Company, 4506 Park Ave.	0.75	1.50	4.00†	.....
Biltmore Garage, 134 East 41st	1.00	2.00 to 2.50	7.00	10.00
Blue Sprocket Garage, 139 East 31st	1.50	2.50	.....	.....
Bord's Garage, Inc., 114 West 50th	1.00	2.00	.....	10.00
Broadway and 62d Street Company	1.25	2.50	.....	10.00 to 12.00
Corvan Garage, 122 West 54th	.....	2.50	.....	.....
Equitable Garage, 8th Ave. and 49th	1.00	2.50	6.00	10.00
Fifty-Seventh Street Garage, 156 E. 57th.	1.00	2.50	.....	.....
Flint Garage, 155 W. 56th	1.00	2.50	.....	.....
49th Street Garage, Inc., 147 W. 49th	1.00	2.50	.....	10.00
Gotham Garage Company, 102 W. 46th	1.50‡	.....	.....	7.00 to 10.00
Great Northern Garage, 114 W. 56th	1.00	2.50	.....	.....
Halcyon Garage Co., Inc., 226 E. 65th	$0.75 to $1.25	1.50 to 2.25	.....	.....
Hollywood Garage Corporation, 238 E. 64th	1.00	2.50	.....	15.00
Hudson Garage, 220 W. 41st	1.50	2.00	.....	.....
International Garage Co., 252 W. 40th	1.00	2.50	.....	10.00
Joselyn Garage, Inc., 112 W. 52d	1.00	2.50	.....	.....
Lexington Auto Garage, 150 E. 39th	1.00 to 1.25	2.50	.....	12.50
Monmouth Garage, Inc., 126 E. 54th	1.00	2.00	.....	10.00
St. Paul Garage, 36 W. 60th	1.50	2.50	.....	12.00

† With one washing; additional washings, $0.75 each.
‡ Washing and cleaning extra, $1.50 to $3.00.

Marriages

Frank W. Romaine, M.D., Corozal, C. Z., to Miss Ellen Gray Cleland of Philadelphia, at Ancon, C. Z., February 24.

Readie Garfield Snyder, M.D., New York, to Miss Theresa O'Neil of Garden City, L. I., N. Y., in Chicago, March 16.

Stafford Baker Smith, M.D., to Miss Amyah Mary Hodges, both of New York, February 24.

Alfred Adolph Strauss, M.D., to Miss Hilda Grunsfeld, both of Chicago, March 27.

Elmer Clayton Terry, M.D., to Miss Lovett, both of Washington, D. C., March 1.

Deaths

Samuel Posey Collings, M.D., Hot Springs, Ark.; Jefferson Medical College, 1870; aged 72; a Fellow of the American Medical Association; president of the Mississippi Valley Medical Association in 1901 and 1902; a member of the American Urological Association; for a short time after his graduation demonstrator of anatomy in the Medical College of Indiana, Indianapolis, and demonstrator of anatomy and lecturer on venereal diseases in the College of Physicians and Surgeons, Indianapolis; a practitioner of Hot Springs since 1878; consulting surgeon and a member of the board of governors of St. Joseph's Hospital, Hot Springs; a director in the Arkansas National and Security banks, Hot Springs; one of the most esteemed and beloved practitioners of that city; died at his home, March 16, from hypostatic pneumonia.

Moses James White, M.D., Hartford, Conn.; New York University, New York, 1884; aged 57; assistant physician to the New York City Asylum for the Insane for three years after his graduation, and afterward first assistant physician to the Milwaukee County Hospital for the Insane, Wauwatosa, and then superintendent from 1888 to 1915; a Fellow of the American Medical Association, and a member of the American-Medico Psychological Association; clinical professor of insanity in the Wisconsin College of Physicians and Surgeons and professor of mental diseases in Marquette University, Milwaukee; consulting physician to Milwaukee County Hospital and the Milwaukee Asylum for the Chronic Insane; a frequent contributor to the literature of insanity; died in Hartford, March 14.

David Porter Morgan, M.D., Clarksburg, W. Va.; Jefferson Medical College, 1876; aged 73; formerly a Fellow of the American Medical Association; a member of the West Virginia State Medical Association; a veteran of the Civil War; local surgeon of the Baltimore and Ohio System since 1893; a member of the state board of health in 1901 and made president of the board in 1905; president of the West Virginia State Medical Association in 1893, and at one time president of the Harrison County Medical Society; for several years president of the West Virginia Educational Association; died at his home, March 10, from acute gastritis.

William Blackwell Welch, M.D., Fayetteville, Ark.; University of Nashville, Tenn., 1859; aged 88; a Fellow of the American Medical Association; one of the founders of the Washington County Medical Society, and one of the founders and first president of the Arkansas Medical Society; one of the leading citizens of northwest Arkansas; brigade surgeon in the Confederate service during the Civil War; president of the hospital board which built the Fayetteville City Hospital; died at his home, March 9, from cerebral hemorrhage.

Newton J. Phenix, M.D., Colorado, Texas; Tulane University, New Orleans, 1890; aged 56; a Fellow of the American Medical Association, and since 1912 councilor of the El Paso-Big Springs District Medical Society; secretary from 1904 to 1910, and president in 1910 and 1911; health officer of Mitchell County; president and senior member of the local board of education; proprietor of the Phenix Sanitarium, Colorado; died, Dec. 30, 1916, from gunshot wounds inflicted by a former employee with homicidal intent.

Albert Eugene Ham, M.D., Providence, R. I.; College of Physicians and Surgeons in the City of New York, 1868; aged 73; a Fellow of the American Medical Association, and formerly president of the Providence Medical Association; consulting physician to St. Mary's Orphanage and the Providence Dispensary, and formerly visiting physician to the Rhode Island Hospital; died at his home, January 24, from carcinoma of the stomach.

David Gochenauer, M.D., San Diego, Calif.; University of Pennsylvania, Philadelphia, 1868; aged 72; a Fellow of the American Medical Association; formerly president of the San Diego County Medical Society, president of the San Diego Chamber of Commerce and professor of medical diagnosis in the College of Physicians and Surgeons, Los Angeles; died at his home, February 20, from heart disease.

Charles F. Swan, M.D., Chicago; Medical College of Ohio, Cincinnati, 1875; aged 64; a Fellow of the American Medical Association; a pioneer practitioner of South Chicago; chief of staff of the South Chicago Hospital; from 1900 to 1902 a member of the staff of Cook County Hospital; who established the first bank in South Chicago; died at his home, March 19, from cerebral hemorrhage.

Henry Lee Williford, M.D., Bartlett, Tenn.; New York University, New York, 1880; aged 62; for many years a practitioner of Bartlett; formerly professor of materia medica and therapeutics in Memphis Hospital Medical College; president of the Shelby County Board of Health from 1880 to 1892; a member of the Memphis school board; died at his home, February 28, from pneumonia.

Frederick James Will, M.D., Des Moines, Iowa; University of Iowa, Iowa City, 1883; aged 57; a Fellow of the American Medical Association; medical director of the Bankers' Life Insurance Company, Des Moines; district surgeon to the Chicago and Northwestern System; colonel and surgeon-general of Iowa from 1907 to 1909; died in San Antonio, Texas, March 7, from arterioclerosis.

Clotworthy Birnie, M.D., Taneytown, Md.; University of Pennsylvania, Philadelphia, 1870; aged 73; a Fellow of the American Medical Association; president of the Medical and Chirurgical Faculty of Maryland, 1899-1900; formerly president of the Carroll County Medical Society; died at his home, March 16, from cerebral hemorrhage.

Charles C. Deming, M.D., Friendship, N. Y.; New York University, New York, 1869; formerly a member of the Medical Society of the State of New York, and president of the Allegany County Medical Society; proprietor of a sanatorium for several years and at one time health officer of Friendship; died at his home, March 5.

Ralph Root Hollopeter, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1912; aged 29; a Fellow of the American Medical Association, and a member of the Philadelphia Laryngological Society; a member of the faculty and staff of his alma mater; died at Asheville, N. C., March 12, from pneumonia.

Leonard Franklin Dozier, M.D., San Francisco; Oglethorpe Medical College, Savannah, Ga., 1859; aged 80; at one time professor of materia medica in his alma mater; a Confederate veteran; for twenty-nine years medical superintendent of the California State Hospital, Napa; died at his home, March 9.

John Ryland Eaton, M.D., Chittenango, N. Y.; Syracuse, N. Y., University, 1875; aged 67; a member of the Medical Society of the State of New York; for more than twenty-five years health officer of the town of Sullivan; at one time president of the village of Chittenango; died at his home, March 12.

Henry Everett Hays, M.D., Attica, Kan.; University Medical College, Kansas City, Mo., 1900; aged 40; a Fellow of the American Medical Association; health officer of Harper County; local surgeon to the Santa Fe System; died at his home, March 11, from chronic interstitial nephritis.

Daniel W. Bortz, M.D., St. Lawrence, Pa.; College of Physicians and Surgeons, Baltimore, 1885; aged 61; died at his home, March 4, from uremia.

Preston H. Sharp, M.D., Pontiac, Mich.; Columbus (Ohio) Medical College, 1884; aged 68; died at his home, Dec. 13, 1916, from cerebral hemorrhage.

Thomas Richard Baldwin, M.D., Waco, Texas; Eclectic Medical Institute, Cincinnati, 1890; aged 61; died at his home, January 16, from pneumonia.

Daniel Galbraith, M.D., Dresdon, Ont.; University of Toronto, Ont., 1868; aged 76; died at his home, Dec. 20, 1916, from cerebral hemorrhage.

J. G. Pickering, Zavalla, Texas (license, years of practice, Texas, 1907); aged 99; died at the home of his daughter near Zavalla, February 4.

Carl M. Bock, M.D., Greenville, Mich.; University of Erlangen, Germany, 1876; aged 64; died at his home, March 5, from pneumonia.

Peter Franklin Eagle, M.D., Troy, Ohio; Washington University, St. Louis, 1878; aged 60; died at his home, March 3, from pneumonia.

Willard Remington Baker, M.D., Tombstone, Ariz.; University of Minnesota, Minneapolis, 1912; aged 34; died recently at his home.

Dias S. Smith, Upper Sandusky, Ohio (license, Ohio, 1896); aged 62; died at his home, February 22, from valvular heart disease.

Emanuel H. Gebauer, M.D., Indianapolis; Barnes Medical College, St. Louis, 1897; aged 45; died at his home, March 7.

Frank Hanson, M.D., Worden, Ill.; Rush Medical College, 1888; aged 51; died in Joliet, Ill., recently, from pneumonia.

William T. Lively, M.D., Buffalo, Ky.; University of Louisville, Ky., 1875; aged 73; died at his home, January 18.

Correspondence

Compulsory Health Insurance

To the Editor:—The numerous letters on health insurance contained in The Journal, March 10, 1917, prompt me to remind your readers of one or two facts which have been overlooked by your correspondents.

It is suggested by Dr. Albert Bowen of Rochester, N. Y., that the remedy for inadequate wages, insufficient to meet the expenses of illness, is higher wages. To this we should all subscribe. However, those of us who face the practical questions realize, just as the Massachusetts Commission on Social Insurance has pointed out, that there is no immediate prospect of a sufficient increase in wages to enable the American wage earner to bear the full cost of sickness. Even if a rise of wages should occur, the incidence of sickness is so uncertain that it is essentially an insurable proposition. For example, the Social Insurance Commission in California found that from a group of 600 persons, more than one half of the total amount expended for medical care by the group was spent by twenty-one individuals. The uncertainty of sickness makes it desirable to insure one's health, just as persons of means insure their property against the risk of fire.

Moreover, we realize that it is unjust to place the full cost of sickness on the worker, whereas industry, because of its long hours, its often dusty, ill ventilated, poorly lighted workrooms, and even the poisons handled, is responsible for much illness. It is only a matter of justice that the employer should be expected to bear this portion of his human repair bill, just as he now bears that portion already covered by the workmen's compensation laws. Legislative action is the only method by which the responsibility of industry for illness can be placed on industry.

Another correspondent, Dr. W. D. Chapman, refers somewhat disparagingly to the free choice among the panel physicians under the British insurance act. In practice, the insured workers of Great Britain have had free choice among practically all of the physicians previously practicing in the industrial districts. Moreover, it should be borne in mind that the act there, as well as the bill introduced in the American legislatures, provides that all physicians desiring to practice under the act may join the panels.

So far from attempting to exploit the medical profession, the drafters of the health insurance bills have taken unusual pains to consult with physicians. If the medical provisions of the bill, as now drafted, are unsatisfactory, it is because the profession has been slow in offering constructive suggestions. From the outset, criticism and suggestion have been most cordially invited, and are still welcome.

I cannot help but feel that the opening of the columns of The Journal of the American Medical Association for a free discussion of this question will be a most important factor in calling forth constructive suggestions from your readers.

John B. Andrews, New York.

Secretary, American Association for Labor Legislation.

To the Editor:—In Public Health Bulletin 76, on "Health Insurance, Its Relation to the Public Health," p. 44, it says:

> It must be evident that the average wage worker's family with an income of $750, if it must spend $650 on food, rent, clothing and fuel and light, has very little surplus available for extraordinary expenses. Out of the remaining $100 must come the funds for amusements and recreation, books, papers and magazines, lodge and union dues, benefit and insurance premiums, sickness, upkeep of household and kitchen furnishings and the hundred-and-one incidental expenditures that are common to the most frugal households. A death in the family is a heavy expense; the birth of an additional member of the family is a cause not only of lessened family income where the wife is a wage earner, but also of immediate expense and the promise of increasing cost in the future. For we are speaking of the "average" family with an income of $700 to $800 a year, which is considered adequate if everything "goes right." But sometimes things "go wrong."

This statement indicates that the invisible hand back of the health insurance bill is capital, for it admits that the physician is necessary to the laboring man, but does not provide for any increase in wage to meet the necessity. Instead it aims to obtain the physician's services free of charge. A slave owner will give to his slave what is best to obtain the best work from him. This scheme will give the same to the laborer, but aims to obtain the physician's part practically free.

Compulsory health insurance pretends to assist the poor while it robs them of their independence. Nearly all physicians have taken care of confinements for anywhere from the tenth to the thirteenth child when the entire family with the boarders have lived in one room, children sleeping on the floor with the same ragged clothing that they wear through the day, boarders standing around while labor is in progress, and no change of clothing for the mother after the baby has been born.

Health insurance will not help situations like this, for the physician does not expect to receive any fee for his services; but it will make matters worse by furnishing a heartless, overworked, 15-cent-a-call contract physician in place of a physician with a kind heart, who gladly donates his services to help humanity. A mercenary, overworked contract physician would not take the necessary time to care properly for a woman in labor and would thus increase sickness, misery and suffering. Compulsory health insurance is a step backward and tends to degrade both the physician and the laborer. If the laborer must have health insurance, then make it voluntary and give him a certain benefit without dictating to him as to the physician he should employ or the amount he should pay him.

George N. Jack, M.D., Buffalo.

The Diagnosis and Serum Treatment of Anterior Poliomyelitis

To the Editor:—May I draw the attention of the author and your readers to a misleading error contained in the paper by Dr. Zingher on this subject (The Journal, March 17, 1917, p. 817)? In the opening paragraph Dr. Zingher states that the treatment of poliomyelitis by means of immune serum was recommended by Netter, and that "later, Flexner and Lewis carried out some experimental work in monkeys, and showed that the intraspinal injection of immune serum twenty-four hours before the intracerebral inoculation of a fatal dose of virus acted as a preventive against the disease."

Any one examining the footnote accompanying the article would be mystified by the quotation, since the two papers referred to by Netter and his co-workers are dated 1915 and 1916, respectively, while the two papers of Flexner and Lewis were published in The Journal, May 28 and Aug. 20, 1910.

It will be particularly illuminating to quote what Netter himself says of the serum treatment in the first paper which he published on the subject with his co-workers Gendron and Touraine in the *Comptes rendus des séances de la Société de biologie* (1911, **70,** 625). They say:

> Flexner and Lewis conceived the idea of injecting the serum into the spinal canal for several consecutive days, a method which gives good results in cerebrospinal meningitis, and the necessity for which is justified by the fact that the serum, being rapidly absorbed by the blood, immediately leaves the spinal canal. They obtained favorable results by this method. In fact, the disease was prevented from developing provided the injections of serum were begun as early as eighteen to twenty-four hours *after* the introduction of the virus. . . . The same good results were obtained by means of immune serum in the case of a monkey treated on the day of inoculation (by the nasal route) as well as three and six days later. Human serum collected from persons who had had poliomyelitis a long time before was equally active against the poliomyelitis of the monkey.
>
> The experiments of Flexner and Lewis show the possibility of serotherapy for experimental poliomyelitis, but the serum, in order to produce good results, must be injected every day during the first days of sickness . . . We do not see how one can begin treatment as early as this in human cases. It is true that in man poliomyelitis is less serious than in the monkey. The mortality is decidedly less, scarcely 10 per cent. of all cases, instead of more than 50 per cent.; the development is less rapid.

They then proceed to describe the employment of the serum from recovered individuals in four acute cases of poliomyelitis.

In other words, the experimental observations of Flexner and Lewis furnished the immediate starting point of the serum treatment of poliomyelitis in man; and showed that the immune serum of recovered monkeys and human beings has protective power when given to monkeys not in advance of, but as long as twenty-four hours after an intracerebral inoculation of the poliomyelitic virus.

Harold L. Amoss, M.D.
The Rockefeller Institute for Medical Research, New York.

The Shortage of Salvarsan

March 19, 1917.

To the Editor:—In The Journal, March 10, 1917, p. 785, there appeared a comment on the salvarsan situation in this country at the present time. As I am particularly interested in obtaining salvarsan, I wrote to Senator Hoke Smith, enclosing the article from The Journal. The letter to Senator Smith was as follows:

Hon. Hoke Smith,
U. S. Senate, Washington, D. C.

Dear Sir:—As one of the physicians of your constituency, I write to direct your attention particularly to the shortage of salvarsan in this country. This subject is briefly but well presented in the enclosed editorial clipped from the last copy of The Journal of the American Medical Association.

Those of us who are engaged in active practice encounter a very large number of cases of ill health, the primary cause of which is syphilis. Salvarsan has proved to be of wonderful efficiency in the treatment of these cases. In the state of Georgia, and in the city of Atlanta, there is a great demand for this remedy, which frequently produces results obtained by no other substance. However, the time has come when it is impossible to obtain this except at exorbitant prices from such individuals as have bought up the visible supply.

In view of our present relations with Germany, would it not be possible for Congress to provide relief for the situation so that this remedy may be available?

Senator Smith replied as follows:

March 17, 1917.

Your letter of the 12th in regard to the manufacture of salvarsan has been duly received.

I will take the matter up with Senator James, chairman of the Committee on Patents, and see what can be done.

It occurs to me that it would be advisable for physicians in various parts of the country to write to their representatives in Congress, and to Senator James, chairman of the Committee on Patents, urging the abrogation of the special privileges granted in connection with the manufacture of salvarsan, and also urging that steps be immediately taken for the production of the preparation in this country.

Lewis M. Gaines, M.D., Atlanta, Ga.

Health and Athletics

To the Editor:—Physicians working in colleges have an opportunity to obtain facts concerning the influence of athletics on the health of young men. The accompanying table gives the result of a short analysis made after the routine examination of 745 new students at the Pennsylvania State College health service last fall.

The data were obtained partly from a careful past history included at the examination. The conditions selected for comparison are in our experience the most frequent and representative of health and disease in young men.

In the table, the first column of figures gives general percentages for the entire 745 students who gave a history of previous competitive athletics averaging 2.8 months during each of 1.8 years. The second column gives the same for 100 students selected for maximum athletic experience. Their average is 8.1 months for each of five years.

COMPARATIVE INFLUENCE OF GENERAL ATHLETICS AND MAXIMUM ATHLETIC EXPERIENCE

Condition	Percentage General	Percentage Maximum
Previous sore throats	45	44
Previous tonsillitis	24	38
Previous head colds	29	25
Previous boils	18	26
Previous constipation	9	16
Those taking laxatives regularly (at least once a week)	10	18
Those wearing glasses	21	24
Those having diseased tonsils	20	21
Those having definite acne	13	8
Those having dental caries, marked	8	4

Warren E. Forsythe, M.D., State College, Pa.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEART MURMUR IN AORTIC LESION—RELATION OF HEART DISEASE TO LABOR

To the Editor:—Kindly discuss the following questions:

1. In aortic regurgitation with probable stenosis do we often have a murmur so transmitted to the radial as wholly to mask the succession of sounds following the systolic reading? This murmur is harsh, high pitched, and heard with ease over the right radial at the wrist.

2. What is the most plausible explanation for this transmission to the right but not to the left radial?

3. Could there be a relation between such transmission and a systolic pressure 15 to 25 mm. (Tycos) higher in the right arm than in the left? Blood Pressure, systolic, respectively, 130 to 145; 115 to 130; diastolic, respectively, 10 to 30?

4. This patient, a woman, aged 24, with good family history and negative past history except for acute rheumatic fever eleven years ago with endocarditis, has since had three attacks of cardiac decompensation, the last four weeks ago, when the patient was seven months' pregnant, at which time there was a process in the lower lobe of the left lung, the symptoms of which with the physical signs strongly suggested lobar pneumonia. There is one child, aged 2½, at whose birth labor was easy. Compensation has now been regained.

What is the prognosis for spontaneous delivery at term? What is the present concensus of expert opinion as to the management of a case like this, the choice of method of delivery?

O. B. Lynch, Littlefield, Texas.

Answer.—1. We assume that "probable stenosis" of the aortic valve is a correct diagnosis. This assumption is supported by necropsy experience that when a lesion of the aortic valve occurs following rheumatism or similar infections, there is usually some stenosis as well as incompetence of the valve. The loudness of the murmur (transmission far out in the peripheral arterial system) also argues for aortic stenosis, although the systolic thrill palpable over the right second interspace and surrounding region which is looked for in such cases is not mentioned. The loud, harsh systolic murmur of aortic stenosis is often heard in the carotid and subclavian, and occasionally may also be heard, as in the case described, in the arms to the radials.

2 and 3. Under the conditions described (age and probable etiology) the difference in blood pressure between right and left sides suggests that the flow of blood to the left arm is not as free as to the right, a condition which might be brought about by difference in vessel caliber or from pressure from without; any such condition would impede the transmission of vibration, and tend to reduce the distance to which the murmur could be transmitted.

4. The lesion in the lung which occurred in association with a period of broken compensation may of course have been a lobar pneumonia, but pulmonary infarction, which is often seen under such circumstances with pain, bloody expectoration and fever, would have to be considered, as also passive congestion with possibly pleural effusion.

In a woman with an aortic lesion in whom compensation has been repeatedly broken, once during the present pregnancy, we should regard the prognosis for safe delivery at term very doubtful.

Special conditions not mentioned in the necessarily abreviated description given in the question may modify the indications for treatment; but assuming that no such unusual conditions exist, we believe the following plan would receive the approval of obstetricians. In a multipara with normal pelvis (easy labor two and a half years ago), with the heart lesion described, in whom pregnancy has advanced to the seventh month, labor should be induced only if compensation has begun to fail. If compensation is maintained labor at term should be allowed to procede to the end of the first stage and then instrumental delivery employed.

ALCOHOLISM

To the Editor:—1. What percentage of deaths are directly or indirectly due to alcoholic poisoning?

2. What are the most common diseases caused?

3. Relatively, how are men and women affected by alcohol?

A. Allen John, M.D., Oregon, Ill.

Answer.—1. Obviously there are no exact figures available to answer this question.

2. There are numerous diseases supposedly indirectly related to alcoholism; among them are arteriosclerosis, cirrhosis of the liver, nephritis, gastritis and various psychoses. The question of venereal disease control is inextricably mixed up with the control of alcoholism. The diseases or conditions specifically caused by alcohol are alcoholism and delirium tremens.

3. In general, alcoholism may be stated to have the same effects in both men and women. Response to it varies frequently with the psychologic status of the individual. The following is a list of references to articles on the subject:

Heron, David: A Second Study of Extreme Alcoholism in Adults, University of London, Francis Galton Laboratory for National Eugenics, Eugenics Laboratory Memoirs XVII, Dulau & Co., Ltd., 37 Soho Square, West, London, 1912, price 5 shillings net.

O'Malley, Austin: The Cure of Alcoholism, B. Herder, 17 South Broadway, St. Louis, 1913.

Atwater, W. O., et al.: Physiological Aspects of the Liquor Problem, Houghton, Mifflin & Co., Boston and New York, 1903, 2 volumes.

Mason, Lewis D.: The Present Status of the Results of the Study of Alcohol in America, *Jour. Inebriety,* July, 1913; this may be obtained in reprint form from the author, 71 Jerolomon Street, Brooklyn.

Mason, Lewis D.: The Etiology of Alcoholic Inebriety, with Special Reference to Its True Status and Treatment from a Medical Point of View, *Month. Cycl. and Med. Bull.,* September, 1910.

Emerson, Haven (Commissioner of Health, New York): The Duty of Health Departments on the Alcohol Question, Publication 50, Reprint Series, October, 1916, New York City Department of Health.

Drunkenness in Massachusetts, Conditions and Remedies, Special Report of the Board of Trustees of the Foxboro State Hospital, 1910, Wright and Potter, State Printers, 18 Post Office Square, Boston.

Maus, L. Mervin (colonel U. S. Army Medical Corps): Alcohol and Officials, etc., reprint from the *Journal of the Military· Service Institution,* 1912.

The Relation of Alcohol and Tobacco to Personal Hygiene and Public Health, Health Bulletin 3 (Series 1911-1912), University of Wisconsin, Madison.

The Liquor Prohlem and Public Health, *Bull. North Carolina State Board of Health,* December, 1912, W. S. Rankin, Secretary and Treasurer, Raleigh, N. C.

First Annual Report of the Board of Inebriety of the City of New York, 1913.

Treatment of Public Intoxication and Inebriety, Publication 108, State Charities Aid Association of New York, March 20, 1909, United Charities Building, 105 East Twenty-Second Street, New York.

Fisher, Irving: The Attitude of the College Man Toward Alcohol, Reprinted from the Eli Spring Book, May, 1915; Sale of Intoxicating Liquors, Washington, Government Printing Office, 1912. Refer to 42108-12-1 when ordering.

Phelps, Edward Bunnell: The Mortality of Alcohol, a Statistical Approximation of the Deaths in the United States in Which Alcohol May Figure as a Causative or Contributory Factor, Thrift Publishing Company, New York, 1911. This book should give much of the information desired.

The *Metropolitan,* published by the Metropolitan Life Insurance Company of New York, Volume 25, No. 11, contains a number of articles along this line.

VEDDER'S STARCH MEDIUM

To the Editor: Where can I find a description of the preparation of Vedder's starch culture medium which Dr. Charles F. Craig mentioned in his article on "The Complement Fixation Test in the Diagnosis of Tuberculosis" (The Journal, March 10, 1917, p. 773).

Kindly use my initials if published in The Journal. E. W. W.

Answer.—The starch medium devised by Captain Vedder for the cultivation of the gonococcus is thus described in the *Journal of Infectious Diseases,* May, 1915, p. 385:

The medium consists of beef infusion agar to which 1 per cent. of starch has been added. Beef infusion is prepared according to the usual method employed for making beef broth. Commercial meat extracts do not give as good results. To the beef infusion sufficient agar is added to make from 1.5 to 1.75 per cent. agar. No peptone or salt is added, since the gonococcus appears to grow better on mediums without peptone or salt. If much more than this amount of agar is added, the medium will be too dry. This mixture is cooked, clarified and filtered according to the method of preparing ordinary agar. It is then neutralized so that the final reaction will be from 0.2 to 0.5 per cent. acid to phenolphthalein. Ten gm. of cornstarch to each liter are now added to this medium. It is well to grind up the cornstarch in a mortar with a little of the agar in order to avoid lumps. Cornstarch has been found by experiment to be the best form of starch, and about 1 per cent. is the optimum amount. After the addition of the cornstarch the mixture is boiled for a few minutes, and then tubed and sterilized at not more than 15 pounds' pressure to avoid breaking down the starch. The medium will be slightly clouded, owing to the presence of the cornstarch.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

Arkansas: Little Rock, May 8-9. Sec., Dr. T. J. Stout, Brinkley, Ark.

Arkansas, Eclectic: Little Rock, May 8. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.

Arkansas, Homeopathic: Little Rock, May 8. Sec., Dr. Scott C. Runnels, Little Rock.

California: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

Colorado: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

District of Columbia: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Hawaii: Honolulu, May 7-10. Chairman, Dr. R. W. Benz, 1141 Alakea St.

Idaho: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

Illinois: Chicago, May 3-5. Sec., Dr. C. St. Clair Drake, Springfield.

Minnesota: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

Montana: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

Nevada: Carson City, May 7. Sec., Dr. S. L. Lee, Carson City.

New Mexico: Santa Fé, April 9. Sec., W. E. Kaser, East Las Vegas.

Oklahoma: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

Rhode Island: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

Utah: Salt Lake City, April 2. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Minnesota June Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 6-10, 1916. The total number of subjects examined in was 18; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 40, all of whom passed. Seven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado		(1914)	83
Northwestern University		(1916)	88.9
Rush Medical College		(1896)86.3; (1916)	82.4, 86.8
University of Illinois		(1915)	85.3
Minnesota College of Physicians and Surgeons		(1904)	75.1
University of Minnesota (1916) 83, 84.4, 85.3, 85.7, 85.8, 85.8, 86.2, 86.2, 86.4, 86.5, 86.5, 86.6, 86.7, 87, 87, 87.6, 87.7, 87.9, 87.9, 87.9, 88, 88, 88, 88.1, 88.4, 88.4, 88.7, 89, 90, 90, 90; (1917) 83.			
Laval University		(1913)	76.5

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College		(1911)	Illinois
Chicago Homeopathic Medical College		(1894)	Indiana
Northwestern University		(1911)	Illinois
Medical College of Indiana		(1898)	Indiana
Medical College of Ohio		(1907)	Indiana
Marquette University		(1915, 2)	Wisconsin

Arizona October Report

Dr. John Wix Thomas, secretary of the State Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, Oct. 3-4, 1916. The total number of subjects examined in was 10; total number of question asked, 100; percentage required to pass, 75. The total number of candidates examined was 20, of whom 16 passed, including one osteopath, and 4 failed, including 1 osteopath, and 1 other drugless practitioner. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles		(1915)	79.7
College of Physicians and Surgeons of San Francisco		(1913)	75.8
University of California		(1912)	81.8
National University		(1900)	75.6
Chicago College of Medicine and Surgery		(1916)	78.1
Rush Medical College		(1910)	79.9
University of Illinois		(1914)	84.2
State University of Iowa, Homeopathic		(1893)	69.8*
Baltimore Medical College		(1904)	81.2
University of Michigan Medical School		(1916)	77.4
St. Louis University		(1905)	86
Kumamota Special Medical School		(1909)	78.9
Okayama Special Medical School		(1902)	75.3
Sai Sei Medical College		(1899) 72.7*; (1901)	71.4*
	FAILED		
Arkansas Industrial University		(1884)	52.5
George Washington University		(1905)	50.7

* Credit allowed for years of practicc.

Texas November Report

Dr. J. S. McCelvey, secretary of the Texas State Board of Medical Examiners, reports the written examination held at Fort Worth, Nov. 14-16, 1916. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 17, of whom 13 passed, and 4 failed, including 1 osteopath. Thirty-two candidates were licensed through reciprocity, including 4 osteopaths and 1 nongraduate. One candidate was granted a license under a special exemption clause. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
University of Louisville	(1914)	76
Syracuse University	(1901)	81
University of Oklahoma	(1916)	92
Meharry Medical College	(1915) 76; (1916)	78
Memphis Hospital Medical College	(1909)	75
University of West Tennessee	(1915)	78
Vanderbilt University	(1916)	84
University of Texas	(1915)	87, 87
Mexico City University*	(1910)	77
National School of Medicine, Mexico	(1900)	75
University of Valencia, Spain	(1907)	75
FAILED		
Atlanta Medical College	(1915)	66
Meharry Medical College	(1912)	60
University of West Tennessee	(1913)	49

* The name of this college does not appear in the official list of Mexican medical colleges.

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas	(1911)	Oklahoma
Atlanta School of Medicine	(1907) Georgia; (1907)	Oklahoma
Hospital Medical College, Atlanta	(1909)	Arkansas
Bennett Coll. of Eclec. Med. and Surg.	(1908)	Arkansas
Rush Medical College	(1893)	Kansas
Louisville Medical College	(1894)	Oklahoma
College of Physicians and Surgeons, Baltimore	(1914)	Maryland
University of Maryland	(1897)	Maryland
Eclectic Medical University	(1911)	Arkansas
Medical College of Ohio	(1895, 2)	Ohio
University of Pennsylvania	*	Penna.
Memphis Hospital Med. Coll. (1888) Kentucky; (1896) Arkansas; (1898) (1911) Tennessee; (1911) Mississippi.		
University of Memphis	(1911)	Tennessee
University of Nashville	(1898)	Tennessee
University of Tennessee	(1892) (1914) (1915)	Arkansas
	(1913)	Mississippi
Vanderbilt University	(1882) (1915) Arkansas; (1914)	Tennessee

College LICENSED UNDER SPECIAL EXEMPTION CLAUSE PASSED	Year Grad.	Total No. Licensed
Boston University	(1893	1

* Date of graduation not given; graduation not verified.

Maryland December Report

Dr. J. P. McP. Scott, secretary of the State Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, Dec. 12, 1916. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 36, of whom 27 passed and 9 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University	(1915)	77
Loyola University	(1916)	75
College of Physicians and Surgeons, Baltimore	(1915)	82
Johns Hopkins University (1915) 90, 92; (1916) 78, 88, 92.		
Maryland Medical College	(1912)	77
University of Maryland (1914) 76, 81; (1915) 80, 87; (1916) 76, 78, 78, 79, 80, 80, 81, 84, 84.		
Medico-Chirurgical College of Philadelphia	(1916)	83
Woman's Med. Coll. of Pennsylvania	(1914)	85
Medical College of Virginia	(1915) 79; (1916)	78
University of Toronto	(1910)	81
FAILED		
Bennett Medical College	(1914)	*
Chicago College of Medicine and Surgery	(1916)	71
Coll. of Phys. and Surgs., Baltimore	(1915)	74
Johns Hopkins University	(1916)	*
Maryland Medical College	(1904)* (1913)	*
University of Maryland	(1916)	70, *,*

* No grade given.

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
George Washington University	(1898) (1915)	Dist. Colum.
Georgetown University	(1889)	Dist. Colum.
University of Georgia	(1916)	Georgia
American Medical Missionary College	(1904)	Wisconsin
Kentucky School of Medicine	(1892)	So. Carolina
Coll. of Phys. and Surgs., Baltimore	(1907) (1911)	W. Virginia
Jefferson Med. Coll. of Philadelphia	(1902)	Penna.
University of Pennsylvania	(1905)	Penna.
Meharry Medical College	(1914)	Tennessee

Book Notices

Syphilis. By Loyd Thompson, Ph.B., M.D., Physician to the Syphilis Clinic, Government Free Bath House. Hot Springs, Ark. Cloth. Price, $4.25 net. Pp. 415, with 84 illustrations. Philadelphia: Lea & Febiger, 1916.

In this, the newest text on syphilis, Dr. Thompson has undertaken to cover the entire subject, considering syphilis not only in general, but also in its special manifestations in the various tissues of the body. His book gives a good exposition of our present knowledge of the disease. For so large a subject, however, he has assigned himself a rather limited space, so that the consideration of many topics is of necessity extremely brief. The greatest criticism to be made against the book is that it is not well balanced. The clinical history of syphilis—its development, its clinical course and its general symptoms—is covered in fifty pages, and it cannot be said to be given with adequate fulness. The same criticism applies to many other subjects, notably to the important subjects of syphilis of the vascular system and of the nervous system. On the other hand, some clinical subjects, such as syphilis of the bones and joints, are considered fully. The chapter on the laboratory aspects of syphilis—on the *Spirochaeta pallida* and on the serum complement reaction—and the chapter on the treatment of syphilis are full and complete. Dr. Thompson belongs to the radical school as regards the treatment of syphilis, and he gives a satisfactory statement of the present vigorous methods of treatment. Altogether, the book is a good summary of our present knowledge of syphilis, and gives abundant evidence of first hand experience with the disease.

The Prevention of Disease. A Popular Treatise. By Kenelm Winslow, B.A.C., M.D., Attending Physician to Seattle City Hospital. Cloth. Price, $1.75 net. Pp. 348. Philadelphia: W. B. Saunders Company, 1916.

This work, by the author of "The Production and Handling of Clean Milk," was written for the public. It opens with a foreword by Charles Mayo, and important subjects throughout the book are introduced by authorities in various fields, who commend the work to the public. The opening chapters discuss tea, coffee, alcohol and drugs, and devote space to an extended consideration of personal hygiene. There is a chapter on the prevention and cure of cancer and one on sexual hygiene and diseases. Prevention of the diseases of childhood is especially well treated. The book is well indexed and attractively bound.

Physical Examination and Diagnostic Anatomy. By Charles B. Slade, M.D., Chief of Clinic in General Medicine, Bellevue Hospital Medical College. Second Edition. Cloth. Price, $1.25 net. Pp. 150, with 40 illustrations. Philadelphia: W. B. Saunders Company, 1916.

In this book the elementary principles of the physical examination of the body, and the location of the normal anatomic structures and features important in diagnosis are described for the student. The book is not intended to take the place of teacher, but to serve as a basis of instruction to be amplified by one. The importance of systematic procedure, and the training of the eye, the ear and the hand are emphasized. No other methods or instruments of precision are mentioned except the simple form of the binaural stethoscope.

Health and Disease: Their Determining Factors. By Roger I. Lee, M.D., Professor of Hygiene, Harvard University. Cloth. Price, $1.75. Pp. 378. Boston: Little, Brown & Co., 1917.

Lee believes that the sanitarian can gain intelligent cooperation only by instruction of the public. In this book he discusses heredity and environment; food; air; exercise and work; light and the eyes; the hygiene of the nervous system; communicable, air-borne, contact, insect-borne and ingestive diseases; milk; sewage disposal; occupational diseases, and sexual hygiene. While the book is designed for lay readers, physicians will find it well worth reading. It should be of benefit to those who wish to keep well and help others in their community to do the same.

Medicolegal

Physicians and Surgeons Restricted in Right to Practice Dentistry

(*People vs. Blair* (*Mich.*), *158 N. W. R. 889*)

The Supreme Court of Michigan affirms a judgment of conviction of the defendant of having violated the statute regulating the practice of dentistry, although it was conceded that he was a duly licensed physician and surgeon. The court says that he contended that he had the right to extract teeth and to advertise that he would do so, under his license as a physician and surgeon; that as he had a right to perform minor surgery by virtue of his medical certificate, and as it was conceded that the extracting of teeth is minor surgery, he therefore asserted that he was not guilty of the offense charged. The difficulty with his position was that he assumed that the right he once enjoyed as a physician and surgeon to extract teeth could not be taken away from him by the legislature without invading his constitutional right. The right of the legislature to regulate the practice of medicine and dentistry is beyond controversy. Questions affecting the public health, safety and morals of the people are subject to regulation by the legislature under the police power of the state. The legislature has indicated an intention of making the practice of medicine and dentistry two distinct professions by prescribing the conditions and qualifications under which one may practice them. It has made all persons subject to the dental act save physicians and surgeons, for which it created some exceptions. It has stated in express language in the exception what physicians and surgeons may do, and therefore the court must decline to read into the act any implied exceptions in their favor. As the right to practice dentistry and to advertise to do so does not come within the exceptions, the defendant was not thereby protected from the penal provisions of the act. Nor can the court agree with the contention that, as the medical act was passed twelve days after the passage of the dental act at the session of 1913, it should be construed as amending by implication the dental act. Such a construction would be opposed to the trend of legislation. The several acts heretofore passed by the legislature regulating the practice of medicine and dentistry have indicated its intention of separating these professions and making them two distinct professions. By the medical act the legislature has conferred in general terms the right on physicians and surgeons to practice surgery; but by the use of particular words in the dental act it has indicated its intention of restricting the scope of that general right where it overlaps into the field of dental surgery, and therefore the court must hold that physicians and surgeons have no right to practice dentistry except as permitted by the provisions of the act. The court thinks this is a reasonable construction of the legislation and is consistent with the obvious policy of the legislature to make the practice of dentistry a distinct profession.

Validity of Proceedings and Law Against Advertiser

(*State Board of Medical Examiners vs. Macy* (*Wash.*), *159 Pac. R. 801*)

The Supreme Court of Washington affirms a judgment of the superior court which affirmed a decision of the state board of medical examiners revoking the license of the defendant, an osteopath. The court holds that where there is nothing in the record before it indicating that the sufficiency of the complaint was in any manner challenged before the state board of medical examiners or in the superior court, so that it must be concluded that its sufficiency is challenged in the supreme court for the first time, this fact calls for a most liberal construction of its allegations looking to the sustaining of the judgment, even if the proceedings should be regarded as purely judicial. It seems to be well settled by the authorities, however, that proceedings of this nature are not purely judicial, in the sense that they must be attended by the strict rules of pleadings and procedure incident to actions at law. The complaint here, after charging that the defendant "advertised his medical business" in certain named newspapers in Seattle and Tacoma on certain specified dates, charged: "That such advertising of his medical business was intended and has a tendency to deceive the public and impose upon credulous and ignorant persons and so be harmful and injurious to public morals or safety. That such advertisements consist in part in advertising of medicine or of means whereby the monthly periods of women can be regulated, or the menses reestablished if suppressed." This quoted portion of the complaint followed in substance the language of Subdivisions 3 and 4 of section 8397½, Rem & Bal. Code, defining unprofessional conduct for which the licenses of osteopaths and other physicians may be revoked by the state board of medical examiners. It was argued that the complaint was defective in that it did not set out or describe with sufficient certainty the advertisements charged as the unprofessional conduct on the part of the defendant. It might well be argued that this, in any event, would only entitle the defendant to have the complaint against him made more specific and certain or that he be furnished a bill of particulars before trial, and that, having proceeded to trial before the state board of medical examiners without insisting on this right, it was waived. However that may be, when the case was pending on appeal in the superior court, a stipulation was entered into between counsel on both sides that certain specified advertisements, copies thereof being made a part of the stipulation, which appeared on their face to have been published by the defendant in certain named Seattle and Tacoma newspapers, might be introduced in evidence on the trial in the superior court, subject only to objections as to their competency and materiality. This stipulation, the record made it apparent, served all the purposes of a bill of particulars, and advised the defendant of the specific charge against him as much as any language of the complaint, standing alone, could possibly have done. It seems quite clear to the supreme court that he cannot now complain of the insufficiency of the complaint, and that in no event can the complaint be said to be so defective as to be insufficient to support the judgment. Among the seven definitions of acts declared to constitute unprofessional conduct for which a practitioner's license may be revoked, found in said section 8397½, is the following: "Third. All advertising of medical business which is intended or has a tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful or injurious to public morals or safety." This court is constrained to adopt the view that this definition of unprofessional conduct is not void or unconstitutional because of its vagueness or uncertainty, in harmony with what the court regards as the weight of authority and better reason, in view of the fact that this is not a criminal statute, enacted with any purpose of imposing penalties as such. Much less can the fourth subdivision, with reference to advertising medicine or means for regulating or reestablishing the menses, be said to be unconstitutional. Nor had the defendant any constitutional right to a trial by jury in this case.

Court Going to Hospital to Take Testimony

(*State vs. Tracy* (*N. Dak.*), *158 N. W. R. 1069*)

The Supreme Court of North Dakota affirms an order denying the defendant a new trial after he had been convicted of the crime of assault and battery with intent to commit rape, in a case in which the testimony of the complaining witness was taken at a hospital in which she was confined at the time of the trial on account of an operation for appendicitis, which had been performed on her four or five days prior thereto. The court holds that taking the testimony of a witness in a criminal action at a hospital in the county seat in which the trial is being conducted, to which the presiding judge, jurors, court officials, state's attorney, and the defendant and his attorney go for that purpose, against the defendant's objection, does not deprive the court of jurisdiction or nullify the judgment, and it cannot be said that any substantial right of the defendant has been affected, unless it is shown that the trial court abused its discretion to the prejudice of the defendant.

Social Medicine, Medical Economics and Miscellany

THE FRAMINGHAM EXPERIMENT

An Organized Effort at Community Control of Disease

What is the value of our accumulated knowledge on the prevention of disease when applied under the most favorable circumstances? To what extent can disease be prevented, in a modern industrial community, when all available knowledge and resources are utilized? Through the liberality of the Metropolitan Life Insurance Company, which contributed $100,000 for a community laboratory experiment, an effort is being made to determine, in a typical American community, whether it is possible to ascertain with some degree of definiteness just what social and economic factors are responsible for disease and what methods are most effective in securing an adjustment of social forces by which disease may be controlled and prevented. This problem has been studied elsewhere in a limited way. The conversion of a selected community into a laboratory for the study of public health problems in their broadest aspects and for the organization and coordination of all available forces for united effort in disease prevention constitute an experiment which is novel, interesting and capable of being of great value in the development of community public health methods.

The National Association for the Study and Prevention of Tuberculosis announced in its press bulletin in November that Framingham, Mass., had been selected as the town in which to make the community health demonstration for a period of three years. Framingham was selected because Massachusetts has a good department of health, because the town contained various types of industries and various races of people; because the town had a good local health organization, progressive city officials, good educational and relief organizations, good hospitals, and well trained physicians; because the town itself, both officially and through its individual citizens, was willing to cooperate and to meet its own obligations; because health conditions in the town were average and typical, and because Framingham itself desired to advance in health work. A committee made up of representatives of the National Association for the Study and Prevention of Tuberculosis, the Metropolitan Life Insurance Company, the U. S. Public Health Service, the Massachusetts State Department of Health, and tuberculosis associations in Massachusetts, New York, Connecticut and Pennsylvania was appointed to have charge of the work. Dr. Donald B. Armstrong, formerly connected with the work of the Association for Improving the Condition of the Poor of New York City, was selected as the director of the experiment. The plans made include the following items:

1. The establishment of an office, the appointment of a local committee, the introduction of the program to all the organizations and people in Framingham.
2. Complete care for known cases of tuberculosis.
3. The early discovery of unknown advanced cases.
4. A thorough knowledge of the whole town, including sanitary conditions, factory conditions, school conditions, commercial and office conditions and rural conditions.
5. Tuberculosis lectures and clinics by the country's most famous experts, for local physicians, emphasizing uniform and efficient work, and showing the way to the rest of the state and country for the use of the best methods of diagnosis and treatment.
6. The coordination of Framingham health activities, including the work of the demonstration committee, school health work, factory health work, the work of the board of health, infant health work and charitable relief.
7. The coordination and expansion of Framingham medical facilities, including laboratory, dispensary and hospital, with the establishment of necessary connections with outside medical agencies, such as the state and country sanatoriums, the Boston medical schools, etc.
8. An educational campaign carried on through general public channels, school and factory, etc., aimed at the detection and prevention of early cases of tuberculosis, the prevention of infection, and the creation of healthful conditions and thorough annual medical examinations for every one.
9. The thorough medical examination of all Framingham citizens who are willing to go to their physician or to the dispensary for this purpose.
10. Home care, with adequate nursing and medical facilities for tuberculosis cases. Hospital care, in state or county institutions, will be recommended and provided for in some way when necessary.

Discussing this program and the best methods of carrying it out, Dr. Armstrong said recently[1] that it was essential for the complete and successful use of available community agencies that mutually beneficial and cooperative relations be established with the health and medical representatives in Framingham. On the side of health and nursing, the problem presented no difficulty. The local health organization can meet the routine health and nursing needs. "But," says Dr. Armstrong, "in Framingham, as probably would be the case elsewhere, the problems of medical organization are most fundamental and at the same time most difficult. The success of many phases of the problem, including thorough medical examinations, the detection of early cases of disease, etc., depends on the sympathy and help of the members of the medical profession. Their criticism and approval of numerous steps must be had. Uniform diagnostic standards and methods for the examination and classification of disease are essential to the scientific value of the demonstration. . . . Medical work must be done through the practicing physician in such a way as not to interfere with normal medical procedure. . . . A local organized medical efficiency is necessary to meet these ends. . . . If the campaign to urge people to go to their doctors for thorough medical examinations is a success, here again the intelligent cooperation of the Framingham physicians will be needed."

What is to be expected of the town itself? Here again definite plans have been formulated. The following synopsis shows what Framingham is expected to do:

1. If the demonstration is to be a success, it must have the earnest cooperation of the Framingham physicians in the detection and reporting of tuberculosis cases, in the making of thorough medical examinations, etc. This will mean a considerable burden of work for the physicians, and for that reason will have to be paid for by the Framingham people themselves, sick or well, if possible, or by local charitable agencies and the demonstration committee's special fund for this purpose.
2. The demonstration must have the help and good will of Framingham town officials, private agencies, private citizens, factory owners, newspapers, etc.
3. The help of the antituberculosis society is essential, and all should be willing to follow completely the advice and treatment recommendations of their physicians.
4. Finally, Framingham should continue to meet its natural and normal town health obligations. These may be outlined as follows, and concerning them, assurances have been given the committee that most or all of them will be met either from the town funds or from funds to be provided by private organizations:
   - (*a*) The maintenance of a health office with a full-time officer and public health laboratory.
   - (*b*) A tuberculosis dispensary and full-time tuberculosis nurse.
   - (*c*) Medical school inspection, a full-time school nurse, and, if possible, a full-time school physician.
   - (*d*) An infant welfare clinic and at least a part-time infant welfare nurse.
   - (*e*) A district visiting nurse, the expense to be met in part at least by the Visiting Nurse Association, Metropolitan Life Insurance Company, assisted by the nurses at the hospital.
   - (*f*) The efficient coordination of charitable agencies.
   - (*g*) Open-air rooms in the schools and possibly a dental clinic.
   - (*h*) The cooperation of as many people as possible in making successful the campaign for thorough annual medical examinations.
   - (*i*) Full cooperation in the use of the old school building now used by the department of health as an isolation pavilion, as a temporary place for certain types of cases, if necessary, pending the completion of the county's hospital, particularly for patients who cannot wisely be cared for at home, owing to the exposure to infection of infants and children; the expense to be met jointly by the demonstration committee and the hospital.
   - (*j*) The cooperation with the committee in the use, if necessary, of another old school building to be used as a preventorium for children.
   - (*k*) Willingness on the part of patients to follow advice and treatment of their physicians.

Finally, what results are to be expected from this impressive and carefully planned experiment in municipal disease prevention? As formulated by the committee, they are:

1. The discovery and adequate care of all cases of tuberculosis, the reduction of sickness and deaths to a minimum.
2. The general health and sanitary improvement of all of Framingham and its population, and the prevention of other diseases as well, resulting in a reduction in the general death rate from all causes.
3. The demonstration of the belief that disease prevention for any town is cheaper than disease, both to the town and to the sick person.
4. The making of Framingham the world's healthiest spot and hygienic Utopia.
5. The spending locally of $100,000 or more.

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[1] Armstrong, D. B.: Framingham Health and Tuberculosis Demonstration, Boston Med. and Surg. Jour., 1917, **176**, 206.

6. The transformation of Framingham into the healthiest and safest place to trade and the safest town from which to advertise manufactured products—a substantial asset.
7. Fame for Framingham—the eyes of the medical, health, scientific and popular worlds are on her.
8. The working out, at the end of the experiment, of the best health and disease preventive machinery for a town of Framingham's size.
9. The demonstration of the cheapest and most efficient method for the prevention of tuberculosis—a plan for other towns the world over to copy.
10. The answer to the questions: Are we spending our money wisely? What methods in disease prevention are worth while?
11. The successful demonstration of a worthy program for the conquest of tuberculosis and for the enthronement of health.

The Framingham experiment will be followed by those interested in disease prevention and the conservation of human life. While it may not be determinative in its results, as far as other communities are concerned, it will at least give an opportunity for the testing of many theories and the working out of exact methods for disease control. Whether or not all the expected results are realized, the three year demonstration cannot fail to be a stimulus to the people of Framingham in securing better living conditions which will be an example for other cities to follow.

Children's Code and Its Enforcement

A commission recommended by the State Committee for Social Legislation and a number of other agencies interested in child welfare, appointed by the governor of Missouri to complete a code of laws for the welfare of children, has recently made its report. The report covers the subjects of statistics and social conditions, public administration, delinquents, defectives, destitute and neglected children, child labor, health and recreation, and education. The commission recommends: (1) the establishment of a board of public welfare in every county; (2) the creation of a children's court in every county as part of the circuit court, with provisions for a referee for the immediate hearing of children's cases in the absence of the judge of the circuit court; (3) statewide provisions for mothers' pensions; (4) a complete revolution in the status of illegitimate children, giving them practically the right of legitimate children; (5) state supervision of all private agencies caring for children; (6) the placing of all institutions for defectives and delinquents under the state department of education; (7) the providing of special classes in the schools for all types of defective children; (8) requiring children to complete the sixth grade in school unless the child has reached the age of 16.

Society Proceedings

COMING MEETINGS

American Medical Association, New. York, June 4-8.

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Genito-Urinary Surgeons, Rochester, Minn., May 21-23.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
American Dermatological Association, Cincinnati, May 24-26.
American Gastro-Enterological Assn., Atlantic City, April 30-May 1.
American Urological Association, Chicago, April 2-4.
Arizona Medical Association, Douglas, April 17-18.
Arkansas Medical Society, Little Rock, May 1-3.
Association of American Physicians, Atlantic City, May 2-3.
California State Medical Society, San Diego, April 17-19.
Connecticut State Medical Society, New Haven, May 23-24.
Florida Medical Association, Atlantic Beach, May 18-19.
Georgia Medical Association, Augusta, April 18-20.
Illinois State Medical Society, Bloomington, May 8-10.
Iowa State Medical Society, Des Moines, May 9-11.
Kansas Medical Society, Salina, May 2-4.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Mississippi State Medical Association, Jackson, May 8-9.
Missouri State Medical Association, Springfield, May 14-16.
Nat. Assn. for Study and Prev. of Tuberculosis, Cincinnati, May 9-11.
Nebraska State Medical Association, Lincoln, May 8-10.
New Hampshire Medical Society, Concord, May 16.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
Ohio State Medical Association, Springfield, May 14-16.
Oklahoma State Medical Assn., Lawton-Medicine Park, May 8-10.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.
Texas State Medical Association, Dallas, May 8-10.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Feb. 28, 1917

The President, Dr. Henry D. Jump, in the Chair

SYMPOSIUM ON BACKACHE

Backache as Viewed by the Internist

Dr. Joseph Sailer: There are few diseases in which backache may not occur. The first step in diagnosis is a careful history and a description of the pain. Exceedingly important is the question of the association of pain in other parts of the body. The patient will usually understate rather than overstate the duration of pain. The patient should remove all clothing, and often the presence of an eruption will determine the nature of the condition. This is particularly true of herpes zoster. Next in importance to the inspection of the back is the use of the Roentgen ray by which it is possible to detect disease of the spinal column, and also disease in situations other than the back, yet causing backache. In the occipital region, pain may be caused by suboccipital neuritis, brain tumor, especially cerebellar; meningitis, disease of the sphenopalatine ganglion, eyestrain, or ear disease. Frequently pain in the occipital region is associated with infectious disease. The pain which occurs in the shoulder girdle is sometimes very severe, and is due to a great variety of causes: disease of the cervical or upper dorsal spine, tumor of the spinal cord, aortic disease, brain tumor or meningitis. Pain in the shoulders is sometimes unilateral. It may occur in either shoulder in brachial neuritis, in intercostal neuritis, in diaphragmatic pleurisy, in disease of the lungs and pleura, particularly in the neighborhood of the apex, and is common in subclavian aneurysm, in bursitis and in osteomyelitis of the shoulder. On the right side pain occurs in the shoulder in disease of the gallbladder and sometimes in disease of the liver; on the left side in pylorospasm, ulcer of the stomach, aneurysm of the descending aorta and in diaphragmatic hernia. Among the most important causes of pain in the dorsal region of the spinal cord are secondary malignant tumors of the spine, osteosarcoma and esophageal disease. In the lumbar region, pain may be due to abdominal aneurysm, lumbar abscess (psoas), anemia, pregnancy, retroperitoneal sarcoma, bladder and rectal disease, uterine and ovarian disease and to constipation. Pain is also present in postoperative conditions sometimes due to faulty position on the table.

Backache from an Orthopedic Standpoint

Dr. Gwilym G. Davis: Of orthopedic conditions causing backache all may be included under "traumatism": actual blows, muscular strains, sprains of the joints, and strains due to static changes involving disturbances of the body balance due to weakness, etc., of the lower extremities. While actual blows seldom cause backache, there must be borne in mind the possibility of such injury being the starting point of tuberculosis. Roentgen-ray examination is here indicated. In obscure cases the patient should be examined to ascertain whether there are serious deformities of the limbs and whether the feet are properly shod. Persons suffering from habitual constipation are especially liable to backache. Among other sources of backache may be mentioned disease of the kidneys and uterus and malignant disease of the spine. No matter what the cause of the backache, a certain amount of support is usually of service, but curative only when the cause is local. The general condition must receive attention. Massage and exercises are to be avoided in ostearthritic conditions. People who are generally miserable and run down are apt to attribute their troubles to the back; in such patients hygienic in addition to supporting measures are required. There is scarcely a single measure to which a physician can resort in these painful backs which will be of more practical service than some form of support.

Gynecologic Aspects of Backache

Dr. Catharine Macfarlane: In 16 per cent. of 983 gynecologic cases backache was mentioned as a prominent symptom. The pelvic findings of these 159 cases comprised chiefly lacerations, retroversions, prolapse and inflammatory conditions, such as adherent appendages and endocervicitis. The incidence of marked nervousness in these 159 patients with backache was about 9.5 per cent., or about equal to the incidence of adherent appendages, and half as frequent as that of prolapsus uteri. It would seem that the neurasthenic state predisposes to backache of pelvic origin by lowering the resistance of the central nervous system. The fact that the backache in many of the reported cases was permanently relieved by appropriate gynecologic treatment compelled belief that these backaches were caused by the pelvic condition. The mode of production of backache is explained by the theory of referred pain. The diagnostic features of pelvic backache are that the pain is sacral or lumbosacral, is apt to be aggravated by the menstrual period, and is usually associated with objective symptoms of pelvic disease. Neurotic patients with purely subjective symptoms must be handled with great care, and caution exercised to avoid unduly emphasizing some trifling gynecologic condition which might merely coexist.

Backache as Seen by the Neurologist

Dr. M. H. Bochroch: It is impossible to make a definite or clear cut diagnosis of a spinal affection, either of functional or organic disease, from pains in the back. Neither the location, character nor intensity of the pains will justify it. They are merely the sign posts which point the way for deeper investigation. In conjunction with pains in the back there must be a searching history of the case in all its phases, and a separation and intelligent interpretation of the objective from the subjective symptoms.

DISCUSSION ON BACKACHE

Dr. Harry Hudson: Constipation as a cause of backache deserves more than passing mention. In the Samaritan Hospital we have frequently seen cases of supposed back trouble in which there is packing of the colon. Following purging, the Roentgen ray has shown that the persistence of the back pain was due to the fact that the colon had not been evacuated. Spinal curvatures, and strains of the static type are frequently overlooked as causes of pain in the occipital region. In my rather limited experience I do not think I have seen more than one or two cases of painful back due to Bright's disease. It is interesting to note that in the first examination of patients we may find the muscles on one side rigid, and on the other relaxed, and on subsequent examinations, possibly both sides rigid, or the muscular tension transferred to another portion of the back, although the pain remains in the same position. Certain conditions of muscular strain cause painful backs which are not yet explained.

Dr. J. T. Rugh: In myositis as a cause of pain in the back the hypodermic injection of hot salt solution, particularly into the body of the muscles, gives remarkable relief. In men in whom backache is relieved after a bowel movement, examination should be made of the seminal vesicles and prostate gland for infection. The Roentgen ray has shown a congenital malformation of the fifth lumbar vertebra in cases of backache occurring among laborers forced to flex the spine in their work. In fact, roentgenologists assert that it is unusual to find a normal fifth lumbar vertebra in these cases, and removal of the process of the fifth lumbar vertebra is being done by orthopedic surgeons with remarkable results in the cure of these cases.

Dr. William R. Nicholson: The reference to lack of pain in retroversions of the uterus would, I think, be better stated by saying that in nulliparous women without adnexal disease, immovable retrodisplacement caused pain only in rare instances. In multiparous women, pain is present under these conditions.

Dr. A. Bruce Gill: One is apt to be confused by the multiplicity of conditions that may cause pain in the back. They may be divided into: (1) diseases of the spinal column; (2) referred pain, and (3) mechanical causes. The mechanical causes are most often operative. Few people grow to adult life with perfect backs, and the spinal column should be examined from the mechanical point of view. Acute sprain of the back involving only the muscles is relieved by massage; the deep injuries are made worse, which is an important diagnostic feature. In the early treatment of backache, supportive measures may be advisable, with the subsequent employment of exercise, manipulations and gymnastics.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Orthopedic Surgery, Boston

March, XV, No. 3

1 *Relation of Blood Supply to Longitudinal Growth of Bone. S. L. Haas, San Francisco.—p. 157. To be concluded.
2 Scoliosis. E. G. Abbott, Portland, Me.—p. 172.
3 Analysis of Seventy-Five Cases of Tuberculosis of Spine in Adult. M. H. Rogers, Boston and T. M. Foley, Washington, D. C.—p. 208.
4 *Isolated Disease of Scaphoid Bone of Foot (Köhler's Disease); Report of Case. W. B. Hetzel, Pittsburgh.—p. 214.

1. **Blood Supply and Bone Growth.**—In order better to appreciate the effects of the various operative procedures and to emphasize the importance of the blood supply to bone, a detailed description and diagram of the direct blood supply to the metacarpal and metatarsal bones, as determined from the dissection of several injected specimens of the dog's foot, are given by Haas. In none of the five experiments, varying in length from twelve to fifty-nine days, is there any disturbance in growth following an incision down to the metacarpal or metatarsal bones. In only one of nine experiments was there any hindrance in the growth of the bone, when the incision extended down to the bones, with the separation of the overlying tissue. In a series of eleven experiments there was a very slight disturbance in growth after the ligation of the vessels on the dorsal surface of the foot. Cutting tissues from about the entire epiphyseal end of the metacarpal or metatarsal bone showed in six of the seven experiments that there is an appreciable loss of growth in the bone. There is not a complete cessation of growth, as a certain amount of blood enters from the diaphyseal end of the bone. In some instances there were gross changes visible in the region of the epiphyseal cartilage line. There was a greater disturbance in growth following the separation of the tissues from about the distal two-thirds than when only the tissues about the epiphysis are separated. In some of the experiments there was a complete cessation of growth. (To be concluded.)

4. **Köhler's Disease.**—No history of any injury could be elicited in Hetzel's case. Of the nine other cases reported, trauma was absent in four, and in two others was questionable or very slight. The von Pirquet reaction was negative, nor was there evidence of the disease in any organs. The Wassermann test was negative. No bacteriologic or microscopic studies have been possible because no operations have been performed, the condition being cured spontaneously. The treatment is rest and support.

American Journal of Physiology, Baltimore

March, XLII, No. 4

5 Physiology of Atrioventricular Connection in Turtle. Irritability and Rhythm Formation. H. Laurens, New Haven, Conn.—p. 513.
6 *Bile Pigment Metabolism. Bile Pigment Output Influenced by Eck Fistula. G. H. Whipple and C. W. Hooper, San Francisco.—p. 544.
7 *Origin of Proteolytic Ferments. Character of Certain Ferments. L. H. Sloan, Chicago.—p. 558.
8 *Influence of Partial Thyroidectomy in Pigs. C. C. Palmer, St. Paul, Minn.—p. 572.

6. **Eck Fistula and Bile Pigment Output.**—An Eck fistula, Whipple and Hooper show, allows the portal blood to pass directly into the vena cava and excludes it from the liver. The Eck fistula liver is atrophic with central fatty degeneration, and shows evidence of subnormal functional capacity. The Eck fistula liver secretes much less bile pigment than the normal liver—one-third to three-fourths of normal or even less. Splenectomy added to the combined bile and Eck fistula does not essentially modify the result. Simple bile fistula and the combined bile and Eck fistula dogs show the same histologic picture in the hematopoietic system. This means that bile pigment formation is in part dependent on liver function—in other words, not solely dependent on red cell disintegration. It is at least possible that the production

of other body pigments (that is, hemoglobin) may depend in part on the constructive capacity of the liver.

7. **Origin of Proteolytic Ferments of Blood.**—According to Sloan, normal blood serum contains a weak proteolytic ferment which carries digestion to the amino-acid stage. The concentration of this ferment is not constant. There is an increased proteolytic ferment action of serum during pregnancy as shown by the dialysis method of Abderhalden. This cannot be detected by the Van Slyke method. The injection of placental suspension does not give rise to an increased production or mobilization of ferments when tested by the dialysis method or the Van Slyke method. The injection of the split products of pepsin-trypsin digestion of human placenta gives rise to an increase in the ferments. This increase can be shown by the dialysis method but not by means of the Van Slyke method. The theory underlying the Abderhalden reaction as advanced by Abderhalden does not explain the increase in ferments found during pregnancy. The basis of the theory would seem to be the entrance of split products of placental hydrolysis rather than of chorionic villi and cells. The Van Slyke method is not applicable to determinations of the above character in which a nonsoluble, moist, complex, protein substance is incubated with serum in a test tube but without dialysis.

8. **Partial Thyroidectomy in Pigs.**—The work reported on by Palmer was undertaken with the view of determining if cretinism can be produced. He found that extirpation of the main thyroid in young pigs does not induce cretinism, at least within a period of nearly one year. There is a slight retardation in growth, but the pigs operated on act similar to the controls, except that they show a marked lowered resistance to infection. Postmortem examination of the thyroidectomized pigs revealed a marked hypertrophy of the accessory thyroid tissue. The main thyroid plays an important part in the normal body resistance to infection and when this structure is removed the accessory thyroids cannot completely compensate. In pigs a degree of hypothyroidism, not sufficient to lead to marked changes in physical appearance of the animal, lowers the resistance to infection to quite a degree, and impairs the functions of reproduction.

Boston Medical and Surgical Journal

March 8, CLXXVI, No. 10

9 *Results of Treatments for Fractures of Carpal Bones. H. W. Marshall, Boston.—p. 333.
10 Inebriety and How To Control It. I. H. Neff, Norfolk.—p. 337.
11 Intrathoracic Goiter. F. H. Lahey, Boston.—p. 341.
12 Suppurative Labyrinthitis; Critical Review of Its Diagnosis and Treatment. A. B. Duel, New York.—p. 345.
13 Paravertebral Anesthesia; Report of Fifty Cases. F. C. W. Konrad, Boston.—p. 351.
14 *Large Ovarian Tumor. F. A. Pemberton.—p. 354.
15 Case of Aspermia. Successfully Treated with Dried Suprarenal Cortex. S. W. Little, Rochester, N. Y.—p. 355.
16 Case of Congenital Dislocation of Shoulder Joint. F. E. Peckham, Providence, R. I.—p. 355.
17 Treatment of Pain and Distress in Digestive Disorders. A. E. Austin, Boston.—p. 357.

March 15, No. 11

18 Study of Problem of So-Called Defective Delinquent and What Has Been Done in Massachusetts. L. V. Briggs, Boston.—p. 371.
19 What Massachusetts Is Doing for Syphilitic at State Infirmary at Tewksbury. O. M. Lewis, Boston.—p. 380.
20 *Vasomotor Unrest in Insane. C. J. Enebuske, Säter, Sweden.—p. 385.
21 Pulmonary Syphilis; Report of Probable Case. C. Phipps, Boston.—p. 390.

9. **Treatments for Fractures of Carpal Bones.**—Eighty-one cases are analyzed by Marshall. Among these there were sixty-four cases of simple fracture of the scaphoid, three cases of fracture of scaphoid with fracture of styloid process of radius, and five cases of fracture of scaphoid with dislocation of semilunar. The results from treatment of these cases indicate that early fractures of scaphoid bones without displacement of fragments should be protected for a short time, one to four weeks, then passive and active movements gradually resumed until painful symptoms subside. Such early fractures resulting from slight injuries should not be operated on, because many wrists regain good function with very little medical care. Old ununited fractures of scaphoid bones, without displacement of fragments, however, should be operated on if soreness persists for a long period, or recurs frequently enough to cause serious disability. The length of time which should be allowed to elapse between injury and time of operation differs widely according to different occupations, different degrees of initial injuries, and varying constitutional conditions of patients. Fractures with accompanying irreducible dislocations of semilunar bones should be operated on soon. Perfect restorations of wrist motions after operations appear to be rare, but fairly serviceable wrists ultimately should be expected.

14. **Large Ovarian Tumor.**—Pemberton cites a case in which the tumor and its contents weighed 72 pounds. Pathologically it was a unilocular pseudomucinous cyst adenoma lined by a single layer of high cylindric cells and showing no papillary hypertrophies growing from the epithelium. Only three cases of larger cysts which have been successfully removed are recorded in the literature.

20. **Vasomotor Unrest in Insane.**—These studies are based on 20,000 measurements of the tension of the radial pulse in 250 cases of various forms of insanity. According to Enebuske vasomotor unrest is a common occurrence in the insane, but his observations regarding the vasomotor unrest in the insane do not furnish reasons enough to call for any declaration of opinion regarding the causes and origin of insanity. Characteristic of the manodepressive group is vasomotor unrest at hypertension level, continuous within certain periods of time. That is to say, that the blood pressure in radialis is subject to frequent alterations between higher and lower values about a middle value which always is higher than 150 mm. Hg. This alterability ceases after a period of time, briefer or more prolonged, as the case may be. When the vasomotor unrest ceases, vasomotor tranquillity sets in. Whenever this occurs, the disease has either run its course or is altered. The tension of the radial pulse in the praecox group is characterized by continuous vasomotor unrest at hypertension, hypotension, or middle level. The blood pressure in praecox presents by far more numerous variations than in the manodepressive group. In the manodepressive group, the psychic symptoms having run their course, when remission has entered or health is restored, the vasomotor unrest subsides spontaneously and vasomotor tranquillity at normal blood pressure manifests itself. In the praecox group, on the contrary, the vasomotor unrest is continuous without time limit through periods of remission with vasomotor tranquillity (exception for periodical praecox). In all these forms of insanity is found vasomotor unrest at different blood pressure levels during the acute and subacute stages. During periods of a relatively more tranquil vasomotor condition, the receptivity and responsiveness of the insane to psychotherapy and pedagogic influence (working therapy, etc.) is markedly increased in a majority of the cases observed.

California State Journal of Medicine, San Francisco

March, XV, No. 3

22 Animal Experimentation and Medical Progress. G. H. Whipple, San Francisco.—p. 68.
23 *Report of Fifty Cases of Tuberculosis of Kidney and Bladder Clinically Cured without Operation. F. S. Dillingham, Los Angeles.—p. 70.
24 Limitations of Roentgenology in Tumors of Kidney. A. Soiland, Los Angeles.—p. 73.
25 Treatment of Syphilis. G. MacGowan, Los Angeles.—p. 73.
26 Stenosis of Duodenum; Report of Cases. P. S. Campiche, San Francisco.—p. 76.

23. **Tuberculosis of Kidney and Bladder Clinically Cured without Operation.**—This report by Dillingham is made of patients who have presented themselves with both sides infected or who absolutely refused to be operated. Dillingham says that with the best hygienic care, compatible with the patients' occupations, cautioning them not to overdo physically, using extreme gentleness in the care of the cystitis and with small doses of tuberculin regularly given and carefully increased, not necessarily to the highest point of toleration for the individual patient, but to the point of greatest clinical gain, a great many who refuse to be operated on, or who come with both sides infected, may be relieved, and possibly cured,

and certainly may be made more comfortable. Of these fifty patients, 90 per cent. have been able to keep at their work during the course of treatment or were able to return within a very few weeks. Two patients developed tuberculous epididymitis in the course of their treatment. Great care was taken not to get a reaction with the tuberculin. In the average case 1/75,000 mg. was given twice a week and so gradually increased that there was never a local or general reaction. In those cases, complicated by lung infections, this initial dose was reduced to 1/150,000 mg. As a guide for increasing the dose in the majority of the cases, Dillingham relied on the following: a feeling of well-being and less of the tired feeling, increase in weight and appetite, improvement as to frequency either day or night, or both. Along with careful diet and hygienic measures, Dillingham is a firm believer in the use of silver nitrate for bladder irrigations, beginning with a pint of a 1/50,000 solution in distilled water, the rule being not to cause irritation either from the strength of the silver or the rapidity of its injection. In increasing the strength of the silver, which is done as rapidly as possible, the bladder should never burn.

Cleveland Medical Journal

January, XVI, No. 1

27 Interpretation of Stereoroentgenograms of Mastoid. J. M. Ingersoll, Cleveland.—p. 1.
28 Psychoneurosis—Emotionalism as Genetic Factor. H. H. Drysdale, Cleveland.—p. 5.
29 Conservative Surgery in Splenomegaly; Report of Cases. A. Peskind, Cleveland.—p. 16.
30 Pneumoliths; Report of Cases. L. E. Brown, Akron.—p. 21.
31 Importance of Enlarged Rectal Valves in Causing Autotoxemia. W. M. Gregory, Berea.—p. 26.

Florida Medical Association Journal, Jacksonville

February, III, No. 8

32 Valvular Lesions in Aged. G. E. Henson, Jacksonville.—p. 225.
33 Senile Bronchitis. H. L. Merryday, Daytona.—p. 229.
34 Effects of Senility on Kidney. L. B. Bouchelle, New Smyrna.—p. 229.
35 Management of Senile Debility. J. Reeve, Deland.—p. 230.
36 Urinary Troubles of Aged. H. K. DuBois, Port Orange.—p. 231.
37 Diet in Senility. W. C. Chowning, New Smyrna.—p. 232.
38 Degenerative and Vascular Changes of Aged—Arteriosclerosis and Atheroma. J. E. McGunagle, Daytona.—p. 233.
39 "Indigestion." G. M. Niles, Atlanta, Ga.—p. 234.
40 Colle's Fractures. J. S. McEwan, Orland.—p. 237.
41 Diabetes Mellitus. D. W. McMillan, Pensacola.—p. 238.

Journal of Infectious Diseases, Chicago

March, XX, No. 3

42 *Hypersensitiveness to Tuberculin as Determined by Intracutaneous Injection of Different Dosages. M. S. Cohen, Philadelphia.—p. 233.
43 Virulence and Toxin Formation in B. Diphtheriae. W. E. Cary, Chicago.—p. 244.
44 *Germicidal Action and Specific Bacteriotropism of Quinin and Urea Hydrochlorid, Ethylhydrocuprein and Other Cinchona Derivatives on Pneumococci in Vitro. S. S. Cohen, J. A. Kolmer and G. D. Heist, Philadelphia.—p. 272.
45 Various Methods of Determining Bactericidal Action of Substances in Vitro and Their Relation to Chemotherapy of Bacterial Infections. J. A. Kolmer, S. S. Cohen and G. D. Heist, Philadelphia.—p. 293.
46 *Protective and Curative Value of Quinin and Urea Hydrochlorid, Ethylhydrocuprein, and Other Cinchona Derivatives in Experimental Pneumococcus Infections. S. S. Cohen, J. A. Kolmer and G. D. Heist, Philadelphia.—p. 313.
47 *Influence of Quinin and Urea Hydrochlorid, Ethylhydrocuprein, and Other Cinchona Derivatives on Leukocytosis and on Phagocytosis of Pneumococci in Vitro. J. A. Kolmer, S. S. Cohen and E. Steinfield, Philadelphia.—p. 333.
48 *Allergic Skin Reactions in Pneumonia to Type Strains of Pneumococci. E. Steinfield and J. A. Kolmer, Philadelphia.—p. 344.

42. **Hypersensitiveness to Tuberculin.**—This phenomenon was studied by Cohen in 28 patients. The character of the response varied. An areola alone was noted in 12 patients and 17 tests; induration alone in 4 patients and 5 tests; a papule alone in 4 patients and 5 tests; areola and induration together in 14 patients and 34 tests; areola and papule in 19 patients and 37 tests; induration and papule in 2 patients and 3 tests; and areola, induration, and papule in 17 patients and 48 tests. Only when induration or a papule was present was the response regarded as a true reaction. The patients varied greatly in their degree of hypersensitiveness, one patient reacting to one ten-millionth of a milligram, and another only to ten milligrams. Six patients reacted to one ten-millionth of a milligram, 2 patients to one millionth of a milligram, 7 to one one-hundred-thousandth of a milligram, 2 to one ten-thousandth of a milligram, 1 to one thousandth of a milligram, 1 to one hundredth of a milligram, 3 to one tenth of a milligram, 2 to one milligram, and 1 to ten milligrams. Great irregularity was shown in the reactions. Only 12 of the 28 reacted to all the doses of tuberculin above the one that caused the minimal reaction. Fifteen patients were again tested from two and one-fourth to five and one-half months after the degree of hypersensitiveness had been first determined. Five reacted in about the same manner as before. Four reacted to 10 times the previous minimal reaction dose, 3 to 100 times it, 1 to more than 100 times it, and 1 to 1,000 times it, while 1 reacted to one hundredth of it. Tuberculin hypersensitiveness seems to correspond with tuberculin tolerance. The appropriate therapeutic dose as determined by intracutaneous injection is approximated clinically by increasing the dose until a favorable systemic reaction is produced, then maintaining the dose producing this until it no longer produces such reaction, and then again increasing it. The therapeutic value of tuberculin, properly administered, can be seen in the accompanying decrease in hypersensitiveness.

44. **Action of Quinin, etc., on Pneumococci.**—This report is confined to certain preliminary studies concerning the germicidal action of quinin, its compounds, and its congeners, especially their action on pneumococci. Besides ethylhydrocuprein and methylhydrocuprein and their respective hydrochlorids, the chemicals chosen for study were the alkaloid quinin and its monobasic and dibasic salts with hydrochloric, hydrobromic, and sulphuric acids; its salicylate, lactate, arsenate, valerianate, and tannate; and the double salt of hydrochloric acid with quinin and urea. Types I, II and III of the pneumococcus were selected as the micro-organisms for investigation. With the centrifugation method the various salts of quinin proved bactericidal for all types in dilution of about 1:100 (least active 1:80; most active 1:200). Methylhydrocuprein hydrochlorid had about the same germicidal value as the quinin compounds. The compound of quinin and urea hydrochlorid was slightly more active than the other quinin compounds against Type II (1:200) and Type III (1:150). Ethylhydrocuprein hydrochlorid, however, proved 3.5 to 8 times as active as the most active of the quinin salts (bactericidal in dilution of 1:700 and 1:800). Cross bactericidal tests—employing, on the one hand, quinin and ethylhydrocuprein, with cultures of *B. typhosus* and of a staphylococcus, and on the other hand, arsenobenzol, phenol, mercuric chlorid, sodium salicylate and other substances, with cultures of pneumococci, show that the cinchona derivatives possess a high degree of specific pneumococcidal activity. The pneumococcidal activity of ethylhydrocuprein hydrochlorid was reduced to one-fifth or sometimes one-tenth part in a menstruum of serum, as compared with that shown in normal salt solution. The activity of the majority of the quinin salts tested was, relatively, but slightly reduced in serum. The activity of phenol in serum was reduced to one-half, and that of mercuric chlorid to one-tenth, of their respective values in salt solution.

46. **Chemotherapy of Pneumococcus Infections.**—Although the authors' study shows a real protective and curative value in ethylhydrocuprein in experimental pneumococcus infections, their results demonstrate a somewhat less marked antipneumococcus potency on the part of this drug than has been previously reported. Other cinchona derivatives are shown to possess also a certain degree of protective power in experimental infections. In their opinion ethylhydrocuprein stands today in a position somewhat similar to that of atoxyl in the treatment of experimental trypanosomiasis. The authors emphasize further that in so far as the facts here reported may be considered to bear on the value of quinin compounds in the treatment of pneumonias in man, that the use of these agents as advocated by one of them forms but one element in a therapeutic plan, and that, at least until some more potent pneumococcide in vitro than even ethylhydrocuprein is found,

it is the plan as a whole, and not any single feature only, that is offered for the consideration of practicing physicians.

47. **Action of Quinin, Etc., on Phagocytosis of Pneumococci in Vitro.**—The experiments here reported indicate that probably a part of the curative effect of quinin and urea hydrochlorid, ethylhydrocuprein, and other cinchonics in pneumococcus infections is to be ascribed to their influence on phagocytosis.

48. **Skin Reactions in Pneumonia.**—Allergic reactions were observed by Steinfield and Kolmer in 30 per cent. of a series of cases of lobar pneumonia following the intradermal injection of washed and heat-killed pneumococci. True reactions were not observed among normal persons or those suffering with various chronic diseases, and the presence of pneumococci in the upper air passages during health apparently does not sensitize in so far as this condition is detectable by skin tests. All reactions occurred after the crisis or after the infection had been present over a prolonged period. There was no constant relation between reactions to the protein of various types of pneumococci and the types found in the sputum. It is probable that the allergic reactions to pneumococcus protein are of a more general character than the agglutination reactions.

Laryngoscope, St. Louis

February, XXVII, No. 2

49 Surgery of Temporomandibular Articulation. L. W. Dean and W. F. Boiler, Iowa City, Iowa.—p. 65.
50 Rational Treatment of Stuttering. M. K. Scripture and E. Jackson, New York.—p. 74.
51 Repair of Tympanic Membrane in Perforations of Long Standing. A. M. Dunlap, Shanghai, China.—p. 81.
52 Cerebral Complication of Acute Mastoiditis with Very Sudden Unusual Symptoms. W. T. Patton, New Orleans.—p. 86.
53 Safety-Pin in Larynx; Perilaryngeal Abscess Treated for Diphtheria. H. L. Lynah, New York.—p. 93.
54 Case of Hemiplegia Occurring Immediately After Tonsillectomy Under General Anesthesia. W. A. Scruton, New York.—p. 96.
55 Edema of Glottis Following Tonsillectomy. E. L. Myers, St. Louis.—p. 98.
56 Curious Case of Diphtheric Membrane in Lung Simulating Foreign Body, Diagnosed and Removed by Bronchoscope. R. H. Skillern, Philadelphia.—p. 100.
57 New Instrument for Attachment to Suction Apparatus to Maintain Dry Field in Tonsillectomy Under General Anesthesia and to Lessen Occurrence of Postoperative Pneumonia. S. Israel, Houston, Texas.—p. 102.

Medical Record, New York

March 10, XCI, No. 10

58 Blood Pressure Test and Its Present Status in Life Insurance Examinations. F. A. Faught, Philadelphia.—p. 399.
59 Massage in Raynaud's Disease (Dry Gangrene). D. Graham, Boston.—p. 402.
60 Subdeltoid Bursitis with Lime Salt Deposit. M. K. Smith, New York.—p. 406.
61 Calcium Salts for Acidity and Associated Disorders. J. Aulde, Philadelphia.—p. 408.
62 Vaccine Treatment of Coryza. H. L. Fifield, Syracuse.—p. 409.
63 Clinical Studies in Hyperthyroidism. L. F. Watson, Chicago.—p. 411.
64 Dont's in Hemorrhage and Blood Diseases. M. Chideckel, Baltimore.—p. 412.

Missouri State Medical Association Journal, St. Louis

March, XIV, No. 3

65 *Recurrent Transient Complete Heart Block. S. Simon and G. C. Robinson, St. Louis.—p. 97.
66 *Treatment of Carcinoma of Mouth. V. P. Blair, St. Louis.—p. 101.
67 Gangrene of Extremities; Report of Cases. M. F. Engman, St. Louis.—p. 105.
68 Value of Early Treatment of Mental Disorders. F. M. Barnes, Jr., St. Louis.—p. 108.
69 *Trichiniasis; Report of Three Sporadic Cases. L. H. Hempelmann, St. Louis.—p. 111.
70 Cooperation and Loyalty of Medical Men in Local Communities. M. P. Overholser, Harrisonville.—p. 113.
71 Factors of Safety in Surgery. W. Bartlett, St. Louis.—p. 116.

65. **Transient Complete Heart Block.**—The case reported by Simon and Robinson is an example of functional recovery of the auriculoventricular conduction between attacks of complete heart block. The electrocardiograms showed complete heart block only on one occasion, but the clinical observations and history make it clear that such a condition occurred repeatedly, while records obtained between periods of block revealed but slight depression of the auriculoventricular conduction. Syncopal attacks occurred frequently over a period of two years. Between attacks the cardiac mechanism was practically normal. The authors are of the opinion that the patient probably had an organic lesion affecting the conducting system, not only in junctional tissues, but also in the ventricles. That this damage never led to partial block, but caused apparently a sudden change from the normal beat to complete block is of interest.

66. **Treatment of Carcinoma of Mouth.**—Fifty cases are analyzed by Blair. In thirty-two cases, which included the medium grade, the far advanced and the inoperable, radical cures were done or attempted by one or several operations; five being the most done on one patient before all tissues likely to be infected were removed and repair effected. In all, fifty-three operations were done on these thirty-two patients. Seven died while in the hospital. Of the fifty cases analyzed, four were far advanced and three were inoperable within two months after they had attracted the patient's attention. The majority of them could and should have been recognized at a time when the operative death rate should be almost nil and the cures at least around 70 per cent. Blair emphasizes the fact that carcinoma of the inside of the mouth, now generally regarded as one of the most hopeless forms of disease, is so chiefly on account of largely avoidable procrastination and partly on account of pernicious treatment. When the public is taught the advisability of consulting a physician or a dentist in regard to every localized thickening, discoloration, crack or ulceration that appears within the mouth and which persists for more than a few days; when the physician or dentist consulted will bend his efforts toward making an accurate diagnosis rather than dismissing it as inconsequential or tentatively using various irritants in an attempt to cure it; when patients of cancer age with leukoplakia or other chronic epithelial change are warned of the danger of cancerous degeneration and of the frequently insidious nature of the onset of the change; when surgeons operating on mouth carcinoma will make sufficiently wide local excisions and extensive painstaking regional lymphatic dissections, not curtailing the latter because the cancer is early, but rather making the dissection thorough in the early cases on account of the greater chance of curing them, then, Blair says, will the results of operation for cancer of the inside of the mouth compare favorably with the results obtained in other regions.

69. **Eosinophilia in Trichiniasis.**—The maximum eosinophilia in the three cases reported by Hempelmann, was 46, 40 and 30.4 per cent., respectively, and in like order the lowest polynuclear count was 37.8, 32 and 51.2 per cent., respectively. Mast cells were present in the first two cases, 0.3 and 4 per cent., respectively. Hempelmann advises that trichiniasis must be considered when confronted by an obscure febrile disease. The fact that two of these three patients first consulted oculists under the impression that there was something wrong with the eyes shows how necessary it is for oculists particularly to be familiar with the picture of this disease.

New Jersey Medical Society Journal, Orange

March, XIV, No. 3

72 Cancer. E. Staehlin, Newark.—p. 95.
73 Preparation for Medical Practice. L. Emerson, Orange.—p. 99.
74 Ethical Practice; Its Scope and Its Limitations. G. E. Harbert, Beverly.—p. 101.
75 Some Lessons of 1916 Mobilization. S. A. Cosgrove, Jersey City.—p. 104.
76 Unpleasant Postmobilization Meditations. H. B. Orton, Newark.—p. 108.
77 Fatal Case of Bichlorid Poisoning from Vaginal Absorption. W. P. Conaway, Atlantic City.—p. 110.
78 Acute Lymphatic Leukemia. Developing Forty-Eight Hours After Minor Surgical Procedure. F. H. Glazebrook, Morristown.—p. 11.

New York Medical Journal

March 10, CV, No. 10

79 Oral Sepsis. J. M. Anders, Philadelphia.—p. 433.
80 Medical Notes of Early New England. E. E. Cornwall, Brooklyn.—p. 435.
81 Kidney in Pregnancy. W. E. Parke, Philadelphia.—p. 440.
82 Gastric Onset of Pulmonary Tuberculosis. A. Bassler, New York.—p. 443.

83 Wassermann Paradoxus. D. M. Kaplan, New York.—p. 444.
84 Mental Factors in Etiology of Psychoses. C. Ricksher, Kankakee, Ill.—p. 444.
85 Typhlitis or Chronic Appendicitis. L. H. Levy, New Haven, Conn.—p. 449.
86 Sane and Rational Method in Treatment of Acute Gonorrhea. H. J. Millstone, South Chicago.—p. 451.
87 Use of Electrochemical Iodin in Urethral Infections. G. Greenberg, New York.—p. 453.

Pennsylvania Medical Journal, Athens

February, XX, No. 5

88 Early Care of Suppurative Conditions of Middle Ear and Mastoid. N. S. Weinberger, Sayre.—p. 321.
89 *Treatment of Deformed Union and Nonunion of Fractures. J. B. Roberts, Philadelphia.—p. 324.
90 *Treatment of Compound Fractures. J. M. Wainwright, Scranton.—p. 328.
91 *Criminal Epileptic with Consideration of Epilepsy as Medicolegal Problem. N. S. Yawger, Philadelphia.—p. 332.
92 Ringworm of Scalp Cured with Roentgen-Rays; Report of Eighty-Three Cases. F. C. Knowles and J. B. Ludy, Philadelphia.—p. 336.
93 Duty of Medical Profession in Problem of Cripple. J. T. Rugh, Philadelphia.—p. 339.
94 *Types of Pneumococci in Infants and Children. A. G. Mitchell, Philadelphia.—p. 343.
95 *Specific Treatment of Acute Lobar Pneumonia. R. I. Cole, New York.—p. 345.
96 *Treatment of Croupous Pneumonia by Other Than Specific Methods. M. H. Fussell, Philadelphia.—p. 351.
97 *Acidosis. J. H. Austin, Philadelphia.—p. 356.
98 *Id.; Report of Cases. C. L. Palmer, Pittsburgh.—p. 359.
99 Relative Infrequency of Drug Habit Among Middle and Upper Classes. Treatment and Final Results. F. X. Dercum, Philadelphia.—p. 362.

89. Abstracted in The Journal, Nov. 4, 1916, p. 1395.

90, 94 and 95. Abstracted in The Journal, Nov. 11, 1916, p. 1471.

91. Abstracted in The Journal, Oct. 14, 1916, p. 1179.

96. **Treatment of Croupous Pneumonia.**—The six essentials of treatment which, Fussell says, are applicable to practically every case are: early recognition of the case; absolute rest, mental as well as physical; abundance of fresh air, pure, unheated, unbreathed air, admitted into the room through wide open windows; proper amount of good nourishing food; constant watchfulness by a good trained nurse; administration of proper drugs at the proper times. Fussell points out that while the temperature ranges between 103 and 105 F. for eight or nine days this degree of temperature is not particularly harmful. Baths and sponges are not necessary, and it would seem that the high temperature for that length of time is not more harmful than the disturbance which their administration involves. Cold may be applied to the head or to the afflicted side of the chest with the result of controlling the temperature to a certain extent. Coal tar antipyretics should never be used.

Each of the conditions of the circulation needs a different treatment. The first with high and often irregular fever, possibly with a low leukocytic count, and low muttering delirium, fresh air, if it has not already been used, cold sponges, normal salt solution, whether by hypodermoclysis or intravenous injection or proctoclysis, is valuable. Caffein is used in the form of caffein sodium benzoate hypodermically; strychnin also is valuable. Digitalis should be used, but its value is much more problematical. In the second condition, dilatation of the right side of the heart with a high blood pressure, cyanosis, with an accentuation of the second pulmonary sound, and bloodletting is of the greatest amount of value. Here, too, the use of digitalis is very valuable. Other cardiac stimulants also can be called into use such as caffein and ammonia, digitalis being the most useful. The third condition with sudden fall of blood pressure, running pulse and leaking skin is the most hopeless of all. Strychnin, caffein, the intravenous injection of epinephrin chlorid may be tried. In the author's experience, however, this is of little value. The pressure will rapidly rise, but is of extremely short duration. Strophanthin, or digitalis must be used hypodermically, with the hope of strengthening the heart muscle. Oxygen may be used and will give some comfort to the patient, but there is no lasting value by its use.

97. Abstracted in The Journal, Oct. 28, 1916, p. 1327.

98. **Acidosis.**—In all acute infections in which the diagnosis is not absolutely clear Palmer believes it is advisable to have urinalysis for acetone and diacetic acid; in fact, in routine urinalysis it is advisable to test for these substances, inasmuch as it might throw considerable light on certain obscure conditions. It is also advisable, in suspected cases, to estimate the carbon dioxid tension of the alveolar air.

Public Health Journal, Toronto

February, VIII, No. 2

100 Syphilis from Medical Aspect. A. McPhedran, Toronto.—p. 33.
101 Public Health Aspects of Venereal Diseases. C. J. Hastings, Toronto.—p. 37.
102 Attitude of Hospital. C. K. Clarke, Toronto.—p. 41.
103 Venereal Disease Problem from Military Standpoint. G. Bates.—p. 43.
104 Need for Sanitary Control and Minimum Standard of House Construction. F. Cartlidge, Moose Jaw, Sask.—p. 52.
105 Hours of Work in Relation to Efficiency and Output. J. W. S. McCullough, Toronto.—p. 60.

Southern Medical Journal, Birmingham

March, X, No. 3

106 *Correlation of Laboratory and Clinical Teaching. G. Dock, St. Louis.—p. 187.
107 *Significance of Hypertension. C. W. Strickler, Atlanta, Ga.—p. 191.
108 Renal Functional Tests. J. T. Geraghty, Baltimore.—p. 194.
109 Infant Stools as Diagnostic Aids to General Practitioner. W. Weston, Columbia, S. C.—p. 197.
110 *Treatment of Syphilis with Arsenic Preparations. E. H. Martin, Hot Springs, Ark.—p. 201.
111 Public Health Activities in Southern States with Suggestions for Increased Efficiency. W. S. Leathers, University, Miss.—p. 213.
112 Rôle of County Health Officer in Public Health Work.—T. M. Dye, Clarksdale, Miss.—p. 218.
113 *Health Insurance; Its Relation to Medical Profession. B. S. Warren, Washington, D. C.—p. 222.
114 Gastric Cancer. W. A. Bryan, Nashville, Tenn.—p. 230.
115 *Neglected Appendicitis. J. L. Crook, Jackson, Tenn.—p. 233.
116 *Treatment of More Common Fractures. L. E. Burch, Nashville, Tenn.—p. 237.
117 *Value of Genupectoral Position for Bastedo's Sign in Chronic Appendicitis. J. D. S. Davis, Birmingham.—p. 240.
118 *Basal Celled Cancers of Skin. H. H. Hazen, Washington, D. C.—p. 241.
119 Aural Phenomena Result of Unusual Influences. E. H. Cary, Dallas, Texas.—p. 249.
120 Submucous Resection of Nasal Septum. W. T. Patton, New Orleans.—p. 253.
121 Id.; Report of One Hundred Cases. C. S. Dodd, Petersburg, Va.—p. 257.

106. Abstracted in The Journal, Dec. 23, 1916, p. 1967.

107. **Significance of Hypertension.**—Of all the theories advanced as a cause of hypertension, Strickler believes the toxic to be most rational; and while the manner in which it acts cannot be explained nor can the agents be named, the author believes we possess the clinical evidence that they respond more quickly and remain well for a longer period of time when this condition has been relieved. Hypertension is not a cause of nephritis or arteriosclerosis, nor is it caused by them, but is associated with them and may be influenced to some extent by them. Worry, mental and physical strain may keep up a moderate hypertension.

110 and 113. Abstracted in The Journal, Dec. 23, 1916, p. 1966.

115 and 116. Abstracted in The Journal, Dec. 23, 1916, p. 1967.

117. **Bastedo's Sign in Chronic Appendicitis.**—Davis agreed with Goodman and Lueders that the Bastedo test is not pathognomonic of chronic appendicitis and that there is no constancy in the results obtained with it. But, he says, if the patient is placed in the knee chest position and a rectal tube introduced into the rectum, the sigmoid at once becomes inflated with air, straightens out, and fluid may be made to pass through the sigmoid up into the colon. So he came to the conclusion that failures were due to not getting air to the head of the colon. In a case in which he suspected a chronically inflamed appendix, he had inflated the rectum by the Bastedo method and failed to get pain on pressure over the cecum. He placed the patient in the knee chest position and inflated the colon, which caused acute pain at McBurney's point. When the patient was turned on the back, pressure

over the appendix caused severe pain. Since this experience he has been in the habit of placing all suspected chronic cases of appendicitis, who do not give pain on pressure before colon inflation, in the knee chest position for air distention with uniform results. In every case in which pain was so induced an inflamed appendix was found at operation.

118. Abstracted in The Journal, Dec. 23, 1916, p. 1968.

Vermont Medicine, Rutland

February, II, No. 2

122 Fractures of Lower End of Humerus. J. B. Wheeler, Burlington. —p. 29.

Washington Medical Annals

January, XVI, No. 1

123 Acidosis and Renal Insufficiency. W. J. Mallory, Washington, D. C.—p. 11.
124 Case of Spurious Hermaphroditism. J. Constas, Washington, D. C. —p. 19.
125 Two Cases; Cystic Dilatation of Ends of Ureters and Foreign Body in Bladder. A. Kemble, Washington, D. C.—p. 20.
126 Fracture of Femur; Newer Methods of Treatment. W. P. Carr, Washington, D. C.—p. 23.
127 Congenital Pyloric Stenosis in Baby Five Weeks Old—Operation. W. B. Marbury, Washington, D. C.—p. 27.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

February, XXI, No. 9

1 Some Aids to Accuracy and Rapidity in Roentgen Ray Localization. W. Oram.—p. 277.
2 Case of Multiple Exostoses and Abnormalities of Osseous System Occurring in Soldier on Active Service in France. J. McKail. —p. 286.
3 Use of Localization Methods in Elucidation of Doubtful Shadows in Kidney Region. F. Hernaman-Johnson.—p. 291.
4 Two Radium Applicators for Malignant Disease of Mouth and Pharynx. C. H. Bubb.—p. 293.

British Journal of Children's Diseases, London

December, 1916, XIII, No. 156

5 Heart Disease among Elementary Schoolchildren. J. Priestley. —p. 353.
6 Congenital Tuberculosis. F. P. Weber.—p. 359.

British Medical Journal, London

February 17, I, No. 2929

7 Influence Exerted by Military Experience of John Hunter on Himself and on Military Surgeon of Today. G. H. Makins.— p. 213.
8 *Case of Rotation of Liver on Its Vertical Axis. J. Howell. —p. 219.
9 Effects of Cinematograph Displays on Eyes of Children. N. B. Harman.—p. 219.
10 Case of Puerperal Fever Treated by Streptococcic Vaccine. R. Kay.—p. 221.
11 Case of Trench Fever Contracted in England. R. D. MacGregor. —p. 221.
12 *So-Called Trench Fever as Seen in England. J. Ramsay.—p. 222.

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13 Principles Governing Early Treatment (Absolute Rest) of Infantile Paralysis. W. C. MacKenzie.—p. 249.
14 *Modern Treatment of Diabetes Mellitus. O. Leyton.—p. 252.
15 Cardiac Disease in Soldiers and Recruits. W. Scarisbrick.—p. 254.
16 *Hypochlorous Solution Electrically Produced from Hypertonic Saline as Disinfectant for Septic Wounds. J. M. Beattie, F. C. Lewis and G. W. Gee.—p. 256.
17 *Autodisinfection of Wounds by Use of Ether Solution. A. Distaso and T. R. Bowen.—p. 259.
18 Relation of Type of Coccus to Type of Disease in Meningococcal Meningitis. A. M. Kennedy and C. C. Worster-Drought.— p. 261.

8. **Rotation of Liver on Its Vertical Axis.**—Howell was preparing to perform cholecystotomy for the removal of gallstones on a female patient, aged 33, when he discovered this anomaly. The liver had rotated on its vertical axis through an angle of approximately 90 degrees; the lobe opposite the incision and covered by the suspensory ligament was the left, with the characteristic omental tuberosity on its under surface, and the quadrate lobe, instead of being opposed to the abdominal wall between the midline and right semilunar lines, was related to the right hypochondrium between the anterior and posterior axillary lines. It was impossible to see the gallbladder incision, though it extended from the margin of the ribs to opposite the umbilicus. Howell tried to rotate the liver back again to its normal position, grasping it with both hands to make the attempt, but found that it was immovably fixed in this position, nor could the gallbladder be made to present in the incision. He therefore made a transverse incision at right angles to his first incision back as far as the midaxillary line. The gallbladder could now be opened in the corner of this incision, and eighty-one small calculi were evacuated.

12. **Trench Fever as Seen in England.**—It seems that in the training camps of England exists a disease which for all practical purposes is indistinguishable from the trench fever of the overseas troops. It occurs in men who have never been in the trenches, and who are not infected with lice.

14. **Modern Treatment of Diabetes Mellitus.**—Leyton suggests that the Allen treatment be called the "treatment by alimentary rest," for three reasons: (1) the alteration in metabolism which occurs when food is withheld is due to rest of the various glands which are stimulated during digestion, and not to the simple absence of food; (2) to prevent confusion between the Allen treatment and the Guelpa treatment, which has been called "the starvation treatment" for quite a long time; (3) starvation treatment is a name which does not commend itself to patients. Since the treatment entails alimentary rest for several days, it is obvious that not every case should be submitted to it.

16. **Electrically Produced Hypochlorous Solution.** — The principle on which the apparatus originally devised by one of the authors (Lewis) works is that when an electric current of suitable strength is passed through even a weak solution of salt, part of the salt is decomposed, as also is part of the water. As a result, chemical reaction occurs and a body of high disinfecting value is produced. Experiments with this type of apparatus showed that bacteria of all kinds could be destroyed rapidly and effectively. The main chemical agents produced are hypochlorous acid and sodium hypochlorite. Cases are reported to support the efficacy of this antiseptic. The bactericidal action of this hypochlorous solution is said to be high, and it has the advantage over the ordinarily used antiseptics in that it does not coagulate albuminous material, and thus form a protecting coagulum. It has a slight stimulant action, but is nonirritating. The lymph flow in the wound is encouraged by the hypertonic solution which is used for the production of the hypochlorite. Surface bacteria on septic foci seem to be destroyed almost immediately, and the stimulant action on the lymph flow tends to wash to the surface the more deeply situated organisms. (This lymph increase is very evident in the wounds treated with this solution.) The solution can be produced very simply, and at comparatively small cost.

17. **Use of Ether in Autodisinfection of Wounds.**—The authors' aim has been to create embryonic tissue regeneration in wounds by a sort of "quickening" process. Ether was selected on account of its marked stimulating power. A series of patients were treated by irrigation with a 2 per cent. solution, using about 2 liters once daily. Sections of the granulations grown during the treatment were made. From them the authors learned that regeneration of the tissues takes place normally. It is, however, to be noted that the number of polymorphonuclear leukocytes present was very small, but lymphocytes were present in fair numbers. The most striking feature was the marked production of fibroblasts. The new blood vessels were very richly distributed, and quickly formed in the deep layers. The upper layers showed fibroblasts which were in the stage of forming vessels. On staining the sections by Gram's method and fuchsin no microbes were seen. The total absence of fibrin (Weigert-Gram method) was another striking feature in the sections. The authors believe that the observations prove that the leukocyte defensive property is not to be taken into consideration. The bactericidal action of the blood is emphasized. The function of the ether is to stimulate the growth of the

tissues without clotting the fibrin, and providing thus the newly-formed tissue with free and constant lavage with blood. The discharge of patients from the hospital is materially accelerated by the use of the ether method, on account of its comparatively rapid healing power.

Journal of Laryngology, Rhinology and Otology, London

February, XXXII, No. 2

19 Orthopedic Treatment of Laryngeal Stenosis. C. Jackson.—p. 51.
20 Sphenoid Sinus; Present Day Value of Surgical Procedure. R. H. Skillern.—p. 52.
21 Method of Closing Postaural Fistula. L. J. Curtin.—p. 66.

Journal of Pathology and Bacteriology, Cambridge

April, 1916, XX, No. 4

22 *Etiology of Scarlet Fever. W. Mair.—p. 366.
23 *Pathology and Bacteriology of Gas Gangrene. K. Taylor.—p. 384.
24 *Reactions of Tubercle Bacillus to Sperm Oil and Its Constituents. A. H. Miller. Chemistry of Sperm Oil. A. R. Smith.—p. 395.
25 *Whey Medium for Gonococcus. T. Watabiki.—p. 408.
26 *Effects of Vaccine Sensitized with Homologous Immune Serum, as Compared with Those of Nonsensitized Vaccine; Experimental Study. S. Kakehi.—p. 410.

22. **Etiology of Scarlet Fever.**—The *Diplococcus scarlatinae*, Mair says, can be demonstrated in the throats of scarlet fever patients during the first week of the disease in 87 per cent. of the cases, and it disappears as a rule from the throat about the fifth week of convalescence, persisting in an as yet undetermined percentage of cases for a much longer period. The diplococcus produces in monkeys a disease which in many respects resembles scarlet fever, although it has little tendency to produce septicemia in the monkey. The *Diplococcus scarlatinae* is confined to the region of primary invasion, which is usually the throat, and there produces toxins which are poured into the blood stream. Another feature common to the disease in man and in the monkey is scarlatinal arthritis. No definite evidence of the occurrence of nephritis in the monkey has yet been obtained. The most outstanding clinical feature of scarlet fever, namely, the rash, has not been reproduced in the monkey. Additional evidence in favor of the diplococcal theory, Mair says, is found in the fact that complement fixation reactions occur with much greater frequency, and with greater intensity in scarlet fever than in control cases. In one case this reaction was found to be distinctly positive on the third day of the disease, while on subsequent examinations on the tenth and seventeenth days it could not be detected. This observation is very much against the view that the diplococcus is a secondary invader. Finally, the biologic characters of the diplococcus are not inconsistent with known facts in the epidemiology of scarlet fever. Even if further research makes it necessary to identify with one or other subgroup of the *Diplococcus scarlatinae* all the bile soluble diplococci found in normal throats, Mair says, no valid objection could be made for that reason on statistical grounds, to the diplococcal theory of scarlet fever.

23. **Pathology and Bacteriology of Gas Gangrene.**—It is suggested by Taylor that the fatal cases of infection by the gas bacillus pass through the following phases: Phase 1, dormant stage; localized infection of the wound; Phase 2, stage of acute gaseous distention, the result of obstruction to the escape of the gas generated locally in the wound; Phase 3, explosive stage; this is characterized by the rapid extension of the swelling associated with subcutaneous crepitus; Phase 4, stage of systemic intoxication; Phase 5, stage of septicemia. The terminal invasion of the blood by the bacilli, when it happens, is probably a very late phenomenon, occurring approximately at the time of death. The first phase, or the stage of local infection in the wound with the free escape of a small amount of gas, represents a common type seen in fresh wounds. The great majority of cases do not pass beyond this stage. When, however, for any reason, the free escape of the gas becomes interfered with, the second phase, with its clinical picture of gas gangrene, develops rapidly and passes frequently within a few hours into the third stage. If sufficient drainage be established at this point for the escape of the gas, and too large a mass of muscle has not been destroyed, recovery is usual; otherwise the patient passes shortly into the stage of intoxication, and dies within a few hours, frequently before the fifth or septicemic stage is reached. The possibility of gas embolism cannot be excluded in all cases, but seems improbable as a cause of death.

24. **Reactions of Tubercle Bacillus to Sperm Oil.**—Miller found that the tubercle bacillus when grown on sperm oil mediums is converted into "banded" and "beaded" forms. This is also shown in its first stages on olive oil medium, but does not occur with other fatty substances tested. It appears to be due, in part at least, to the presence of unsaturated fatty acids in the form of esters.

25. **Whey Medium for Gonococcus.**—Watabiki after long experience with the cultivation of gonococcus, maintains that blood agar and blood bouillon are the most suitable culture mediums with which to obtain excellent results. Moreover, if blood cannot easily be had for the purpose, whey agar or whey bouillon can be used as substitutes for blood agar or blood bouillon.

26. **Effects of Sensitized Vaccine.**—Dealing with the *B. pseudotuberculosis-rodentium* (Pfeiffer), Kakehi found that the following are the effects on the rabbit of the killed vaccine sensitized by Besredka's method, as compared with those of nonsensitized: 1. The sensitized vaccine has one slight advantage in that the increase of temperature in injected animals is a little lower on the average than that produced by the nonsensitized, not only after the first injection, but also after succeeding injections. 2. The animals can generally bear the various series of injections of the sensitized vaccine with much less loss of weight than when the nonsensitized vaccine is used, so that the former appears to be less toxic, although the number of animals which died of injection is not sufficient to decide this point. 3. As to the degree of immunity obtained by the injection of each kind of vaccine, there is no appreciable difference, for they both give about the same degree of resistance against various lethal doses, when the animals are compared ten days after the last injection of vaccine. 4. The production of antibodies in the serum, testable by agglutination and complement fixation, is much less with the sensitized than with the nonsensitized vaccine under the same conditions. Thus the estimation of these antibodies in vitro does not show the actual degree of immunity given by the former, as compared with the latter.

Journal of Tropical Medicine and Hygiene, London

February 15, XX, No. 4

27 Acanthokeratodermia Precornufaciens. A. J. Chalmers and S. Atiyah.—p. 37.

Lancet, London

February 24, I, No. 4878

28 *Dupuytren's Contraction of Palmar Fascia; Dupuytren's Life and Works. J. Hutchinson.—p. 285.
29 Hunterian Tradition in Cardiac Research. W. L. Brown.—p. 291.
30 *Specificity in Antiseptics. K. Taylor.—p. 294.
31 Intestinal Protozoa in Salonika War Area. W. Roche.—p. 297.
32 Method of Plaster Splinting for Treatment of Knee Lesions. G. Davis.—p. 298.
33 Starvation Treatment of Young Diabetic. P. C. C. Fenwick.—p. 299.

28. **Dupuytren's Contraction of Palmar Fascia.**—That all cases (mild or severe) of Dupuytren's contraction can be treated successfully by either subcutaneous division or open excision of the fascial bands, Hutchinson contends is not true. He emphasizes also the dangers of splint treatment after the operation. The V Y method in either of its forms, whether the angular reflected flap is made of skin only or of skin and fascia together, Hutchinson says, is not a good one. It involves too much scarring of the palm, the prolongation of the fascia to the second phalanx cannot be dealt with by this method. He has never known it successful in Dupuytren's contraction. Again, it is not satisfactory to remove much skin from in front of the bent fingers and to trust to skin grafts. The wide excision of skin and fascia, followed by transplantation of a flap from the side of the chest (Paul Berger's method) has nothing whatever to recommend it. Among other faults, it fails entirely to deal with the contraction of the first interphalangeal joint.

With the proviso that all scars in the palm may prove a slight drawback and should be made as short as is consistent with the thorough dissection of the contracted bands, further that it is useless to lay down exact lines of incision for differing cases, the following points are emphasized by Hutchinson: 1. The main incision must be linear and vertical, over or closely parallel to the ridges of palmar fascia. Small transverse incisions at the front of the web may be needed, and any prolongation of the fascia in front of the first phalanx must be followed down and dissected out. 2. In the case of the middle or ring finger, it is impossible to avoid placing the incision toward the midpalm. In the case of the little finger alone the incision may be made rather to the ulnar side of the hand, where the skin is more supple and less subject to pressure. 3. In closing the wounds the finest silkworm gut (ophthalmic) should be used. It is rarely necessary to leave any raw area to granulate up, especially if the head of the first phalanx has been excised and tension in the front of the finger thus removed. Should a small plastic operation be required, a tongue-shaped flap with its base upward might be taken from the side of the digit concerned and shifted over so as to lie transversely. As such a flap contains the whole thickness of the skin and its blood supply, and is fixed in place by two or three fine sutures, it is much better than the epithelial grafts advocated in the textbooks.

30. **Specificity in Antiseptics.**—A small group of substances of a recognized antiseptic value was examined by Taylor. It comprised phenol, cresol, thymol, Dakin's solution, quinin hydrochlorid, ammonium and sodium fluorids, salicylic acid and sodium chlorid. Phenol and cresol proved more active against the streptococcus than against the staphylococcus, and showed very little activity against the gas bacillus. Thymol showed a fair degree of activity against the streptococcus, was less active against the staphylococcus, still less so against the gas bacillus, and showed practically no action on pyocyaneus. Dakin's solution showed a moderate activity against the staphylococcus, was nearly inert against the *B. pyocyaneus* and the gas bacillus, but was more active against the streptococcus. Quinin showed its greatest activity against the gas bacillus, was fairly active against the streptococcus, but showed very little action on the staphylococcus and still less on the *B. pyocyaneus.* Sodium fluorid was more active than ammonium fluorid throughout. Both showed themselves active against the gas bacillus, but less effective against the other three organisms. Salicylic acid showed very little activity against streptococcus, pyocyaneus, or staphylococcus, but was fairly active against the gas bacillus. The concentration of sodium chlorid required to inhibit the growth of these four organisms also varied considerably. About 4 per cent. was required to prevent the growth of the gas bacillus, a slightly higher concentration to inhibit streptococcus, and 14 per cent. failed to inhibit the growth of the other two organisms.

Taylor believes that further analytical study of antiseptics will result in the discovery of dressings specific for one or more groups of bacteria. By a successive application of these dressings the organisms present in the wound may be reduced in number or eliminated, one variety at a time, and true sterilization of a suppurating wound accomplished. But first the concept of the "general antiseptic" must go by the board and the search for a cure-all be recognized as unprofitable.

Archives des Maladies de l'Appareil Digestif etc., Paris

1916, IX, No. 3, pp. 109-168

34 *Roentgen Findings in Twenty-Eight Cases of Cancer of Large Intestine. R. Bensaude and G. Guénaux.—p. 109. To be continued.
35 *The Gastro-Intestinal Sequels of Dysentery and Paratyphoid. J. Carles and Froussard.—p. 136.
36 *Complement Fixation Test in Diagnosis of Echinococcus Disease; Sixteen Cases. F. Gallart-Monés (Barcelona).—p. 148.
37 Duodenal-Pyloric Ulcer Palpated to Left of Umbilicus. A. Mathieu and A. S. Alivisatos.—p. 154.
38 Stenosis of the Pylorus Consecutive to Gallstone Cholecystitis. A. Mathieu and A. S. Alivisatos.—p. 159.

34. **Roentgen Findings with Cancer of Large Intestine.**—Bensaude and Guénaux compare the clinical course in twenty-eight cases of cancer of the large intestine with the Roentgen findings at different periods, and also in some suspects. They expatiate parenthetically on the superior advantages of using barium sulphate in the form of a gelatinous precipitate, instead of bismuth, for the Roentgen examination. A stable and homogeneous emulsion of this is readily made, they say, with a mucilaginous vehicle, such as a mixture of 2.5 gm. gum acacia; 7.5 gm. gum tragacanth; 1 gm. gluten; 2 gm. agar and 10 gm. glycerin. This quantity emulsifies 200 gm. of the gelatinous precipitate of the barium sulphate (equivalent to 100 gm. of the dry salt). It is possible to make tablets from the mixture. By dissolving the tablet representing 100 gm. of the dry salt in hot water, it is ready for use at any time. They declare that the fluidity, homogeneousness and stability render this fluid a great improvement over others for the purpose, especially for rectal injection. They add that thousands of experiences during the last seven years in different countries have shown the harmlessness of chemically pure barium sulphate for internal use.

35. **The Sequels of Dysentery and Paratyphoid.**—Carles and Froussard have encountered fifty cases of chronic gastro-intestinal ulceration which they were able to trace to some old attack of dysentery or paratyphoid. Merely symptomatic treatment is of no avail in these cases. They require measures to combat the dysentery (emetin or ipecac), kept up systematically for months as needed, with frequent pauses, even through periods of apparent calm. Diphtheria antitoxin should be given if the dysentery is of diphtheric origin. When paratyphoid is responsible, they give hexamethylenamin by the drip method, with iodin internally. They have had no experience with antiparatyphoid serum for this purpose, but regard it as theoretically justified. It might aid in the production of antibodies reenforcing the organism in its efforts to conquer the tenacious germs. Local measures may supplement the above, e. g., cauterizing the lesions through the rectoscope. The complete recovery under the treatment outlined confirmed in many cases the assumptions as to the nature of the trouble. Before this the men had long seemed doomed to chronic invalidism. In diagnosis, one must bear in mind the constant possibility of the prolonged action, over long periods, of a primary attack of any form of dysentery or paratyphoid. Also that this is just as liable to occur with either disease when the primary attack was of an abortive or even latent type. We must disabuse our minds of the idea that amebic dysentery is an acute affection. On the contrary, it is essentially chronic. It ranks with syphilis and malaria in this respect. The same is true of bacillary dysentery only to a lesser extent.

36. **Complement Fixation in Echinococcus Disease.**—Gallart-Monés analyzes his experiences with sixteen operative cases of echinococcus disease of the liver in which he obtained a positive reaction with the hemolytic test in only 69 per cent. Positive findings are illuminating, but the fact that 31 per cent. negative responses were obtained, throws doubt on the diagnostic significance of a negative reaction. No connection between the antibody content of the serum and the eosinophil count could be detected.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

1916, V, No. 10-11-12, pp. 285-376

39 *Pus in the Uterus. (Pyométrie.) E. Chomé.—p. 285.
40 *The Histophysiology of the Placenta at Different Stages of the Pregnancy. (La villosité du placenta. Ses formations mitochondriales et ses processus d'élaboration.) M. de Kervily.—p. 296.
41 *Hegar's Sign of Early Pregnancy Reappears in the Normal Puerperium. A. Turenne and C. Colistro (Montevideo).—p. 350.
42 *Treatment of Gastro-Intestinal Hemorrhage in the Newborn. L. Triollet.—p. 354.

39. **Pyometrium.**—Chomé describes a case of pus accumulated in the uterus, and urges that the uterus had better be removed in such cases in elderly women. No matter how carefully the organ is rinsed and drained, review of the literature shows that recurrence is the rule. Another argument in favor of hysterectomy in case of pyometrium is that cancer is often at the bottom of the trouble, as the obstruction responsible for the accumulation of pus is the work of senile

endometritis. Cancer was found in his case. In young women the mechanism is different, the trouble being merely a suppurating hematometrium. Proper drainage restores normal conditions as a rule.

40. **Histophysiology of the Placenta.**—De Kervily devotes seven pages to the long list of his conclusions from personal research on the placental syncytium, the Langhans cells, the connective tissue cells of the placental villi, and the physiology of the villi as a whole. He appends further an alphabetically arranged and extensive bibliography but with no titles.

41. **Sign of Recent Childbirth.**—Turenne and Colistro have been impressed by the reappearance after the childbirth of Hegar's sign, which is usually regarded as restricted to early pregnancy. The disappearance anew of the sign before the twentieth day after childbirth confirms the other signs of normal involution of the uterus. The sign proved instructive in a medicolegal case described.

42. **Gastro-Intestinal Hemorrhage in the Newborn.**—Triollet says of epinephrin, in treatment of gastro-intestinal hemorrhage in the newborn, that its advantages are not enough to counterbalance the gravity of the accidents which such a potent measure may entail. At the Tarnier maternity, excellent results have been obtained with calcium chlorid given by the mouth, supplemented by subcutaneous injections of gelatinized serum. Neither alone answer the purpose, but the combination of the two is remarkably effectual. The newborn with gastro-intestinal hemorrhages is given every two hours a teaspoonful of a 2 per cent. solution of calcium chlorid to a total of 1 or 2 gm. of the chlorid in the twenty-four hours. This is kept up for a day or so after all traces of hemorrhage have subsided. Each day the child is given in the scapular region a subcutaneous injection of 20 c.c. of gelatinized serum. No food is allowed; a few teaspoonfuls of boiled water every two hours are given to alternate with the chlorid and assuage the thirst. The child is kept warm with hot water bottles. When the hemorrhages are definitely suspended, breast feeding is cautiously resumed. On suspicion of syphilis, specific treatment is given along with the other measures. No directions are given for preparing the *sérum gélatiné* beyond that it is sterilized for thirty minutes at 120 C.

Bulletin de l'Académie de Médecine, Paris

January 30, LXXVII, No. 5, pp. 115-160

43 Measures Suggested for the Welfare of Munitions Workers' Nurslings. Doléris and others.—p. 116.
44 *Dry Hypochlorite plus Boric Acid for First Dressing for War Wounds. H. Vincent.—p. 136.
45 Extraction of Projectiles from the Pedicle of the Lung. R. Le Fort.—p. 151.
46 Acute Myelitis as Military Epidemic. G. Etienne.—p. 153.
47 Elephantiasic Edema of the Limbs after War Wounds. Mériel. —p. 156.

44. **Prophylactic Treatment of War Wounds.**—Vincent urges that the wound should be powdered thick with a dry mixture of 10 parts calcium hypochlorite with 90 parts boric acid. They are pulverized separately, mixed very carefully, and kept dry in colored glass. His experience with this method in the French colonies and in the present war has confirmed the potent prophylactic action of this powder, he reiterates, when applied at once after the thorough mechanical cleansing of the wound. It does not harm living tissues nor change them, and seems to be perfectly tolerated, while it favors cicatrization. He has used it in direct application even to the brain, and never noted any harm from it. Wounds of the thorax and abdomen are the only ones not amenable to this treatment. The powder is poured freely from the flask into all the crevices of the wound, and is insufflated into the inaccessible passages. The powder in the wound dissolves slowly, not being very soluble. Calcium hypochlorite usually contains about 6 per cent. calcium chlorid, which has, further, a hemostatic action.

Journal de Médecine de Bordeaux

December, 1916, LXXXVII, No. 14, pp. 271-288

48 *Overlooked Heroes of the War. (Les héros de la maladie.) P. Mauriac and M. Gaud.—p. 271.
49 *Malingering among Soldiers. (La carotte.) E. Blum.—p. 274.
50 Poisonous Mushrooms. (Champignons vénéneux.) Creyx.—p. 280.

48. **Overlooked Heroes of the War.**—Mauriac and Gaud refer to the soldiers in the trenches who have concealed some serious trouble and kept up their duties to the end, or until will power could no longer keep them on their feet. They cite several typical cases of men with Addison's disease overcoming their asthenia and fighting to the end, never hinting a word of complaint. One man with meningitis kept at his work of burying the corpses, notwithstanding his dizziness and vomiting. Others with febrile tuberculosis and night sweats kept doggedly at work, concealing their symptoms. To the officers, to the crowd, these men merely seem "unlucky"; no medals go to them for this. But Mauriac and Gaud declare that the *héros de la maladie* often display more gallantry and devotion than many who have medals pinned on their breasts.

49. **Malingering in Soldiers.**—Blum reviews the various factitious affections that may be induced to escape active military service. The list is a long one, and the reports of simulators run through history from Hippocrates downward. He says that the word "poltroon" is a relic of voluntary mutilation to escape military service. The men who cut off their thumb were called *pollices trunci.* The army medical men now have to be on the alert to detect simulation, not only in picric jaundice but in disturbances of all kinds, from the stomach trouble induced by ingestion of oil or tobacco, "hemoptysis" from pricking the throat, "diabetes" from phlorizin or ammonium oxalate, edema of the legs from a tourniquet, abscesses from a thread soiled with tooth tartar, to all kinds of skin affections and discharges induced and maintained by irritating or infectious substances. Factitious epileptic seizures are easily differentiated. The discovery of a fork that fitted the marks in the skin upset the story of one man who claimed to have been bitten. The prevalence of factitious jaundice has fastened the name "carrots" on these malingerers.

Paris Médical

January 27, VII, No. 4, pp. 69-84

51 Dysenteriform Enteritis. C. Lesieur.—p. 69.
52 War Wounds of the Knee; Ninety Cases. R. Grégoire.—p. 75.
53 Associated Paralysis of Ninth, Tenth and Eleventh Nerves. (Sur le syndrome du trou déchiré postérieur.) M. Vernet.—p. 78.
54 Improvised Hammer for Testing Reflexes. Perrin.—p. 81.
55 Pedal Control of Switch to Turn Electric Current On and Off in Roentgen Examinations. (Commutateur à distance pour postes radiologiques.) C. Roch.—p. 82.

Presse Médicale, Paris

January 22, XXV, No. 5, pp. 41-56

56 *Technic for Gastro-Enterostomy and Exclusion of the Pylorus in Treatment of Duodenal Ulcer. V. Pauchet.—p. 41.
57 *Syphilis in Relation to Nephritis under or near Forty. (Néphrites sèches et syphilis.) P. Merklen and G. Heuyer.—p. 44.
58 Chronic Gonorrheal Urethritis in Women. L. Bizard and P. Blum. —p. 46.
59 Malleable Trellis Frame for Immobilization. L. Lemaire.—p. 48.
60 Cardiac Insufficiency after Exposure to Chlorin Gas. C. Lian. —p. 49.

56. **Duodenal Ulcer.**—Pauchet explains his technic, as followed in 100 cases, with twelve illustrations. Over 75 per cent. of the patients were restored to complete health, and the others were all much improved except 5 per cent. who required a second operation. He excludes the pylorus by suturing the mucosa of the stomach to shut it off. He makes a transverse incision in the anterior wall and incises the mucosa of the posterior wall to correspond. Then the cut edges of the mucosa are sutured to form a bag, shutting off the pylorus below, and the incision in the anterior wall is sutured. The posterior wall, back of the mucosa, is not molested. In one of his operative cases, a spastic contraction of the wall of the duodenum was mistaken for an ulcer and the gastric neurosis persisted afterward as before. The failure in the other cases was because the suture was made too close to the pylorus and it did not hold, or else such a coarse thread was used that it hung there for months and years, finally setting up a peptic ulcer. In one case there was trouble later because the mesocolon was unusually fat and it had been sutured to the anastomosis, instead of the stomach wall. When the mesentery is fat there is liable to be retraction later.

57. **Syphilitic Nephritis.**—In the three cases here described by Merklen and Heuyer as also in others in their practice, there was nephritis without dropsy but with high blood pressure or uremia, in persons under 50 and sometimes only 40 or under. Infection is responsible for the clinical picture, not arteriosclerosis, as in the classic picture over 60. Syphilis is sometimes responsible, but other infections may likewise be incriminated in other cases. In a series published recently by Lian, five of the ten patients gave a positive Wassermann reaction. The necropsy findings in one of their cases, in a man of 35, included a large cicatrix in one suprarenal, probably the relics of a gumma. The arteries in the brain were scattered along their course with atheromatous nodules, almost like rows of beads, and the kidneys showed endarteritis and sclerosis. The infection or infections causing the trouble in persons of 40 or under may have escaped recognition; syphilis should be excluded first of all. The syphilis is usually of long standing, so that it is a tertiary renal symptom. There are usually manifestations also on the part of the heart or aorta. To date, no benefit from specific treatment of the syphilis at this stage has been realized. In persons of about 60 or over, on the other hand, the kidney trouble is the localization in the kidneys of a general tendency to arteriosclerosis.

Progrès Médical, Paris

January 20, XXXII, No. 3, pp. 19-28

61 *Syphilitic Ophthalmoplegic Headache. A. Poulard.—p. 19.
62 Epidemic of Bacillary Dysentery. D. Gilbert.—p. 22.
63 The Professional Patrimony of Physicians. A. Satre.—p. 25.
64 Importance of Cytologic Examination of the Gastric Content in Diagnosis of Cancer of the Stomach. H. Codet.—p. 26.

61. **Headache with Ophthalmoplegia.**—Poulard remarks that this is almost invariably of syphilitic origin. He insists on treatment as for syphilis, even when the Wassermann test and the spinal fluid give negative findings. Ophthalmoplegic migraine is also a recurring paralysis of the oculomotors, always accompanied by headache. He warns further that syphilitic meningitis may be accompanied by fever. He has several patients who, he is confident, owe their lives to the tenacity with which he waged war against the syphilis he suspected. With brain tumor causing ophthalmoplegia, there is usually choked disk. In case of the slightest doubt, give treatment as for syphilis. The ophthalmoplegic headache is the result of meningitis at the base which spreads to the oculomotors and induces perineuritis, and there seems to be a connection between it and tabes or general paralysis. A history of old ophthalmoplegic headache is sometimes found with tabes or may be its first manifestation, or it may occur in the course of tabes. The headache soon yields to proper treatment, and does not return, but the outlook for the future is a little less favorable.

Revue de Chirurgie, Paris

1916, XXXV, No. 7-8, pp. 1-244

65 *War Wounds of Larynx and Trachea. Treatment at the Time and Later. E. J. Moure and G. Canuyt.—p. 1.
66 Fistulas Consecutive to War Wounds of the Skull. C. Villandre.—p. 83.
67 *Cartilage Grafts from the Calf. (Recherches sur les greffes cartilagineuses hétéro-plastiques.) L. Imbert, C. Lheureux and Rouslacroix.—p. 111.
68 Extraction of Projectiles from the Pelvic Belt of Bone and Muscle. G. Leo.—p. 129. Conclusion.
69 Varieties, Evolution and Treatment of Gunshot and Shell Wounds. P. Dézarnaulds.—p. 164.
70 *Experiences with Extensive War Wounds. (Les grandes blessures de guerre.) A. Chalier and R. Glénard.—p. 179. Conclusion.
71 *Minor Points of Technic in End-to-End Suture of Intestine. (Un point de technique de l'entérorraphie circulaire.) J. Fiolle.—p. 231.
72 The Field Dressing Station. (A propos du fonctionnement intensif d'une ambulance chirurgicale de 1re ligne et du rôle d'un poste chirurgical avancé.) A. Martin.—p. 235.

65. **War Wounds of Larynx and Trachea.**—Moure and Canuyt relate that they have been constantly successful with tracheolaryngostomy in thirty-one cases, and they describe with minute detail the measures required at first and the procedures for repair later. The men not only breathe naturally but they are able to speak with a loud and intelligible voice although they have lost not only their vocal cords but often the false vocal cords and part of the aryteno-epiglottic folds. Cicatricial tissue takes the place of the vocal cords.

67. **Calf Cartilage Grafts.**—The grafts were studded with perforations and fitted into the gap in the skull or at other points desired, under local anesthesia. A few typical cases are described in detail. In all, the cartilage flap softened in the course of a month and its elements were absorbed, an irregular sheet of connective tissue fiber taking its place in the course of a few months.

70. **Extensive War Wounds.**—This part of Chalier and Glénard's report of their experiences with 1500 cases of extensive gunshot and shell wounds, is devoted to wounds of the chest.

71. **Minor Points in the End-to-End Suture of the Intestine.**—Fiolle does away with the difficulty otherwise experienced in starting to suture the serous coats together after the mucous membranes have been sutured. At the point of attachment of the mesentery, the serosa-serosa suture is awkward and blind. Matters are simplified by passing a thread through both stumps at the point of attachment of the mesentery, before any other suturing is done. The needle is passed, perpendicularly to the axis of the intestine, through the thickness of the wall but sparing the mucosa. Passed thus through both stumps, they are approximated and the ends of the thread are tied and left long and hanging loose. This thread thus joining the stumps does not enter the lumen, but holds each stump about 2 mm. from the cut edge. The mucous membranes are then sutured all around. Then with one of the long ends of the enteromesenteric suture thread the serous coats are approximated and sutured on one side half way around, and with the other long end the seroserosa suture is completed.

Archiv für klinische Chirurgie, Berlin

1916, CVII, No. 4, pp. 533-693. Last indexed March 24, p. 943

73 External Pharyngotomy and Flap Plastic Operation for Supralaryngeal Stenosis of the Pharynx. G. Axhausen.—p. 533.
74 Technic for Plastic Operations on the Skull. (Schädelplastik.) G. Axhausen.—p. 551.
75 Multiple Callous Gastric Ulcers. (Zur Kenntnis und operativen Behandlung des multiplen callösen Magengeschwürs.) E. Liek.—p. 575.
76 *Nerve Blocking between Two Tourniquets. (Leitungsanästhesie am Oberschenkel durch Infiltration des incarcerierten Querschnitts.) R. Sievers.—p. 595.
77 War Aneurysms. (Kriegsaneurysmen.) H. v. Haberer.—p. 611.

76. **Nerve Blocking Between Two Tourniquets.**—Sievers relates that he has been able to operate on the thigh or leg without pain in twenty cases by local anesthesia induced by the infiltration technic applied to the segment of the limb, 2 or 3 cm. wide, between two broad constricting elastic bands. In from twenty to thirty minutes the limb below this segment can be operated on, even with operations taking up to an hour and a half. The analgesia keeps up as long as the circulation below is interrupted. The constricting band is applied only tight enough to arrest the circulation. Two illustrations accompany the article.

Gazzetta degli Ospedali e delle Cliniche, Milan

January 14, XXXVIII, No. 4, pp. 49-64

78 *Postinfectious Thyroid-Hypophysis Meiopragia. (Sindromi pluriglandolari.) F. Dematheis.—p. 49.
79 Projectile in Pleural Cavity. (Diverso comportamento della pleura secondo la forma del proiettile.) G. Ceresole.—p. 51.

January 18, No. 5, pp. 65-80

80 Undulant or Malta Fever; Two Cases. (Febbre melitense.) C. Chiri.—p. 68.

78. **Postinfectious Pluriglandular Disturbances.**—In Dematheis' case the pluriglandular symptoms developed ten days after recovery from a two months' course of paratyphoid. The symptoms indicated suffering from lack of both thyroid and hypophysis secretion, as is fully described, and the man was given both thyroid and hypophysis extract, with prompt and durable benefit.

Policlinico, Rome

January 21, XXIV, No. 4, pp. 89-104

81 The Deep Reflexes in General Anesthesia. (I riflessi profondi nella narcosi.) L. Roncoroni.—p. 89.
82 *Tapeworm in Soldiers. (La teniasi nei soldati.) A. Borini.—p. 91.

January 28, No. 5, pp. 129-164

83 Treatment of War Fractures. L. Cherubini.—p. 129.
84 Present Status of Our Knowledge of Acute Poliomyelitis. G. Dragotti.—p. 135.
85 *Gum Camphor Preserves Substances and Solutions that Spoil Easily. R. Romanelli.—p. 142.
86 Importance of Dental Service for the Troops Exposed to the Vicissitudes of Trench Life. E. Giovannini.—p. 145.

January, Medical Section, No. 1, pp. 1-52

87 *Clinical Study of Evolution of Tabes. P. Ciuffini.—p. 1.
88 *Nature and Functions of the Eosinophil Blood Cells. R. Marchesini.—p. 26.

82. **Tapeworm in Soldiers.**—Borini found tapeworms in twenty among 3,000 soldiers in an Italian troop, that is, in 0.75 per cent. It was associated with other helminths in half of the cases, and one man had two tapeworms. The *Tenia mediocannellata* was most frequent. None of the men presented anemia or other appreciable disturbance from the presence of the tapeworm.

85. **Scrap of Gum Camphor Preserves Solutions that Putrefy Readily.**—Romanelli drops a scrap of gum camphor into the bottle. It floats on the surface of the fluid, not dissolving readily, and its fumes seem to destroy germs entering the bottle. He has thus kept white of egg unaltered for ten years, and a 5 per cent. solution of gelatin for a year or more, without change. Solutions for hypodermic injection can be thus kept indefinitely, he states, without growth of microorganisms. In control solutions, all kinds of molds and bacilli rapidly proliferate. Even if the lump of gum camphor, the size of a pea or larger, dissolves in the fluid—which is liable to happen in case there is alcohol in the fluid—this does no harm as camphor is used both internally and hypodermically.

87. **Evolution of Tabes.**—Ciuffini remarks that in the last five years or so it seems to be the general impression that the course of tabes is milder than it used to be, and not so fatally progressive. To determine whether there is a basis for this assumption, he has been studying 200 cases of tabes dating from 1895 to 1915. He classifies them by five-year periods, from the records of the Rome clinic for nervous diseases. There is no doubt that in the last decade the tabes has shown a marked tendency to be arrested in the stage of the pains and crises, and that this phase has been slower in developing. In the first five year period, 82.4 per cent. of the patients were men, but this proportion between the sexes has gradually altered so that in the last five year period, only 66 per cent. were men and 34 per cent. women. There were only two or three farmers in the whole series. A history of syphilis was evident in 54 per cent. and dubious in 41.5 per cent., but in 4.5 per cent. nothing could be detected to suggest syphilis. Two of the tabetics had contracted syphilis at the age of 12 and 14. In only three cases did contagion occur after 40. In two cases the onset of the tabes was at 62 and 64. The interval after infection before the tabes developed ranged from one year in two cases, two years in two cases and three years in four cases, to the maximum of thirty-two years in one case; the average was between six and fifteen years. There was a history of abuse of alcohol in 55 per cent. of the total 200, while an inherited nervous taint was evident in 20 per cent. The proportion of alcoholism increased from 38 per cent. in the first period to 76 and 62 per cent. in the last two. Lancinating or other pains were the first manifestation of the tabes in 70 per cent. In 10 per cent. the first sign of trouble was paresthesia, formication in the hands, legs and face, girdle sensations in chest or abdomen, cold hands and feet, and a sensation of cotton under the feet. This proportion gradually increased until the cases of this kind formed 34 per cent. in the last period. Hyperesthesia of the skin was noted in only two patients, while six complained of headache as the initial symptom of the tabes. In a few cases there was such extreme weakness of the legs as to suggest actual slight paresis for a time. Gastric crises were the first symptoms to attract attention in from 9 to 14 per cent.; diplopia in 19 per cent. Amblyopia occurred in from 7.5 to 30 per cent. during the various periods; amaurosis in 1 per cent.

In the further course of the cases, a tendency to arrest of the anatomic and clinical course was strikingly evident in the later periods. His figures show further that the interval between infection and the onset of the tabes has grown longer. On the other hand, the simultaneous development of spinal and cerebral symptoms has grown much more frequent. Analysis of the total 200 cases confirms von Malaisé's statement that the outlook is graver with "superior tabes" and also when the interval between infection and tabes is short. The tabes is more apt to run a milder course in men than in women.

88. **The Eosinophil Cells.**—Marchesini is docent for histology and microscopic technic at Rome, and he here presents an illustrated description of his extensive experimental and clinical researches on the eosinophil cells. Everything seems to indicate, he says, that these cells, instead of being simple phagocytes, have an exalted function as a nourishing cell, possibly possessing a special secretion, not only for purposes of defence but serving also as a preparatory substratum for reedification of tissue wherever there are toxic substances to be neutralized, foreign substances or animal parasites to be encapsulated, or losses of tissue to be repaired.

Riforma Medica, Naples

1916, XXXII, No. 48, pp. 1313-1340

89 *Nature of Fatigue Toxins and Antitoxins. L. Ferrannini and S. Fichera.—p. 1313.
90 Acute Polyneuritis Suggesting Beriberi. (Contributo ad una teoria degli ormoni vegetali.) R. Massalongo.—p. 1316.
91 To Prevent the Drying out of Culture Mediums. (Per imperdire l'evaporazione nei terreni nutritivi di uso batteriologico.) A. Martiri.—p. 1322.

No. 49, pp. 1341-1368

92 Contracture of Joints from Peripheral Trauma. (Mioipertonie degli arti per traumi periferici.) G. Rummo and F. Ferrannini. —p. 1341. To be continued.
93 Intravenous Vaccination against Paratyphoid. G. Quarelli.—p. 1347.
94 The Precipitin Reaction in the Diagnosis of Epidemic Cerebrospinal Meningitis. U. Gasperini.—p. 1351.
95 Unreliability of Buchner-Soyka Technic for Cultivation of Anaerobic Bacterium—Bacillus Bifidus. C. Ninni.—p. 1356.

89. **Fatigue Toxins.**—Ferrannini and Fichera conclude here their various studies of fatigue toxins, or kenotoxins, and antitoxins. In their experiments on frogs, etc., they have apparently demonstrated in muscles, as the effect of fatigue, certain substances which act on various organs and functions in a special manner, as they describe in detail. Among their other effects they impair the nervous system, rendering it less resistant to toxic action in general. These fatigue toxins also seem to induce the production of antitoxins which neutralize their action.

Semana Medica, Buenos Aires

1916, XXIII, No. 49, pp. 583-610

96 Embryotomy with Living Fetus. J. A. Gabastou.—p. 583.
97 Mechanism of Action of Therapeutic Vaccines. M. A. Marini. —p. 585.
98 Spider and Centipede Bites. P. T. Gandia and A. Serantes.—p. 592. Concluded in No. 51, p. 642.
99 *Tuberculous Asthma; Two Cases. J. Frenguelli.—p. 602.

No. 50, pp. 611-638

100 Infantile Tuberculosis in Argentina; Prevalence and Prophylaxis. M. Acuña.—p. 611.
101 Aphasia; Two Cases. (Sobre dos casos de afemia.) L. S. Moreno. —p. 624.
102 Correction by way of the Vagina of Retrodisplacement of the Uterus Interfering with Pregnancy and Delivery. A. Chueco. —p. 628.
103 *Lymphocytosis in Syphilis. C. P. Mayer and A. C. Gourdy.—p. 636. Conclusion.

No. 51, pp. 639-666

104 *Variations in Cholesterin Content of the Blood during Menstruation. G. P. Goñalons.—p. 639.
105 Spider and Centipede Bites. (Lesiones cutaneas provocadas por insectos.) P. T. Gandia and A. Serantes.—p. 642. Commenced in No. 49, p. 592.
106 Treatment of Congenital Twisted Feet. (Caso de tratamiento de pies torcidos congenitos.) E. M. Cavazzutti.—p. 645.
107 Proposed Plan for Reorganization of Public Health Service. F. Otero.—p. 648. Concluded in No. 52, p. 682.

99. **Tuberculous Asthma.** — Frenguelli reports cases of asthma in men of 28 and 43, both with signs suggesting latent tuberculosis although no focus could be found. Both were given tuberculin treatment on the basis that the asthma was an anaphylactic phenomenon from the tubercle bacilli toxins. The improvement was marked in both, and the asthma soon disappeared entirely. These were the cases showing the most

striking benefit in the shortest time of all in a much larger total experience.

103. **Lymphocytosis in Syphilis.**—See abstract 80 in The Journal of March 17, 1917, p. 884.

104. **Cholesterinemia during Menstruation.** — Goñalons recorded the findings in twenty-seven complete menstrual cycles. They show that the cholesterin content of the blood rises abruptly five, six or seven days before the menses and then gradually declines a little, but rises again as the menses become established keeping at this same level, somewhat below the early peak, to the close of the menses and then gradually dropping back to the ordinary level where it remains till it runs up abruptly anew from five to seven days before the onset of the menses. One woman with exophthalmic goiter and one with postpuerperal amenorrhea showed this same curve of the cholesterinemia although there was no uterine discharge.

Russkiy Vrach, Petrograd

1916, XV, No. 48, pp. 1129-1152

108 Pirogoff's Field Surgery. (N. I. Pirogoff i ego voennopolevaya khirurgiya.) S. Y. Shtraikh.—p. 1129.
109 *Technic for Preparing Anatomic Specimens to Keep without Fluid and Exposed to the Air. N. K. Lisenkoff.—p. 1131.
110 The Teaching of Hygiene in the Medical Schools of Russia. N. N. Kostyamin.—p. 1136.
111 Edema as Local Disturbance in the Extremities Consecutive to Trauma. (Ob otekie konechnostei poslie traumi.) V. N. Novikoff.—p. 1140.
112 *Germ of Typhus. (K etiologii sipnogo typha.) A. I. Savatieff and D. D. Lokhoff.—p. 1141.
113 Presence in Nature of Bacillus of Fish Poison. (Bac. ichthyismi i usloviyakh proniknoveniya ikh v ribnie produkti.) S. V. Konstansoff.—p. 1146.

109. **Anatomic Specimens Kept without Fluid and Open to the Air.**—Lisenkoff gives seven illustrations of large anatomic specimens which have kept from six to twenty years without loss of size or outline and in approximately the natural colors. The specimens show little shriveling, even of the skin. The specimens are prepared by soaking them for a month, at least, in a mixture of 500 parts glycerin; 1,000 parts plain water; 500 parts potassium acetate, by weight, and 40 parts liquor formaldehydi. The specimen floats on the fluid, and he covers it with absorbent cotton, this floating also on the fluid. By injecting the fluid into the vessels of the upper half, the procedure is hastened. The fluid can also be used to embalm cadavers. At first he kept the specimens on glass in wood, zinc or iron boxes or glass jars, covered with a sheet of glass. The latter never sweated, showing that evaporation was imperceptible. Some of the specimens were in such constant use in the lecture room that they were out of their receptacles most of the time, and it was found that this did no harm, so now the specimens are kept loose on the museum shelves. The muscle keeps pink and the other tints show little change, while topographic conditions are absolutely normal. The specimens illustrated are cross and lengthwise sections of the trunk, trunk with head, and trunk with thigh. Lisenkoff is professor of topographic anatomy and operative surgery at the University of Odessa, and his method has been in use for twenty years. He first used twice the amount of glycerin and only half the amount of water of the formula given above, but found the later formula equally effectual. Lately he has used 2 parts thymol (first dissolved in 20 parts alcohol), in place of the formaldehyd, and found it equally effectual. Any other equally potent antiputrefaction drug would probably answer the purpose also.

112. **Etiology of Typhus.**—The experiences related here of the constant presence of a certain micro-organism in the blood and excreta of typhus patients and cadavers seem to indicate that this is the causal agent of the disease. A disease resembling human typhus was induced in animals by injecting cultures of this bacillus. It seems to belong to the hemorrhagic septicemia group.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

January 13, I, No. 2, pp. 65-132

114 Disturbances in Orientation, Appreciation of Figures, Time, etc., with Localized Intracranial Process; Two Cases. W. Van Woerkom.—p. 73.
115 *Influence of Horse Paratyphoid Gland Substance on Parathyreopriva Tetany. H. W. Stenvers.—p. 85.
116 Infection of Maxillary Sinus by way of Wisdom Tooth. D. J. De Levie.—p. 94.

115. **Horse Parathyroid Treatment of Postoperative Tetany.**—This communication from the university clinic for nervous diseases at Utrecht reports the case of a young woman with the typical picture of postoperative tetany after thyroidectomy. An attack of tetany occurred before she had left the table. Her exophthalmic goiter has been cured by the two operations on the thyroid, the interval eighteen months. The tetany was treated with fresh parathyroids from the horse. Stenvers obtained them from the slaughter house in their natural setting, and separated them out himself. On account of the scarcity of horses due to the war, he was unable to get as many as he would have liked. His microscopic examination of parathyroids from dogs and calves seemed to show that they consisted of true thyroid tissue, so he did not attempt to use them. The horse parathyroids were placed in sterile physiologic solution as soon as they were separated out, and they were served mixed with the food at the earliest possible moment. The electric reactions, the elimination of creatinin in the urine, and the patient's general condition were kept under constant supervision, and no drugs of any kind were given. An extremely favorable influence from this parathyroid treatment was evident, but it lasted only while the treatment was kept up. Consequently two parathyroid glands, just removed from two patients with exophthalmic goiter, were implanted and this had also a favorable influence which proved durable, so that the patient is now nearly free from tetany, with full working capacity restored. Before treatment, the creatinin content of the urine averaged 1342 mg. a day. Under treatment with horse parathyroids it dropped to 612 mg. During the following month, it averaged 726 mg. After the transplantation, it averaged 586, and two or three months later 884 mg. When the figure was below 613 mg. the patient felt well and had no spasms. The creatinin output is thus a good index of conditions in tetany.

Hospitalstidende, Copenhagen

January 17, LX, No. 3, pp. 49-72

117 *Determination of Difference in Carbon Dioxid Tension in Arterial and Venous Blood. (Om Bestemmelse af Forskellen mellem arteriel og venøs Kulsyrespænding under normale og pathologiske Forhold samt om Anvendelsen af denne Forskel til Maalingen af Forandringer i Minutvolumens Størrelse.) C. Sonne.—p. 49. Conclusion.
118 White Spots in Nails from Handling Brine. (Leukonychia artificialis. Høkernegle.) E. Sylvest.—p. 59.

117. **Determination of Carbon Dioxid Tension in Arterial and Venous Blood.**—Sonne describes a method with which it is possible to determine the difference in carbon dioxid tension of the arterial and venous blood. This difference, in connection with the carbon dioxid tension of the alveolar air affords insight into changes in the rapidity of the blood current. We thus have a reliable means for estimating the variations in the amount of blood passed through the heart per minute. In four patients with auricular flutter and lost compensation the minute volume was reduced by 50 per cent. In two patients with well compensated heart disease, the findings suggested that the rapidity of the blood current was somewhat reduced, probably to permit better utilization of the oxygen in the blood.

Ugeskrift for Læger, Copenhagen

January 11, LXXIX, No. 2, pp. 43-84

119 *The Importance of the Wassermann Reaction for the Internist. V. Scheel.—p. 43. A. Faber.—p. 49.

119. **The Wassermann Reaction in Study of Internal Diseases.**—Scheel has had the Wassermann test applied to all the adult patients at the Bispebjærg Hospital since 1913. By this means it has been possible to detect and give specific treatment in cases in which there was absolutely nothing else to suggest syphilis.

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American			
Academy of Medicine..........	George A. Hare, Fresno, Calif.	Thos. Wray Grayson, 1101 Westinghouse Bldg., Pittsburgh	New York, June 4-5, 1917
Academy of Ophth. and Oto-Lar.	Wm. L. Dayton, Lincoln, Neb...	Lee M. Francis, 636 Delaware Ave., Buffalo..	Pittsburgh, 1917
Association of Anatomists.......	H. H. Donaldson, Philadelphia...	C. R. Stockard, Cornell Univ. M. C., New York	
Assn. of Genito-Urinary Surg's..	L. E. Schmidt, Chicago..........	R. F. O'Neil, 379 Beacon St., Boston........	Rochester,Minn.,May21-23
Assn. of Obstetricians and Gyn..	John W. Keefe, Providence, R. I..	E. Gustav Zinke, 4 W. 7th St., Cincinnati....	1917.
Assn. of Path. and Bacteriologists	Wm. H. Park, New York.......	H. C. Ernst, Harvard Med. School, Boston...	New York, Apr. 6-7, 1917
Association of Railway Surgeons.	W. B. Malone, Memphis.........	Louis J. Mitchell, 29 E. Madison St., Chicago.	Chicago, Oct. 17-19, 1917
Climatological and Clin. Assn.....	Judson Daland, Philadelphia....	Guy Hinsdale, Hot Springs, Va.............	Lakewood,N.J.,May29-31,'17
Dermatological Association	Chas. J. White, Boston.........	Oliver S. Ormsby, 25 E. Washington St., Chicago	Cincinnati, May 24-26, '17
Electro-Therapeutic Association...	J. Willard Travell, New York....	Byron S. Price, 65 Central Park W., New York	1917.
Gastro-Enterological Association..	Wm. G. Morgan, Washington, D. C.	F. W. White, 322 Marlborough St., Boston..	Atlantic City, Apr. 30-May 1
Gynecological Society	F. F. Simpson, Pittsburgh.......	Geo. G. Ward, Jr., New York..............	Pittsburgh,May31-June2,'17.
Laryngological Association	Joseph L. Goodale, Boston.........	Harmon Smith, 44 W. 49th St., New York....	May 28-30, 1917
Laryn., Rhin. and Otol. Society..	Thos. J. Harris, New York......	Wm. H. Haskin, 40 E. 41st St., New York...	Niagara Falls, Can., June 1-2
Medico-Psychological Association.	C. G. Wagner, Binghamton, N. Y.	Henry C. Eyman, Massillon, Ohio...........	New York, May 29-June 1
Neurological Association.........	L. F. Barker, Baltimore.........	Alfred R. Allen, 2013 Spruce St., Philadelphia	
Ophthalmological Society.........	Peter A. Callan, New York........	W. M. Sweet, 1205 Spruce St., Philadelphia.	Va. Hot Springs, May 29-30
Orthopedic Association..........	David Silver, Pittsburgh.........	H. W. Orr, 315 1st Nat. Bk. Bldg., Lincoln, Neb.	Pittsburgh, May 31-June 1
Otological Society..............	C. R. Holmes, Cincinnati..........	John B. Rae, 247 W. 70th St., New York....	Atlantic City, May 29-30'17
Pediatric Society................	Frank S. Churchill, Chicago.....	H. C. Carpenter, 1805 Spruce St., Philadelphia	White Sulph. Spgs., May 28-30, 1917
Physicians, Association of........	George Dock, St. Louis.........	Thomas McCrae, 1627 Spruce St., Phila.....	Atlantic City, May 2-3, '17
Physiological Society	W. B. Cannon, Boston..........	C. W. Greene, State Univ., Columbia, Mo....	
Proctologic Society	A. J. Zobel, San Francisco........	C. F. Martin, 1831 Chestnut St., Philadelphia.	New York, June 4-5, 1917.
Psychopathological Association ...	Adolf Meyer, Baltimore.........	John T. MacCurdy, 969 Park Ave., New York	1917
Public Health Association........	William A. Evans, Chicago......	Selskar M. Gunn, 755 Boylston St., Boston...	1917.
Roentgen Ray Society...........	Lewis G. Cole, New York.......	Wm. H. Stewart, 222 W. 79th St., New York..	1917.
Society of Amer. Bacteriologists..	T. J. Burrill, Urbana, Ill........	A. Parker Hitchens, Glenolden, Pa..........	
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Society of Tropical Medicine.....	Maj. Bailey K. Ashford, San Juan	John M. Swan, 457 Park Ave., Rochester, N.Y.	New York, June 4-5, 1917.
Surgical Association	Samuel J. Mixter, Boston, Mass..	John H. Gibbon, 1608 Spruce St., Philadelphia	Boston, May 31-June 2, 1917
Therapeutic Society	J. N. Hall, Denver, Colo.......	Lewis H. Taylor, The Cecil, Washington, D. C.	New York, June 1-2, 1917.
Urological Association	F. W. Robbins, Detroit............	Henry L. Sanford, Osborn Bldg., Cleveland...	Chicago, Apr. 2-4, 1917
Assn. of Military Surg's of the U. S.	Surg.-Genl. Rupert Blue, U.S.P.H. Service, Washington, D. C.....	Lieut.-Col. Edw. L. Munson, M. C., U. S. A.	
Cong. Am. Phys. & Surgs. of N. A.	W. S. Thayer, Baltimore........	W. R. Steiner, 4 Trinity St., Hartford, Conn.	Washington, May, 1919
Conf. of St. and Prov. Bds. of N. A.	T. D. Tuttle, Seattle, Wash......	Eugene R. Kelley, State Health Dept., Boston.	Washington,May 30-31,'17
Med. Association of the Southwest.	E. S. Lain, Oklahoma City, Okla.	Fred H. Clark, El Reno, Okla..............	Kansas City, 1917.
Mississippi Valley Medical Assn....	Channing W. Barrett, Chicago...	Henry Enos Tuley, 705 S. 3d St., Louisville, Ky.	Toledo, Ohio, 1917.
Missouri Valley, Med. Soc. of the..	C. R. Woodson, St. Joseph, Mo..	C. Wood Fassett, 613 Lathrop Bldg., K. C., Mo.	
National Assn. for Study of Pellagra	Capt. Jos. F. Siler, U. S. A.....	J. W. Babcock, Columbia, S. C.............	1918.
Nat. Assn. for S. and P. of Tuber.	E. R. Baldwin, Saranac Lake, N.Y.	Henry B. Jacobs, 11 Mt. Vernon Pl., Balt...	Cincinnati, May 9-11, 1917
Nat. Assn. for Study of Epilepsy..	D. F. Weeks, Skillman, N. J....	Arthur L. Shaw, Sonyea, N. Y.............	Skillman,N.J.,May 28-29,'17
Southern Medical Association......	Duncan Eve, Nashville, Tenn.....	Seale Harris, Empire Bldg., Birmingham, Ala.	Memphis, 1917.
Southern Surg. and Gyn. Assn.....	Wm. D. Haggard, Nashville......	H. A. Royster, Raleigh, N. C...............	St. Augustine, Fla., Dec., '17
Western Surgical Association......	Leonard Freeman, Denver........	Arthur T. Mann, Donalson Bldg., Minneapolis	Omaha, 1917

State Association list appeared in this space two weeks ago; the officers of the A.M.A. last week. Corrections will be appreciated

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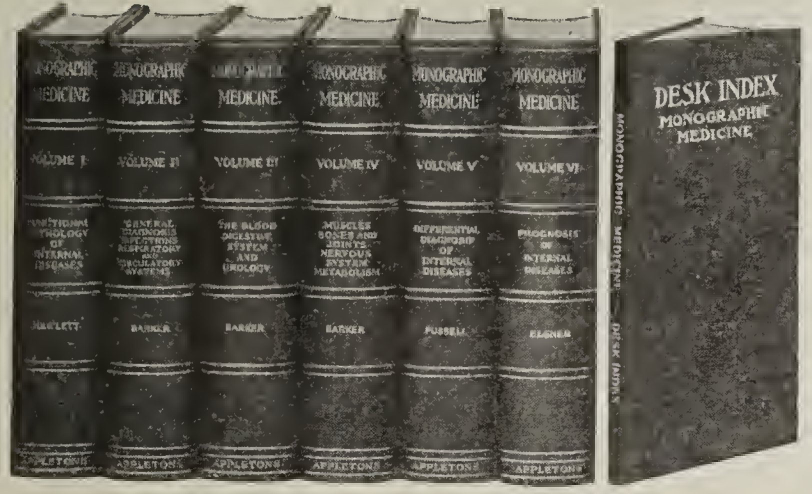

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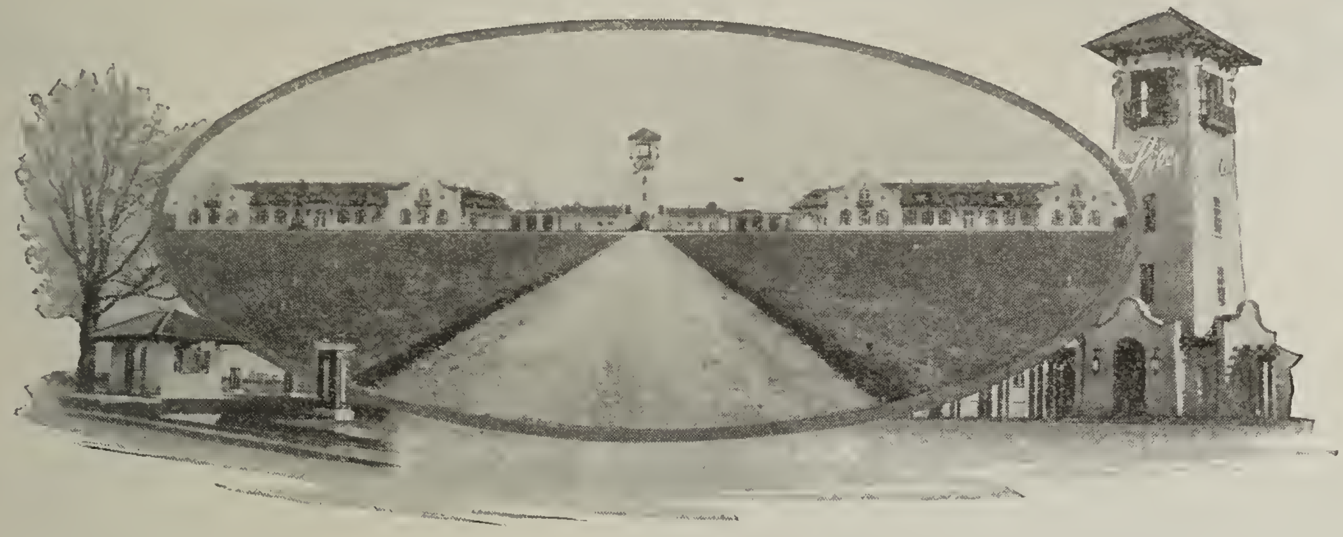

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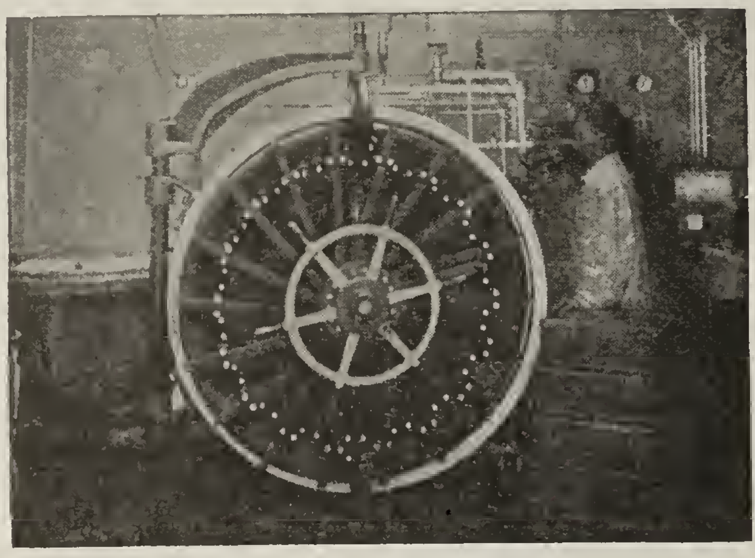

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9	Camphor, 0.1 Gm. (1 1-2 gr.). Oil of Sweet Almond, 1 mil
10	Camphor, 0.2 Gm. (3 gr.). Oil of Sweet Almond, 1 mil
12	Cornutol, 2 mils (c.c.)—vacule ampuls
14	Emetine Hydrochloride, 0.005 Gm. (1-12 gr.)
15	Emetine Hydrochloride, 0.02 Gm. (1-3 gr.)
16	Emetine Hydrochloride, 0.032 Gm. (1-2 gr.)
17	Emetine Hydrochloride, 0.04 Gm. (2-3 gr.)
24	Iodine Solution, 3.5 per cent in 1-mil ampuls. "First Aid Ampuls."
35	Mercuric Chloride Corrosive, 0.01 Gm. (1-6 gr.)
36	Mercuric Chloride Corrosive, 0.0012 Gm. (1-50 gr.)
42	Mercury Succinimide, 0.01 Gm. (1-6 gr.)

No.	Name
43	Morphine Hydrochloride, 0.016 Gm. (1-4 gr.)
44	Morphine Sulphate, 0.01 Gm. (1-6 gr.)
45	Morphine Sulphate, 0.008 Gm. (1-8 gr.)
46	Morphine Sulphate, 0.016 Gm. (1-4 gr.)
47	Morphine and Atropine No. 1. Morphine Sulphate, 0.016 Gm. (1-4 gr.) Atropine Sulphate, 0.0004 Gm. (1-150 gr.)
51	Pituitary Extract, physiologically tested, 1-2 mil (c.c.)
52	Pituitary Extract, physiologically tested, 1 mil (c.c.)
54	Quinine Dihydrochloride, 0.25 Gm. (3 3-4 gr.)
55	Quinine Dihydrochloride, 0.5 Gm. (7 1-2 gr.)
58	Quinine and Urea Hydrochloride, 1 per cent
61	Sodium Cacodylate, 0.1 Gm. (1 1-2 gr.)
62	Sodium Cacodylate, 0.2 Gm. (3 gr.)
64	Sodium Cacodylate, 0.5 Gm. (7 3-4 gr.)

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Manufacturing and Biological Chemists

PHILADELPHIA, U. S. A.

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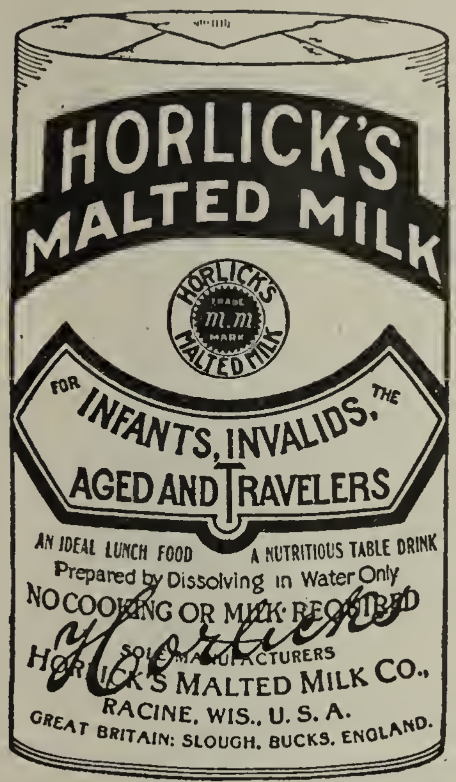
THE UNIFORM QUALITY, PURITY OF INGREDIENTS AND HIGH STANDARD OF

Horlick's the Original Malted Milk


HORLICK'S
MALTED MILK
HORLICK'S TRADE m.m MARK MALTED MILK
FOR THE
INFANTS, INVALIDS,
AGED AND TRAVELERS
AN IDEAL LUNCH FOOD
A NUTRITIOUS TABLE DRINK
Prepared by Dissolving in Water Only
NO COOKING OR MILK REQUIRED
Horlick's
SOLE MANUFACTURERS
HORLICK'S MALTED MILK CO.,
RACINE, WIS., U. S. A.
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Which have been maintained for over a third of a century, make it particularly desirable for infant feeding.

Owing to its high caloric value, nourishing and refreshing properties, and ready digestibility, it has received the favorable consideration of the profession as a diet in the treatment of Typhoid, Diphtheria, Pneumonia and Post Operative cases.

Always Specify

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Horlick's Malted Milk Company - Racine, Wisconsin

MADE IN AMERICA

Maltine Malt Soup Extract

—with which the preparation of Malt Soup becomes easy and satisfactory.

Pamphlet reflecting the views of Dr. Keller will be sent to physicians on application.

THE MALTINE COMPANY, Brooklyn, N.Y.

57 years ago

when we began to make more pharmaceuticals than we needed for what was then the best and largest prescription trade in Baltimore we decided to make *REAL* "Quality Products"—products that we could ethically exploit and honestly recommend to our near-by medical friends — friends who knew us personally.

During all of these 57 years we have lived up to that rigid standard; have seen our business steadily grow to its present international scope; and we're too old now to even think of changing that tried-and-true policy.

We "have the habit" of making "QUALITY PRODUCTS"— just as so many of the most particular prescribers "have the habit" of prescribing them.

SHARP & DOHME
Purveyors to Your Profession
since 1860

Dakin's New Antiseptic
CHLORAZENE

This new chlorine-carrying synthetic antiseptic para-toluene-sodium-sulphochloramide, was developed in France and England by Dr. H. D. Dakin of the Rockefeller Institute and has been tested clinically, with fine results, in the war hospitals of France and England. Many encouraging reports from prominent surgeons in this country are being received daily.

YOU SHOULD USE IT BECAUSE

CHLORAZENE is a definite chemical compound.
CHLORAZENE is less irritant than the hypochlorites.
CHLORAZENE is a most powerful antiseptic.
CHLORAZENE is virtually non-caustic and non-toxic.
CHLORAZENE is stable.
CHLORAZENE does not coagulate the albumens of the tissues.
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Chlorazene is being used in treating infected wounds received in modern warfare, and many physicians in civil practice report success in the use of **Chlorazene** in infections. including those of the mucous lined cavities, and for burns, ulcers and skin lesions.

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CHLORAZENE is supplied in 4.6-grain tablets, in bottles of 100, at **60c.** In powder; two special packages for general and hospital use: Hospital Package No. 1, to make 1 gallon of 1-percent solution, **55c;** Hospital Package No. 2, to make 5 gallons of 1-percent solution, **$2.00.** Chlorazene Surgical Cream, in 4-ounce jars, each, **60c.** Prices on larger quantities on request.
The trade will be stocked, but if your druggist is not supplied we shall be glad to supply you direct, from our home office or branches.

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IOCAMFEN

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Smooth, stable, heavy, well adhering liquid produced by the interaction of Iodine Camphor and Phenol. No alkaline iodides, alcohol, glycerine or other iodine solvents.

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Readily dissolves and permeates through pus, wound secretions and impurities.
Highly analgesic, antiphlogistic, stimulating and granulating.
Well nickeled instruments not attacked. Stains easily washed out.

Manufactured in U. S. A. and furnished in One, Four and Eight Ounce Bottles. Information and Specimen Bottle from

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- FOR EXPECTANT MOTHERS ETC.

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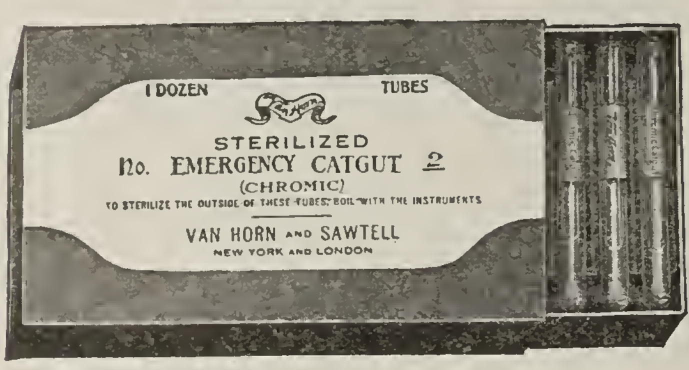

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Send for booklet of instructions how to forward tissue and other specimens. for examination.

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may often be readily traced to imperfect digestion of protein or fat, to a deficiency of total solids in the diet, to a lack of energy, or to a diet containing starchy substances. While this condition is not necessarily a serious one, a natural elimination with soft, smooth stools of a good character is much to be desired, and has no little bearing on the general health of the infant.

The prompt and favorable results following the use of Mellin's Food in constipation is common knowledge to a vast number of medical men, but to physicians who are not familiar with the application of Mellin's Food to correct these errors of diet, we will send, if desired, suggestions which will be found very helpful.

Mellin's Food Company, Boston, Mass.

IF IRON IS INDICATED

OVOFERRIN

(*See description "New and Nonofficial Remedies."*)

should be prescribed, because it has well-defined general tonic properties and does not disturb digestion or produce constipation.

Ovoferrin acts quickly in building haemoglobin and red blood cells.

Indicated in anaemia, malnutrition and nervous exhaustion.

Ovoferrin is furnished by druggists, on prescription, in twelve ounce bottles. The dosage is one tablespoonful in wine-glass of water or milk three times daily.

Produced by

A. C. BARNES COMPANY

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TO protect the delicate skin of infants from the excoriation caused by excessive or rancid perspiration—to prevent chafing by the garments—to keep the skin properly dry without exsiccation—prescribe Colgate's Talc Powder.

The report made by A. A. Breneman, M.Sc., on the comparative value of Talc Powders will be sent free on request.

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Colgate Articles are always Safe.

All the wide line of "Colgate Comforts" have in common a *quality* which means security to the user. Coleo Soap, for instance, is made entirely of vegetable oils; Ribbon Dental Cream is free from over-medication; Colgate's Talc Powder is made on the formula of a physician in charge of a baby hospital.

On request, accompanied by your prescription blank or letter head, we will send you a complimentary package of "Colgate Comforts" in convenient trial sizes.

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Special Courses given in the **Anatomy, Physiology, Pathology** and **Diseases** of the **Eye** and its **Appendages.** Also in **Ophthalmoscopy, Refraction** and **Ophthalmic Surgery** Instruction is didactic, clinical and on animals and cadaver. Classes limited. *Write,*

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WASSERMANN TEST $5.00
(Including Noguchi Control Test)
Expert work and prompt reports assured

Reports telegraphed without extra charge. Fee list and containers mailed on request.

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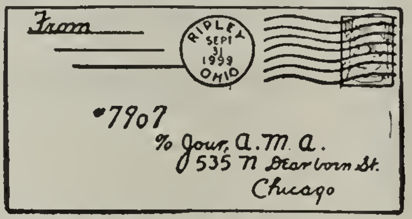
Frequently, we receive requests to this effect: "Please send me the address and particulars regarding ads. No.——, No.——, and No.——." We are not permitted by advertisers who have their mail sent % AMA to furnish inquirers information of any kind, hence when you wish to correspond with such an advertiser, address the envelope in this manner.



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Journal A.M.A., 535 N. Dearborn St. CHICAGO

N. B.—We exclude from our columns all known questionable ads. and appreciate notification from our readers relative to any misrepresentation.

APPOINTMENTS

WANTED — THERE ARE TWO VACANCIES in one of the larger hospitals in New York city; one in the department of bacteriology and serology, the other in the department of clinical pathology; both appointments are full time; the appointment in the department of clinical pathology is intended for one having a considerable knowledge of physiological chemistry, in addition to experience in clinical pathological examinations; the salary in each case is $1,200 per year. Address replies, containing statement of age, place and date of graduation, laboratory experience, etc., to 1995 A, % AMA.

WANTED — PATHOLOGIST AT ONCE, with good routine pathological and bacteriological technic, capable of doing expert serological and spinal fluid work and ordinary clinical examinations; unmarried medical graduate preferred; salary and maintenance; references required. Dr. M. F. Lautman, Medical Director Levi Memorial Hospital, Hot Springs, Ark.

ASSISTANTS WANTED

WANTED—ASSISTANT — WILL PAY $75 per month to assistant to do certain office work; will furnish everything and give him half what he makes on outside; will turn all obstetrics over to him; must be a No. 1 man, with hospital experience. F. B. Bogardus, Eureka, Mont. B

(*Continued on page 22*)

Tonics and Sedatives

Motto:—A rolling stone covers a lot of territory. Keep moving.

—o—

MACHINERY HAS LIMITATIONS

The irritable employer turned to his stenographer with a sudden snarl.

"Why don't you write it just as I say it?" he demanded.

"Because my typewriter hasn't the catarrh," she quietly responded.—Boston *Transcript.*

—o—

The Newer Pathology

We are sorry to announce the serious illness of Mr. J. A. Myers. He has been complaining for some time of a pain in his side and thought it might be appendicitis. Sunday afternoon Dr. Amick was called and on examination thought it was a pusbag. Dr. performed an operation Monday and on farther examination found it a growth and could not do anything more. His many friends hope for a speedy recovery.—N. English (Ia.) *Record.*

—o—

THE PSYCHOLOGICAL FATHER

Pa—"At last I've found a way to make that young scamp of ours stop winking his eyes."

Ma—"Really?"

Pa—"Yes; I'll show him the article in this science magazine where it says that every time we wink we give the eye a bath."—*Buffalo Express.*

—o—

Why He Lost His Friends—12

Whenever he told a funny story it began, "As there are no ladies present ———."

—o—

THE PASSION FOR LEARNING

"You mustn't go near the open windows, dear," said a mother during house cleaning time to her three-year-old daughter. "If you should fall out on the ground, you would surely break your neck."

Betty followed her mother upstairs and played happily with her doll for an hour. Suddenly her mother missed her from the bed and, noticing that the door was closed, thought she was hiding somewhere in the room. After a playful search of a minute or two she heard a patter of small feet in the hall, and hastened to open the door.

"It *didn't* break my neck, mother," remarked the child as she resumed her play with the doll. —*Youths' Companion.*

—o—

The Doctor and the Engineer

The following was forwarded by Dr. T. D. Moore of Grand Falls, Newfoundland:

Drug Store
Will you Please call the doctor for me I had to leave work this morning with stiches in my Side and Shoulder tell him to bring his Sounding instrument.
No. 4 East Street. L—— G.——

—o—

STRANGE

"She died," says a Brooklyn paper telling of the death of a woman of that city; "she died without medical assistance." — Macon *Telegraph.*

—o—

HELPING HIM OFF

A man condemned to be hanged was visited the day preceding his execution by his wife, who intended to have no hitch in the carrying out of the sentence. After the anxious inquiries about his health had been made and answered, he noticed that she had two parcels, and asked what was in them.

Wife: "This one contains a change of linen for you."

Husband: "And the other one?"

Wife: "Oh, that is the clothes line. I brought it, as I did not know whether they found the rope or we had to provide one."

(*Continued on next page*)

An Announcement

The National Pathological Laboratory

announces the establishment of a complete laboratory at

ST. LOUIS

equal in capacity and facilities to those laboratories at Chicago and New York. We present **Dr. Ralph L. Thompson** as the director of this new laboratory, whose reputation is in itself a reliable guarantee as to the accurate pathological service now available at this point.

BACTERIOLOGICAL EXAMINATIONS of Transudates and Exudates - $2.50

Cultures will be held for vaccine.

WASSERMANN TEST Blood or Spinal Fluid $5.00

We do the classical test. Any of the various modifications will be made upon request without additional charge. Sterile container, complete with needle, for taking this specimen sent gratis upon request.

EXAMINATION OF PATHOLOGICAL TISSUE - - $5.00

Slides of section sent upon request.

AUTOGENOUS VACCINES - $5.00

in the treatment of:

Pyorrhea
Asthma
Throat Infections
Sinus Infections
Hay Fever
Otitis Media
Endocarditis
Skin Infections
Bladder and Urethral Infections

Cultures are made both aerobically and anaerobically.

MERCURIAL (GREY) OIL - $1.50

SEND FOR FEE LIST. Sterile containers for the collection of all specimens, with directions, sent gratis upon request.

NATIONAL PATHOLOGICAL LABORATORIES
(INCORPORATED)

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4481 Olive Street, Cor. Taylor

NEW YORK
18 East 41st Street

CHICAGO
5 South Wabash Avenue

Wassermann Laboratory
2159 Madison St., CHICAGO
Alcoholic Luetic Liver Extract and Amboceptors furnished. Wassermann Test, Autogenous Vaccines, Pathological Specimens examined. Intravenous Gravity Outfit.
GUINEA PIGS FOR SALE
Free Instructions how to do the Wassermann Test.

Wassermann Test $5
All lines of laboratory diagnosis.
Highest order of individual service.
S. S. GRAVES, M.D.
32 N. State St. Chicago, Ill.

Send Us your Specimens or Write Us your Clinical Laboratory Wants

Our laboratory is thoroughly equipped to make every form of clinical, bacteriological, pathological and serological examination and analysis.

We earnestly solicit the work of practitioners who demand the best in diagnostic technique.

Out of town patrons can send us their specimens and get reports promptly by special delivery mail or telegram. **City and suburban patrons** have access to our free special messenger service for collection of specimens.

Drop us a card for our table of fees on all examinations and directions for obtaining and mailing specimens.

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Telephone Central 5273 CHICAGO
Mary C. Lincoln, Ph.B., M.D., Stella M. Gardner, M.D.

Telephone Randolph 7688-7689
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Medical Department—Suite 1018-1019—Plate Work Only

PPC OMAHA
$5000 for Accidental Death
$25 weekly indemnity for disability
Cost has never exceeded $13 per year, per member.
Considering the low cost of protection, you cannot afford to carry your own risk.
PHYSICIANS CASUALTY ASSOCIATION
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Conducted by physicians for physicians—a mutual organization.
Application blanks and descriptive literature free on request
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304 City National Bank Building
OMAHA - - - - NEBRASKA

TONICS AND SEDATIVES

(*Continued from preceding page*)

"DE PROFUNDIS"

At the first training camp at Plattsburg last summer an undersized "rookie" was one day struggling along through mud that threatened to engulf him and his pack. The company were singing, and when they came to the chorus he joined in with growls and grumbles that seemed to come from well down toward his belt. Beyond doubt, melody was not his forte. A big, hulking sergeant came along.

"What's the matter? What are you howling about?"

"I'm singing bass," explained the "rookie."

"Don't do it, my boy," said the sergeant; "you're too deep down already. You come up to the surface and get the air."—*Youths' Companion.*

—o—

CORRECT

Mr. Jencks was visiting in the country, and near by lived a centenarian. One morning Mr. Jencks strolled over for a chat with the old man.

"To what do you attribute your longevity?" inquired the young man.

"To the fact," replied the old man, conclusively, "that I never died."

—o—

The Chemist to His Love

I love thee, Mary, and thou lovest me—
  Our mutual flame is like the affinity
That doth exist between two simple bodies;
  I am Potassium to thine Oxygen.
'Tis little that the marriage vow
  Shall shortly make us one.
That unity is after all, but metaphysical.
  Oh, would that I, my Mary, were an acid,
A living acid; thou an alkali
  Endowed with human sense, that brought together
  We both might coalesce into one salt.
  One homogeneous crystal. Or, that thou
Wert Carbon, and myself were Hydrogen;
  We would unite to form olefiant gas,
Or common coal, or naphtha. Would to heaven
  That I were Phosphorus, and thou wert lime!
And we of Lime composed a Phosphuret
  I'd be content to be Sulphuric Acid,
So thou might be Soda, in that case
  We should be Glauber's salt. Wert thou Magnesia
Instead, we'd form that named from Epsom.
  Could'st thou Potassa be, I Aqua fortis,
Our happy union should that compound form,
  Nitrate of Potash—otherwise Saltpetre.
And thus our several natures sweetly blent,
  We'd live and love together, until death
Should decompose that fleshly tertium quid,
  Leaving our souls to all Eternity
Amalgamated. Sweet, thy name is Briggs
  And mine is Johnson. Wherefore should not we
Agree to form Johnsonate of Briggs?
  We will! The day, the happy day is nigh,
When Johnson shall with beauteous Briggs combine.

—*Punch.*

—o—

SAID EMERSON

We do not count a man's years until he has nothing else to count.

—o—

AN INFALLIBLE RECIPE

An Irishman who is noted for his wit went into a public-house the other day and called for a glass of beer. The tumbler was not full enough for Pat's satisfaction, so he quietly asked the publican how many barrels of beer he sold in a week.

"Ten," replied the publican.

"I think," replied Pat, "if yer stand me a pint I could put yez on a plan to sell eleven barrels a week."

"Agreed," said the landlord, handing him a pint. "How now am I to do it?"

Pat, taking a big drink at his new pint, "Always fill your glasses."—*Tit-Bits.*

(*Continued on next page*)

(*Continued from page 20*)

WANTED—ASSISTANT—VIEW TO PARTnership, if mutually desired; single doctor preferred; Christian graduate first-class school; have or get Pennsylvania license; willing worker with me in general practice; $75 month to start; with maintenance; opportunity given later to buy one-fifth interest; over $20,000 practice the past ten or more years; address, stating full training, experience, etc., and whether able later to make investment if satisfied and how much. Add. 1075, % F. V. Kniest, Bee Bldg., Omaha, Neb. B

WANTED—ASSISTANT IN SURGICAL and medical practice; young unmarried man, gentile race and good habits required; will give a three-year contract, starting $1,200 a year; hospital training not essential; must be a Chicago school graduate. Add. 1986 B, % AMA.

WANTED—PHYSICIAN TO ASSIST IN general contract practice in southern Illinois; must be loyal, and a willing worker; everything furnished but board; salary to commence $100 per month; good opportunity for advancement if satisfactory; give full particulars in first letter. Add. 1990 B, % AMA.

WANTED—BY OPHTHALMOLOGIST practicing in Middle Western city 50,000, a competent assistant; in answering state age, school graduation, date graduation, hospital experience in general and special medicine; state salary wanted. Add. 1977 B, % AMA.

WANTED—ASSISTANT AND INTERN IN office and private hospital in central west; practice limited to eye, ear, nose and throat; $75 per month; state age, church, nationality, preliminary education, hospital or any special training and in first letter send photo. Add. 2001 B, % AMA.

WANTED—ASSISTANT AT ONCE IN large eye, ear, nose and throat practice in Middle West; town of 25,000; prefer Scandinavian; partnership later. Add. 1996 B, % AMA.

WANTED—AN ASSISTANT AS RESIDENT physician in small industrial hospital in western New York doing emergency surgery; salary $100 a month to begin; must register in state; give full information in first letter as to education, experience, habits, age, religion, etc. Add. 2015 B, % AMA.

WANTED—FOURTH ASSISTANT PHYSICIAN, State Hospital for Insane, in middle west; male, single and graduate of Class A school; previous mental experience not necessary; promotion if services satisfactory; references required in first letter. Add. 1906 B, % AMA.

WANTED — RECENT GRADUATE, SINGLE, registered in Indiana or reciprocating state, to act as assistant in general practice, including surgery and accident work in factory city; state age, college, date of graduation, etc. Add. 1873 B, % AMA.

PHYSICIANS WANTED

WANTED — PHYSICIAN — POLISH OR Lithuanian speaking preferred, to locate in Chicago neighborhood just vacated by one physician; another physician possibly going away also; splendid opportunity for some one; free to you for the asking; will show you great future; local druggist guarantees all possible assistance. Add. Druggist, 3337 S. Morgan St., Chicago, Ill. C

WANTED—PHYSICIAN—SMALL RAILroad town; rich dairy country; English-speaking, Protestant community, 28 miles from Milwaukee; population 200; no other doctor here or within five miles; good automobile roads. For further particulars write Hughes & Elias, Wales, Wisconsin. C

WANTED—PHYSICIAN, IMMEDIATELY; a good location in a growing North Dakota town of 500 population; main line of the Northern Pacific railroad; good school, two churches, good roads, country telephone connections; large territory, well settled, majority german speaking; collections good; office to be connected with the drug store; only those who can locate at once apply. Address the Commercial Club, Gladstone, N. D. C

WANTED—DOCTOR IN NORTH DAKOTA town, large territory; new town on G. N. R. R.; population 300; good schools and church; a live business place. G. A. Stenehjem, Sec., Arnegard, N. D. C

(*Continued on next page*)

(Continued from preceding page)

WANTED — COMPETENT EAR, NOSE and throat man; Middle Western city 50,000; in answering state age, schools graduation, date graduation, hospital experience in general and special medicine; state salary wanted, which will depend on experience and ability of applicant; no equipment needed, but lots of ability; give references. Add. 1976 C, % AMA.

WANTED — PHYSICIAN IN A GOOD southeastern South Dakota town, population 400; good territory; well-to-do farmers; one of the little towns in the state; would prefer a young doctor; if you are looking for a good location get in touch with this one. Add. 1867 C, % AMA.

WANTED — PHYSICIAN FOR A $2,500 unopposed country practice, located in rich fruit belt of Southwestern Michigan, 72 miles from Chicago on Michigan pike; village of 200, with first-class high school, 2 churches, stores, flour mills, telephone exchange; people first class; collections 95 per cent.; nothing to sell. Add. 1931 C, % AMA.

INTERNS WANTED

WANTED—INTERN — UNION HOSPITAL, Fall River, Mass.; service to begin on June 1, 1917, 8 months medical intern, 8 months surgical intern and 8 months house physician; salary as house physician, $100 per month, total service 24 months; hospital has 135 beds, 1,500 yearly admissions, 1,000 surgical operations, 5,000 outpatients; board, room and washing provided during entire period; no examination, appointment dependent upon previous record. Apply to Dr. George L. Richards, 124 Franklin St., Fall River, Mass., giving full particulars as to previous education and medical history, together with references. D

WANTED—THREE INTERNS FOR JUNE appointment; service 18 months; general hospital, New York City; salary; state age, nationality and college. Add. 1890 D, % AMA.

NURSES WANTED

WANTED — A HEAD NURSE FOR A small hospital for nervous and mental diseases; capacity thirty beds; applicant must be capable of training nurses. Add. 1984 T, % AMA.

LABORATORY TECHNICIANS WANTED

WANTED — A MAN THOROUGHLY trained in all laboratory technic, in a modern hospital of 50 beds in southern Illinois; one who has knowledge of or can acquire the ability to handle an x-ray machine; salary to commence, $75 per month and complete maintenance; to the right man a good opportunity offered for advancement. Add. 1991 V, % AMA.

WANTED—AN EXPERIENCED LABORATORY man, capable of taking full charge of a private laboratory in Indiana; when writing give full details regarding qualifications, age and salary expected. Add. 1856 V, % AMA.

LOCATIONS WANTED

WANTED — LOCATION — GRADUATE A plus school, 30 years old; seven years general and contract practice; public health work; can make small investment. Add. 1993 E, % AMA.

WANTED—LOCATION—IOWA — ESTABlished unopposed practice in Protestant English speaking community; must be good territory; state population of town; give school, church and railroad privileges in first letter; must bear investigation; will consider property; must relinquish practice and introduce; send full particulars of place, terms, why selling. Add. 1997 E, % AMA.

WANTED—LOCATION—IN A GROWING village of 1,000 upwards, by an up-to-date man, aged 34, with family; two years' hospital work; ten years' general practice; have New York state license; give full particulars. Add. 1978 E, % AMA.

WANTED—LOCATION—IOWA — ESTABlished unopposed practice of $3,000 to $3,500; Protestant community; must be large territory; good school, churches, live railroad town of 250 or over; bear strict investigation; will consider property; must relinquish practice and introduce; send full particulars of place, terms, why selling, etc. Add. 1794 E, % AMA.

(Continued on next page)

TONICS AND SEDATIVES

(Continued from preceding page)

A Qualified Dropsy

Mr. Berry was a sufferer of inflammatory rheumatism which terminated in dropsy—of a kindly jovial disposition; always cheerful, the pride of his children's hearts.—Scotland (S. Dak.) *Journal.*

—o—

POOR GIRL

WANTED—A girl to mangle. Inquire at Memorial Hospital.

—*Ad* in Johnstown (Pa.) *Leader.*

Rather a decent way to get surgical material, suggests Dr. W. G. Turnbull, of Cresson, Pa., who sends in the "ad."

—o—

The Inspired Expert

"NON DISPUTANDUM DE GUSTIBUS"

The following extract is from the testimony of Dr. Michael P. Conway, Auburn, N. Y. (see THE JOURNAL, March 24, p. 927), who appeared as one of the "experts" for the Sargol Company in its recent trial:

Q.—And, now, doctor, from the standpoint of a physician, isn't THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION considered one of the best periodical publications in the United States of America?

A.—Yes, it is one of the best.

Q.—And the best, isn't it?

A.—No, I should not want to say that.

Q.—What is that?

A.—I should not want to say that.

Q.—The best weekly periodical publication?

A.—In my opinion it is not the best.

Q.—It is not the best. But it is one of the best?

A.—It is one of the best.

Q.—Would you say that it was second, in your opinion?

A.—Why, I don't know where to place it as to its value.

Q.—Well, will you name what you consider the best publication?

A.—I think the *New York Medical Journal* is far superior to it in the character of the papers which are presented there and they bear what I might say a more unbiased view to the advance of new ideas.

—o—

A MODIFIED PATRIOT

General Gordon, the Confederate commander, used to tell the following story: He was sitting by the roadside one blazing hot day when a dilapidated soldier, his clothing in rags, a shoe lacking, his head bandaged, and his arm in a sling, passed him. He was soliloquizing in this manner:

"I love my country. I'd fight for my country. I'd starve and go thirsty for my country. I'd die for my country. But if ever this damn war is over I'll never love another country!"

—o—

The Demise of the Leg

Mrs. C. M., whose left leg was amputated recently, is getting along nicely at the Home Hospital. Attending physicians feared that she would not be taken off the operating table alive, but she has been improving slowly since the amputation. Mrs. M.'s leg died when a blood clot stopped circulation.—Lafayette (Ind.) *Courier.*

—o—

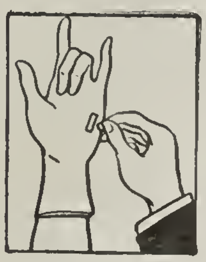
ANOTHER REWARD FOR A HAIR RESTORER

STOLEN—Saturday night, Feb. 12, one blue mare mule, 9 years old, weighs about 900 lbs.; one hind foot has hair rubbed off. Liberal reward for recovery. Phone 11-X, S. W. Jones, Belen, Miss.

—o—

Quis[1] crudus[2] quattuor[3] te[4] lectum[5] album[6] et spiravit.[7]

1. Who. 2. Raw. 3. Four. 4. Thee. 5. Read. 6. White. 7. Past tense of spirare, "to blow," blew.



How to Apply the E. Z. PATCH for Rubber Gloves

PUT the faulty glove on your hand—so that the surface around the tear or puncture is smooth; then, a few brisk rubs by sandpaper to "rough" the fabric. Now, with a pair of tweezers or forceps, remove an E. Z. Patch from the mounting card—moisten the RED, rubber side with a drop of gasoline, and, after permitting this to dry for a few moments, place the moist side down on the puncture or tear and press the patch with your thumb for a few seconds so it can firmly adhere.

All done, and ready for sterilization, (or boiling) where the patch will actually vulcanize to the glove.

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Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

Traumatic Surgery. By John J. Moorhead, B.S., M.D., F.A.C.S., Adjunct Professor of Surgery, New York Post-Graduate Medical School and Hospital. Cloth. Price, $6.50 net. Pp. 760, with 522 illustrations. Philadelphia: W. B. Saunders Company. 1917.

Laboratory Technique. The Methods Employed at St. Luke's Hospital, New York. By F. C. Wood, Karl M. Vogel and L. W. Famulener. Paper. Price, 75 cents. Pp. 172. New York: James T. Dougherty, 1917.

A Chemical Sign of Life. By Shiro Tashiro, Instructor in Physiological Chemistry in the University of Chicago. Cloth. Price, $1 net. Pp. 142. Chicago: University of Chicago Press, 1917.

Man's Unconscious Conflict. A Popular Exposition of Psychoanalysis. By Wilfrid Lay, Ph.D. Cloth. Price, $1.50 net. Pp. 318. New York: Dodd, Mead & Co., 1917.

City Milk Supply. By Horatio Newton Parker. Cloth. Price, $5 net. Pp. 493, with 63 illustrations. New York: McGraw-Hill Book Company, Inc., 1917.

The Public Service

U. S. Public Health Service

Changes for the seven days ended March 14.

Cumming, H. S., surg., re-assigned for duty in the Hygienic Laboratory, effective Feb. 14.

McMullen, John, surg., directed to proceed when necessary to points in the states of Kentucky, Tennessee, Virginia, West Virginia and such other states in the Appalachian region as the Bureau may indicate, for the purpose of supervising the operations of trachoma hospitals, conducting field clinics and making investigations in regard to the prevalence of the disease.

Schereschewsky, J. W., surg., proceed to Washington, D. C., on March 16, for a conference with the Bureau in regard to investigations of industrial hygiene.

Hurley, J. R., passed asst. surg., directed to give a course in first aid to the Public Health Service Unit of the United Service Section of the American National Red Cross.

Bryan, W. M., passed asst. surg., granted 1 month's leave of absence from March 14.

Kearny, R. A., passed asst. surg., relieved from further duty on coast guard retiring board convened by department order of Nov. 3, 1916.

Wheeler, G. A., asst. surg., directed to visit places in Spartanburg County and neighboring counties of South Carolina for the purpose of collecting data relating to pellagra.

Wynne, R. E., asst. surg., relieved at Stapleton, N. Y. Proceed via Washington, D. C., Cincinnati, Ohio, and Lawrence County, Ind., to St. Louis, Mo., for duty in studies in connection with rural sanitation.

Lombard, M. S., asst. surg., relieved at Hygienic Laboratory. Proceed to New Orleans, La., and take the first available steamer for Tampico, Mexico, for duty in the office of the American Consul.

Prather, D. J., asst. surg., relieved at Ellis Island, N. Y. Proceed via St. Louis, Mo., to Okmulgee County, Okla., for duty in studies of rural sanitation.

Eskey, C. R., asst. surg., proceed to El Paso, Texas, stopping enroute at Washington, D. C., for duty in connection with the prevention of the introduction of typhus fever in the United States. After two weeks proceed to Eagle Pass, Texas, for the same duty.

Sydenstricker, Edgar, public health statistician, proceed to points in Spartanburg and neighboring counties for the purpose of collecting epidemiologic data relating to pellagra.

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(Continued from preceding page)

WANTED—TO PURCHASE LOCATION IN Western Pennsylvania or eastern Ohio; town of 1,000 to 10,000; will buy outfit; no real estate at present; 15 years' experience; recent postgraduate work; good habits. Add. 2016 E, % AMA.

WANTED—TO PURCHASE ALL OR PART interest in contract mining hospital, southwest preferred; prepared to handle good sized proposition or one just starting that has a future; married; ethical; experienced in contract mining requirements; can come at once. Add. R. J. Sewall, M.D., 116 Oak Grove St., Minneapolis, Minn. E

WANTED — A PATHOLOGIST AND roentgenologist, each owning successful laboratory in town of 50,000, desire larger field; institution or clinic in west or southwest preferred; those willing to pay real money for real work, write; otherwise save stamps; internships and salaries not considered; can furnish complete laboratory equipment. Add. 1928 E, % AMA.

WANTED—LOCATION — WYOMING, NEvada, New Mexico, Utah, Nebraska; contract practice, unopposed or slightly opposed, by 1912 graduate; hospital training; experienced in contract surgery, one year with first-class surgeon; will buy reasonable amount of equipment, but no real estate; must be first-class proposition; can come at once; full particulars first letter. Add. 1749 E, % AMA.

WANTED — LOCATION FOR EYE, EAR, nose and throat work by a well-trained man; graduate "A" school; had experience in above specialty; can do successfully all surgery in this specialty; south preferred, Florida first; city 10,000 and up; good habits; married; would consider partnership with good man. Add. 1901 E, % AMA.

WANTED — TO PURCHASE CONTRACT practice or partnership in West Virginia or reciprocating states; will consider substitute work or position in sanatorium or state hospital for insane. Add. 1748 E, % AMA.

WANTED — AN EXPERIENCED PHYSIcian wishes to learn of a location in a good farming community; prefer western Iowa or eastern Nebraska. Add. 1968 E, % AMA.

PARTNERS WANTED

WANTED — WILL SELL ONE-HALF INterest in an unusually attractive California sanatorium, ideal home, as well as a thriving business, with practically unlimited future possibilities, near large center Pacific Coast; to insure prompt service, in your reply kindly state amount that you can invest, age, nationality and school. Add. 1994 G, % AMA.

WANTED — PARTNER — SOUTHWEST— In well-established eye, ear, nose and throat practice; $500 cash for half interest; $6,000 to $7,500 per year now; can be increased to $12,000; must be ethical and competent; details upon request; please do not write unless you mean business; I need few months' rest while away; 66⅔ per cent. of income to you. Add. 2010 G, % AMA.

WANTED — A MAN EXPERIENCED IN psychiatry to become resident physician and take half interest in an old-established and profitable New England sanatorium; state professional and financial equipment in first letter. Add. 1905 G, % AMA.

WANTED — IN ONE OF THE RICHEST agricultural regions of the middle west; a surgeon with a very large practice and owner of a 50-bed hospital wishes to associate with him a strong medical man with some laboratory training as partner or on salary; German or Scandinavian preferred; must have best of reference. Add. 1817 G, % AMA.

PARTNERSHIP WANTED

WANTED—COMPETENT UROLOGIST DEsires to become associated with a first-class urological or general surgeon in one of the largest cities in the middle west or west; able; references. Add. 1938 H, % AMA.

WANTED — SURGEON — SINGLE, TEN years' experience general practice, now doing postgraduate work in abdominal surgery, desires partnership; prefer New York, but will go anywhere; F. & A. M.; no whisky, drug or tobacco habits; best health; references exchanged; available May 1; will make any preparation required. Add. 1936 H, % AMA.

(Continued on next page)

WANTED—SURGEON WANTS PARTNERSHIP or location where practice can be confined to surgery; prefer Oklahoma or state reciprocating with Nebraska; county physician, health officer and railroad surgeon in present location; aged 31, married, member state and county medical societies; satisfactory references furnished as to character and ability. Add. 2013 H, % AMA.

WANTED—TO FORM PARTNERSHIP OR assistantship with surgeon or general practitioner; am married, 30 years old, Protestant, 6 foot, perfect health, total abstainer; degree and M.D., Class A+ school; internship in 400-bed hospital; one year on salary; 3 years in general practice; full working knowledge of all laboratory work; willing to prepare for special work as case demands. Add. 1914 H, % AMA.

SITUATIONS WANTED

WANTED — POSITION — FIRST-CLASS general practitioner; about 15 years' experience; or would consider partnership, if no investment; registered Iowa and Minnesota, Washington; graduate University Iowa Medical School; married (one child); also B.Sc. degree; aged 38, strong and active; consider my services worth $175 to $200 month; open for any deal at once. Add. 1145, % F. V. Kniest, Bee Bdg., Omaha, Neb. I

WANTED — BY WOMAN PHYSICIAN — Position in institution; seven years' experience in hospital for insane as assistant physician on acute service; three years in tuberculosis sanatorium; one year epileptic colony; held position as superintendent of small tuberculosis sanatorium; at present in private practice; graduate College Physicians and Surgeons, Chicago, '03. Add. 1985 I, % AMA.

WANTED — ASSISTANTSHIP OR SALARIED position, by a graduate of Class A school; hospital experience; can speak both Italian and American; prefer location in large Italian colony; am single, ambitious, energetic and sober; can give best of references. Add. 1982 I, % AMA.

WANTED — POSITION IN A HOSPITAL for the insane under progressive management by an A+ university medical college instructor who has had special training and three years' experience in psychiatric and serological work; services available in July; particulars and references furnished on request; correspondence solicited. Add. 2002 I, % AMA.

WANTED—POSITION—AGED 30, UNMARRIED; registered Illinois, Tennessee; can reciprocate in many others; graduate Barnes Medical College, St. Louis; also graduate pharmacy; expect $100 to $125 and maintenance; one year hospital experience; good in general practice, internal medicine, diagnosis, obstetrics, etc.; graduated 1912; 3 years' general practice; bank references. Add. 1149, % F. V. Kniest, Bee Bldg., Omaha, Neb. I

WANTED — GRADUATE EUROPEAN A+ university, good diagnostician, rational therapist, specialist physiotherapy, hospital training, good lecturer, honest, normal habits, good personality, Jew, married, speaks several languages, wishes position in hospital, sanatorium; Virginia preferred; also other places; moderate salary. Add. Koler, General Delivery, Washington, D. C. I

WANTED—POSITION—AGED 30, married, no children; graduate Class A+ medical college; registered by examination Louisiana and Alabama; can reciprocate in many states; good appearance, etc.; year hospital work; do some surgery; good physical and laboratory work and good diagnostician; salary $150 month; best references. Add. 1141, % F. V. Kniest, Bee Bldg., Omaha, Neb. I

WANTED—EXPERIENCED LABORATORY worker (woman) desires position in municipal or private laboratory or hospital for bacteriological or serological diagnosis or research work; at present doing diagnostic work for large public health laboratory. For details Add. 1988 I, % AMA.

WANTED — SALARIED POSITION WITH hospital, corporation or surgeon by high class experienced physician; graduate Class A+ school; special training in obstetrics, emergency surgery, internal medicine; skilled anesthetist, good radiographer; 35 years old, married (no children); clean habits, best references; licensed Minnesota, Iowa, Indiana; reciprocal privileges many states; immediate acceptance. Add. 1969 I, % AMA.

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WANTED — SITUATION — IN CHICAGO, with insurance company, factory or as assistant to physician during morning hours by young practicing physician; graduate of University of Illinois and regular internship. Add. 1981 I, % AMA.

WANTED—POSITION AS BACTERIOLOGIST or laboratory assistant; college and partial medical education, also two years' experience with a well-known concern; references and further information on request. Address F. E. Church, 621 Cottonwood Street, Grand Forks, N. D. I

WANTED—POSITION — BRIGHT YOUNG physician, graduate Jefferson Medical College; M.D. and B.Sc. degrees; fine appearance, active; aged 30; registered in Iowa and Washington; can reciprocate many others; experienced general practice; unmarried; consider any good position or deal. Add. 1142, % F. V. Kniest, Bee Bldg., Omaha, Neb. I

WANTED—NORWEGIAN PHYSICIAN DEsires assistantship, partnership or contract mining or lumber practice; 4 years' experience in contract and private practice; aged 32, married, best of references; graduated Chicago, 1912; have Illinois, Michigan and Wisconsin license; personal visit if you desire. Add. 2012 I, % AMA.

WANTED—PHYSICIAN, AGED 31, GRADUATE A+ college, single, four years' hospital work, good personality, best references, wishes position as private physician to family or to an individual who wishes to travel or go to country for their health; moderate salary. Add. 1777 I, % AMA.

WANTED — WOMAN PHYSICIAN DEsires salaried position as superintendent of small hospital or as assistant in large one; have had 7 years' experience in care of insane in state hospital service; 3 years' general hospital work; competent in ordinary laboratory methods; graduate Class A school. Add. 2021 I, % AMA.

WANTED—POSITION AS SURGEON TO general hospital or industrial corporation or associate with busy surgeon or eye, ear, nose and throat man; have had 16 years' general practice; can do general surgery or eye, ear, nose and throat work; have managed a small hospital successfully; desire larger field; aged 37; good mixer. Add. 1937 I, % AMA.

WANTED — POSITION — INDUSTRIAL surgery or hospital physician in factory, mine or other hospital; aged 28, single, good health. A.B., M.D. degrees, A+ school; one year postgraduate training in medicine and surgery; three years' private practice; references and particulars on request. Add. 1965 I, % AMA.

WANTED — TUBERCULOSIS SANATORIUM position in Colorado, New Mexico, Arizona or Texas by physician with extensive experience in organization and administration; big experience in artificial pneumothorax work; will sacrifice a very desirable position for sake of climatic change; salary must be fair or prospects for outside work extraordinary. Add. 1865 I, % AMA.

WANTED — LABORATORY TECHNICIAN and radiographer wishes to associate himself with a group of ethical physicians in Pacific Coast state; nonmedical, young, pleasant personality; excellent references; salary $1,800; will consider salary and commission proposition. Add. 1975 I, % AMA.

NURSES LOCATIONS WANTED

WANTED — REGISTERED NURSE DEsires to take charge of tuberculosis sanatorium; competent to manage all details connected with nursing staff; extensive experience in hospital and sanatorium work in large eastern institutions; prefer to locate in state not too far west; position should pay at least $75 per month; excellent references from hospital superintendents and physicians. Add. 1889 W, % AMA.

WANTED—BY NURSE REGISTERED IN New York and Pennsylvania a position as superintendent of hospital or other institution; graduate of a large Eastern hospital; can furnish best of references; five years in present position. Add. 1891 W, % AMA.

NURSES—WRITE F. V. KNIEST, R. P., Omaha, Neb., for permanent position, any kind of work anywhere U. S. or Canada. Established 1904. Gilt-edge references.

(*Continued on next page*)

WANTED — POSITION — GRADUATE nurse desires position as assistant superintendent of large hospital or superintendent of medium sized hospital; exceptional experience; excellent credentials; at present employed; west preferred. Add. 2018 W, % AMA.

WANTED—NURSE—GRADUATE, REGISTERED, experienced, desires hospital or other institutional position as chief operating room nurse, head nurse or assistant superintendent; thoroughly capable, absolutely reliable; good health; pleasing personality; aged 30, single; excellent references; can accept position immediately after April 1; prefer Pittsburgh, Pa., or near. Add. 2006 W, % AMA.

SALESMEN WANTED

WANTED — REPRESENTATIVES TO ORGANIZE motion picture extension courses; must be well acquainted with practitioners; unusual opportunity for quick returns; liberal commissions; write stating experience, present occupation and references; see display adv. p. 10, this issue. Clinical Film Corp., 110 West 40th St., New York, N. Y. JJ

WANTED — CAPABLE SALESMEN NOW calling on the medical profession to handle our line of candy medication; a nationally advertised line in great demand; will not conflict with other lines in any way; would like to hear particularly from high grade men in Illinois, Oklahoma, Texas, Kansas, California, New York, West Virginia and other southern states. For further information add. Western Chemical Company, Inc., Hutchinson, Minn.

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WANTED—ATOPHAN FOR VERY SICK rheumatic patient; give quantity and price. J. F. Marchand, M.D., Canton, Ohio. J

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WANTED — KEEN'S SURGERY—IF YOU have Keen's Surgery, state how many volumes you have, in what condition they are, and what cash you will accept for them, if you will send them on approval as to their condition. Add. 2008 M, % AMA.

FOR SALE—THE BOOKS AND INSTRUMENTS of the late Dr. Frederick Townsend, F.A.C.S.; list on application. Drs. Webster & Ferguson, Sault Ste. Marie, Mich. M

OSLER'S SYSTEM OF MEDICINE, 7 vols., 1910, cost $42, like new, for $15, f.o.b. Chicago; first check takes it; ask for catalogue with 2,000 other bargains. Login Brothers, 1816 W. Harrison St., Chicago, Ill.

See page 20 for cost of classified and commercial announcement advertisements.

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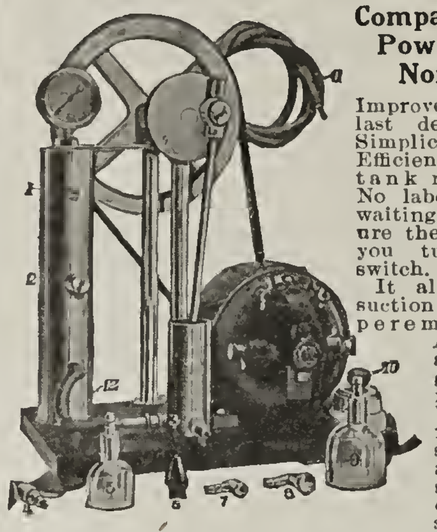

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FOR SALE—IDAHO—NO REAL ESTATE, but a clean $5,000 practice, 95 per cent. good, in an up-to-date town of 1,000; a 4-room hospital furnished, including my office fixtures, 2 horses, harness and sleigh; must sell by June 1, as I am going to give all of my time to other interests; if interested write; no dopes or drunks desired; $750 cash; investigation solicited; assistant surgeon for railroad company and examiner for 8 insurance companies; all can be transferred. Add. 1966 N, % AMA.

FOR SALE — ILLINOIS — EXCELLENT practice, 40 miles from Chicago; steam and electric railways; population 1,500; town has electric lights, good water system, streets and walks, high school; farming and dairy country surrounding; drive automobile entire year; only one other physicion; 9 to 15 miles to others; practice $9,000 annually; January, $1,000; February, $1,100, and March will be $1,150; collections 95 per cent.; $500 for location, drugs and office furniture and supplies at invoice; will require about $1,500; possession May 1; come and inspect; good reason for selling. Add. 2019 N, % AMA.

FOR SALE—ILLINOIS—WILL RETIRE; snap for $700; $3,500 practice, office furniture, fixtures, library, medicines, instruments, 3-room office, 8-room residence, garage, all on same lot; will rent for $15 per month; good auto roads year round; now doing $18 to $30 per day; 99 per cent. collected; railroad town 500 people; big territory; one other doctor 65 years of age; this appears but once. Add. 1992 N, % AMA.

FOR SALE—CHICAGO—$12,000 TO $15,000 exclusive family practice; nice neighborhood; office on money-making corner; am giving you the benefit of a 20-year established business, with personal introduction, for $5,000; one half cash, balance monthly; this includes furniture, drugs, instruments, x-ray, good will; have made a fortune here. Add. 1857 N, % AMA.

FOR SALE—ILLINOIS — ONE OF THE best unopposed locations in state; small railroad town; mixed Protestant and Catholic community; $4,000 to $5,000 business; increased by doing some surgery; 99 per cent. good; here 14 years; good reasons for selling; will sell practice; real estate optional. Add. 1925 N, % AMA.

FOR SALE—ILLINOIS—PRACTICE—$3,200 collected per annum; established 25 years; county seat town 1,300; all modern improvements; competition right; right man can make good from the start; office fixtures and drugs, $1,000; $7,000 home optional; can give possession at any time; am leaving on account of other business interests. Add. 1866 N, % AMA.

FOR SALE — CHICAGO — SUBURBAN practice and fine residence, $6,000; modern 8-room home and office, beautiful yard, flowers, fruit; 7,000 people; in territory not overworked; on fine auto road; excellent school and church within one block; will accept $3,500 cash; balance mortgage. Add. Dr. W., 1124 Republic Bldg., 209 S. State St., Chicago, Ill.

FOR SALE—CENTRAL ILLINOIS—PRACTICE in a rich town of 2,500; competition right; collections over $6,000; modern office (rented) and equipment; price, $3,000; $8,000 home optional; successor must be good careful diagnostician; do not write without you mean business. Add. 1944 N, % AMA.

FOR SALE—CHICAGO—$200 BUYS MODERN office equipment and practice in good North Side location; new building in suite with established dentist; reception room furnished; reason for leaving, am going to specialize. Add. 1973 N, % AMA.

FOR SALE—CENTRAL ILLINOIS—UNOPPOSED village and country practice; town of 200 population; good school and churches; fine farming and dairying community; collections excellent; practice runs $2,000 and more; price for drugs, office furniture and driving outfit, including one horse, $500. Add. Dr. L. J. Cordonnier, Beaver Creek, Ill. N

(Continued on next page)

FOR SALE—ILLINOIS—$3,500 PRACTICE in town of 1,000; gravel roads; auto the year round; high school, churches and one of the finest farming districts in the state; collections 95 per cent.; situated in northern central portion Illinois; one colleague; railroad and insurance appointments; residence and office together in main part of town; for price of property, $3,500; reason for selling, taking up special study; established 10 years. Add. 2022 N, % AMA.

FOR SALE—NORTHERN ILLINOIS—CONTRACT and general practice; guarantee delivery; contract nets $75 monthly and passes; don't need to buy property; will sell for nominal amount; give possession now; city advantages; good schools; small competition; have accumulated $30,000 property here in 11 years; leaving to enter other business; act quickly. Add. 1939 N, % AMA.

FOR SALE—ILLINOIS — AN UNUSUAL opportunity is here offered to a Class A graduate who does laboratory diagnostic work (no opposition); more than $15,000 is paid yearly for surgery alone; hence the following offer is a bargain both in property and for practice; for $7,000 large modern house including reception, drug, laboratory and operating rooms; village of about 1,000 people is in rich farming community on national auto highway, 19 miles from two cities containing hospitals and 45 miles from Chicago; good reason given for selling. Add. 1809 N, % AMA.

FOR SALE — SOUTHERN INDIANA— Good location, inland town 300, 4 miles from mine working 250 men; open for contract with physician; practice established 30 years; good country; practice, residence and office for sale at less than half price of real estate; thorough introduction; terms to suit purchaser. Add. 1880 N, % AMA.

FOR SALE — NORTHWESTERN IOWA— Practice in live town of 1,200; two railroads; large territory; collections good; fine opportunity for a man who does his own surgery; selling for less than cost of equipment; will remain some time to introduce; only two other physicians. Add. 1980 N, % AMA.

FOR SALE — IOWA — GENERAL PRACTICE; averaged $8,200 year for almost past 5 years; collections almost 100 per cent.; wealthy farming community; population 500 to 600; three hospitals less than 15 miles; going to specialize; extraordinary deal; main line railroad; deposits $1,500,000; good roads; use car year round; take part cash; no charge practice, location, etc.; modern residence. Add. 1144, % F. V. Kniest, Bee Bldg., Omaha, Neb. N

FOR SALE — IOWA — WONDERFUL OPPORTUNITY; town 1,500, main line railroad; practice established twenty years, hospital nine years, only one in county; business last three years totaled $30,000; business January, $1,300; can be increased by man doing nose and throat work; town has four new churches, three banks, deposits over $1,000,000; municipally owned public utilities; collections gilt edged; most complete equipment possible for up to the minute work; rent cheap; will stay with purchaser two months; going away to specialize; priced right. Add. 1795 N, % AMA.

FOR SALE—IOWA PRACTICE—POPULATION 100,000; practice $10,000 year; collect high as $8,900; general practice and some surgery; special discount on equipment; small equity in residence; part cash; balance easy payments; don't miss seeing this deal; moderate investment; special price and get full particulars. Add. Dr. Walter E. Baker, 605 Citizens Natl. Bank Bldg., Des Moines, Iowa.

FOR SALE—KENTUCKY—NEW PRESSED brick residence and office combined; 15 rooms, electric lights, waterworks, furnace heat, hardwood floors, slate roof; barn, buggy house and garage; located in Williamstown, Ky., county seat, of about 1,000 inhabitants, on Dixie Highway, 40 miles south of Cincinnati and 47 miles north of Lexington, Ky., on O. & C. R. R.; in general practice here 17 years; desire to locate in Cincinnati on account of only son being in medical college there and will remain there after graduation; price, $7,000. A. V. Menefee, Williamstown, Ky. N

FOR SALE—KANSAS—GENERAL PRACTICE; population 850; accredited high school; established 8 years; collections 98 per cent.; large territory; 6 churches; several appointments; prosperous farmers; collections over $3,000 year; take part cash; bungalow; fine roads, etc.; will bear investigation. Add. 1138, F. V. Kniest, Bee Bldg., Omaha, Neb.

(*Continued on next page*)

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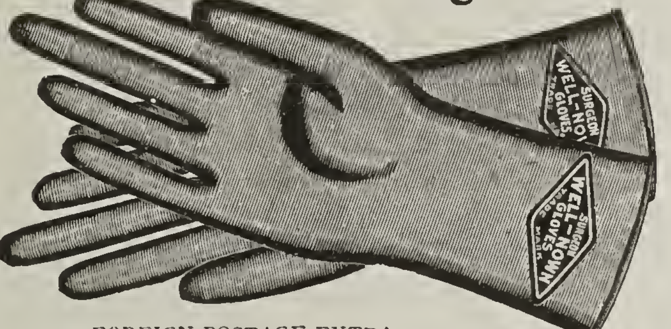

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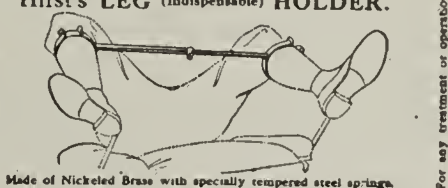

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FOR SALE — KANSAS — PHYSICIAN'S office furniture consisting of writing table, two medicine cases, operating table, miscellaneous supplies, various instruments, books and medicines; entire outfit for $100; a good physician needed in this locality; population 200, with good surrounding country; nearest physician 4 miles. Mrs. E. Forward, Elmo, Kan. N

FOR SALE — EASTERN MASSACHUSETTS; practice of late physician; established 30 years; averaged $5,000 to $6,000 yearly collections; including office furniture and equipment; static electric machine, with x-ray connection; baking apparatus; other appliances; some repairs necessary; modern manufacturing city of 65,000; suitable place for general practitioner; terms reasonable. For particulars add. 1963 N, % AMA.

FOR SALE—MICHIGAN—$4,000 PRACTICE in best town in Southwestern Michigan; population 6,000; 3 railroads; electric road; beautiful resident and good manufacturing town; wealthy surrounding country; mostly stone roads; best office location in city; $1,000 cash buys practice with office furniture and drugs. Add. 1930 N, % AMA.

FOR SALE—MICHIGAN — $5,000 PRACTICE; incorporated fourth-class city of about 700 on D. & M. R. R.; four churches, twelve-grade high school; good roads; nearest doctor 15 miles; nine-room house, 5½ lots on Main St.; water all through from flowing well in yard; electric lights, telephone, barn and garage; office in brick block, electric lights, telephone, hot and cold water; rent free; seven-room private hospital, rent or sell; some appointments to transfer; price, residence and practice, $3,500; surgeon can more than pay for same in first year; one other M.D., elderly; easy competition. Add. Lock Box 40, Rose City, Mich. N

FOR SALE—MICHIGAN—MUST HAVE A good man to take unopposed country practice at once; village 300; large rich farming territory; nearest competition 7 miles; 18 miles from Grand Rapids; roads fine; collections 95 per cent.; must buy small stock of drugs and office outfit; don't answer unless you mean business. George L. Bond, Alto, Mich. N

FOR SALE—CENTRAL MICHIGAN—SIXTEEN-room hospital; nine-room dwelling; $4,000 practice; x-ray and hot air machine; fourteen miles from city; state roads; rich community; $5,000, easy terms. Write, VanWagoner, Hoffman & Sharp, Dwight Building, Jackson, Mich. N

FOR SALE—MICHIGAN — ONE OF THE finest locations in Michigan; general practitioner and first-class surgeon needed; 25 years established practice; population 1,100, with added large resort and tourist; county house and jail; good school, roads, three churches; two physicians; nearest town 9 miles; one physician; fine office, five living rooms; furnace, electric lights, city water, two-story barn; about $600 worth of instruments in first-class condition; library, furniture, etc.; reason for selling, death; terms, $1,300; $500 down, $12 per month balance. Add. 1892 N, % AMA.

FOR SALE—EASTERN MICHIGAN—OVER $6,000 yearly practice; can be increased; in up-to-date modern city of 2,500 population; county seat; pavements, electric lights, fine city water; two railroads; excellent farming community; state roads; hospital; good schools and churches; can use auto year round; will sell modern ten-room house with bath, steam heat, electric lights, city water, sewer connections, garage and complete office equipment, drugs, etc., including records and treatment of cases for past five years; good competition; collections 100 per cent.; opportunity excellent; will introduce thoroughly; only $6,000; one-half down, balance easy payments; investigate at once; mean business. Add. 1951 N, % AMA.

FOR SALE—WESTERN MONTANA—$3,500 practice, including complete office equipment, x-ray, electric sterilizer, etc.; town 900; agriculture, fruit growing and sugar-beet industries; collections 95 per cent.; ideal climate; large territory; insurance appointments transferable; competition right; must sell by May 1; cause for selling, ill health in family; price complete, $700. Add. 1929 N, % AMA.

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FOR SALE—WESTERN MONTANA—UNOPPOSED practice of $4,000 or $5,000 a year, with three-fourths interest in 19-room hospital; county seat; no opposition closer than 25 miles; price, $6,500, with about $2,500 down; town 1,000; no better chance for good man. Add. 1945 N, % AMA.

FOR SALE—WESTERN MONTANA—HOSPITAL and practice; building cost $13,500; did $13,000 professional work in 1916; equipment optional; terms reasonable; must have part cash. Add. 1954 N, % AMA.

FOR SALE — NEBRASKA — $3,000 PRACTICE, including office fixtures and furniture of 7-room house; town of 350; electric lights, etc.; 30 miles from Omaha; must sell by June 1; I am leaving state; price complete, $500. Add. 1989 N, % AMA.

FOR SALE — NEBRASKA — A SNAP—$2,500 cash a year country practice; rich farming community; territory 10 miles north, 9 south, 14 east and 15 west; little local competition; plenty surgery and obstetrics; fees very high; 90 per cent. collections; all English-speaking; Germans predominate; will sell $1,400 residence with it, or only practice and some office furniture, etc.; terms, without residence, $200 cash or bankable notes, and 25 per cent. of first year's practice, payable quarterly; a perfect snap for some doctor; seller is here for ten years; modern town of 300; three elegant rooms over the drug store; electric light; brick building. Add. 2024 N, % AMA.

FOR SALE—NEBRASKA — FIRST-CLASS general practice in large city in eastern Nebraska; one of the finest physician's offices and residences in the city; prominently located on principle street in excellent community; am taking up special work, but will thoroughly introduce; good opportunity for well-equipped man to get busy at once; $10,000; terms. Add. 1962 N, % AMA.

FOR SALE — SOUTHERN NEW HAMPSHIRE; $2,500 cash practice and fine residence, all modern improvements, in suburban town 1,500; on main line railroad, 2 hours from Boston; near 2 large cities; excellent steam and trolley service; good roads, schools and churches; nearest physician 3 miles; congenial; town and county appointments; reason, failing health; price, $3,800, on terms. Add. 2007 N, % AMA.

FOR SALE—NEW HAMPSHIRE — $4,000 village and country practice in live railroad town; population 1,500; farming and manufacturing; good schools, high school; Catholic and 3 Protestant churches; A. F. & A. M., Odd Fellows lodges; finest roads possible; collections 90 per cent.; fees good; a very high grade business that can nearly all be delivered; one other physician; long drives not necessary unless desired; house 9 rooms and bath, electric lights; town water system, sewer connections; office in house; hot water heated; garage; one-half acre land; sell residence and practice, $3,500; one-third on mortgage; driving outfit, horse and harness, 2 wagons and 2 sleighs optional; also auto; or will sell practice and driving outfit, less auto, for $1,000; this is a good thing, but don't write unless you mean business; will stay till June 1 if desired. Add. 1883 N, % AMA.

FOR SALE—IN THE SUBURBS OF NEW York city, $12,000 practice established 20 years; owner wishes to retire; well furnished house and office, with long lease; satisfactory introduction; liberal terms; $2,000 cash; a rare opportunity; no brokers. Add. 1979 N, % AMA.

FOR SALE—NEW YORK — $4,900 PRACTICE and real estate; house, furnace, electric lights, bath room, barn, hen house, 4 acres land in rich dairy town; village 400; on state road; collections 96 per cent.; all for $2,000; rigs, office equipment optional; a safe and sound proposition. Add. 2004 N, % AMA.

FOR SALE—NEW YORK—DOCTORS, ATTENTION; exceptional opportunity for physician to continue practice in fully equipped office of a late and most prominent physician; 14 years at address in the heart of New York City. For full particulars add. Owner, 324 West 58th St., New York. N

(*Continued on next page*)

FOR SALE—NEW YORK — SURGICAL practice; $15,000 to $20,000 practice annually in western New York in a .good manufacturing city of 40,000 to 50,000; good home with office attached and good garage; $12,000; $8,000 cash; time on balance; only good surgeon with experience need apply. Add. 2020 N, % AMA.

FOR SALE—NEW YORK — RAILROAD town 4,000; $4,000 practice; collections 90 per cent.; established 15 years; can be doubled by middle-aged man capable doing some surgery; nearest surgeon 27 miles; 17-room house, office, barn and garage, perfect condition, situated finest location in town; competition right; price, $9,000; $4,000 cash required; best reason for selling. Add. 1908 N, % AMA.

FOR SALE — NEW YORK — HUDSON River town of 12,000; residence with offices and garage, $11,000; $5,000 cash; less than market value of property and with the sale goes a practice of nearly $5,000; established over 26 years; want to retire; splendid opening for a good man. Add. 1907 N, % AMA.

FOR SALE—EASTERN OHIO — $5,000 general and surgical practice, including modern equipped offices, x-ray, etc.; county seat; 5,000 population; best families; collections 100 per cent.; introduction; a live proposition and requires quick action; sell less than price equipment; invoices $2,000; going to specialize. Add. 2014 N, % AMA.

FOR SALE — NORTHWESTERN OHIO—Excellent opportunity for doctor; town 2,500; sell property deceased physician; 13 rooms and bath, modern 3-room office suite, drugs, instruments, heated garage; average yearly income, $5,000; 5 churches, excellent schools; three steam roads, one electric road; large country territory; good location small hospital. Add. Mrs. E. A. Ballmer, Columbus Grove, Ohio.

FOR SALE — OHIO — WANT A DOCTOR to take my eye, ear, nose and throat practice in city of Cincinnati; located best office building in town; all records go with equipment valued at $500; nothing else to sell; easily made in two months; walk in and commence; snap for some one; going to Europe. Add. 1983 N, % AMA.

FOR SALE—EASTERN OHIO — UNOPposed village and country practice; piked roads, high school, churches and railroads; modern 10-room house, barn and garage, 10 acres fruit and farm land; practice has averaged $4,300 for past 8 years; collected $3,987 last year; price, $7,500; one-half cash required; please don't bother me unless you have the price and can take charge within 60 days. Add. 1999 N, % AMA.

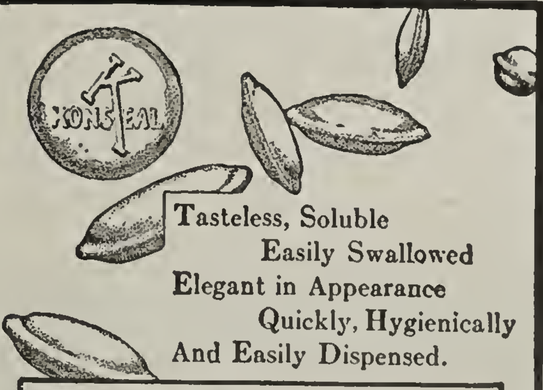
FOR SALE—OHIO—WOMAN PHYSICIAN, medical practice; downtown section of large manufacturing city; sixteen-room brick house, gas furnace; office and part of house furnishings; rooms easily sublet; established seventeen years; want to retire; half cash, balance easy terms. Add. 1998 N, % AMA.

FOR SALE — NORTHWESTERN OHIO—$4,600 practice with 98 per cent. collections, in town of 1,000; good churches, first grade high school, secret orders; stone roads; use auto the year round; competition right; 3 railroads; near a fine hospital; real estate optional; an opportunity; good reasons for selling. Add. 1872 N, % AMA.

FOR SALE—OKLAHOMA — GOOD COAL mine practice; special contract with the miners, whereby single men pay $1.20 and married men $2 a month and which pays us $400 to $500 a month; we furnish medicine and coal company does not charge us for collection; obstetrics, chronic and venereal diseases and special surgical operations charged extra; terms reasonable. Add. 2005 N, % AMA.

FOR SALE — PENNSYLVANIA — $4,000 practice, drugs, residence, office, barn, garage and lot; county seat, 1,600 inhabitants; city water, gas, paved streets, trolley line; large territory in heart of oil and gas fields; good fees, collections and people; three churches, two banks; competition easy; practice and property with introduction, $3,500. Add. 1955 N, % AMA.

FOR SALE—SOUTHEASTERN PENNSYLvania; old established unopposed village and country practice; elegant property worth much more than price asked; collections good; fine roads; good schools and churches; one of the best propositions in state; terms easy; retiring; price, including drugs, $3,500. Add. 2009 N, % AMA.



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Konseals are recommended BECAUSE the freedom in prescribing is a great advantage over any ready-made pill or tablet; BECAUSE the personal responsibility of the dispenser insures the purity of the drugs employed; BECAUSE Konseals are soluble always, and eliminate the unpleasantness when nauseous medicaments must be used.

Look for the K on the genuine.

On prescriptions specify "IN KONSEALS"

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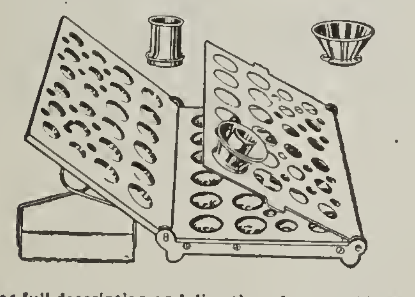

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SUPPORTERS

Patented. Made buckled or laced.

DO THE WORK "JUST RIGHT" ADJUSTABLE FOR "LIFT-UP" OR "BINDER SUPPORT"

To any part of the abdomen. Adapted to any person, any condition requiring efficient, comfortable support.

Call or send to day for folder, order blanks and catalog.

We Are Experts in Corrective
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To secure greatest comfort, shortest period of confinement, best results and health for your

FRACTURES

of leg, knee, thigh, and hip patients. All dealers and direct from us. Wire order. State fracture, which limb, sex. Send for booklet, prices, etc. Recommend it.

Amb. Pneu. Splint Mfg. Co., 30 (A.) E. Randolph Street, Chicago

A CLASSIFIED Advertisement inserted in THE JOURNAL is accessible to about TWO-THIRDS of the medical profession.

FOR SALE—PENNSYLVANIA—GENERAL practice, established 22 years; located in one of the wealthiest cities of size in the United States; an ideal residence town; population 9,000; office and residence combined; centrally located on best street; practice worth from $5,000 to $6,000 yearly; will sell and introduce successor for price of property; wish to retire. For particulars add. 2000 N, % AMA.

FOR SALE—SOUTH DAKOTA—GENERAL practice; has run $6,000 and over for several years; fine farming country and farmers mostly owners; twelve grade school; collections 95 per cent.; population 500; 5 churches; large territory; four elevators and line of business places; if you do surgery, that much extra over $6,000 a year; take part cash on deal; references furnished if desired; good business town. Add. 1140, % F. V. Kniest, Bee Bldg., Omaha, Neb. &

FOR SALE—TENNESSEE — $3,000 PRACtice, 9-room house, garage, barn, garden, free office rent; railroad appointment; $4,000 buys this if taken next month; going to specialize. Add. 1959 N, % AMA.

FOR SALE—WESTERN WASHINGTON—$7,500 practice and property; live town 1,000; hospital in town; can deliver practice; will bear strictest investigation; 11-room modern residence, garage, etc; terms; price less than property value; going to city; must have $1,500. Add. 1864 N, % AMA.

FOR SALE — WASHINGTON — $4,000 practice, 90 per cent. collections, goes with modern concrete bungalow, outside cellar, garage, woodshed; town 1,500; easy competition; one of the best farming sections eastern part; good schools and churches; established 12 years; going to city; price, $3,500; cash $1,500; introduce during May on commission. Add. 1950 N, % AMA.

FOR SALE—WASHINGTON — TO PURchaser of good equipment of small hospital, office and home, less than invoice, will donate fine country practice, over $4,000; one other physician; some work transferable; introduction; business from start; must change climate; if you have $1,000 cash and mean business, write. Add. 1964 N, % AMA.

FOR SALE—WISCONSIN—$2,400 practice; live town; appointments; one other physician; 2,100 population; German-speaking or good surgeon will do much more; selling for $300 cash; auto, house furniture and office equipment optional; splendid roads, high school, churches; do not write if you have no money; this appears but once. Add. 1987 N, % AMA.

FOR SALE—WISCONSIN — $3,600 PRACtice with drugs and office furniture in county seat town of 2,500; competition easy; nearest town 12 miles; well settled country; good opening for surgeon; eight insurance appointments; population mixed; price with introduction $1,000; want to specialize and move. Add. 1717 N, % AMA.

FOR SALE — SOUTHERN WISCONSIN—Practice clearing $4,000; can be much increased by doing surgery; large territory; fine dairy country; town 1,000; close to Chicago; unusual opening; price, $3,000; one-half cash, includes residence and all office equipment; selling account sickness. Add. 1927 N, % AMA.

FOR SALE — WISCONSIN — OFFICE equipment and automobile; town of 7,000; fine residence town; good schools and churches; good hospital; terms easy. Add. 1970 N, % AMA.

FOR SALE—SOUTHEAST WISCONSIN—Town and country practice; thickly settled rich dairy country; exceptional opportunity to acquire 20-year established practice, beautiful home, office fixtures, drugs, etc.; first year your collections should net $4,500; will sell all or part, turn over practice and introduce; cash and terms. Add. 2017 N, % AMA.

FOR SALE—WYOMING—$3,000 TO $3,500 practice; county seat of 4,000 people on Lincoln Highway and main transcontinental railroad, with large machine and car shops; new $25,000 theater, $50,000 amusement block and new hotel to be built this spring; town nearly doubled population in last two years; practice could be doubled by doing surgery; best office location in city; price, $900; this includes office equipment, auto and salaried appointment; a snap for some one. Add. 1917 N, % AMA.

See page 20 for cost of classified and commercial announcement advertisements.

(*Continued on next page*)

FARMS

LAND BARGAIN — 320 ACRES TIMBER land 1 mile from Frisco Railroad; above overflow and will make good farms; in new drainage district where land will likely advance rapidly; will divide into two tracts; price for quick sale, $4,000. A. W. Hall, Jonesboro, Ark.

HOSPITALS, SANITARIA for SALE

FOR SALE—SANITARIA—AN UNUSUAL opportunity is offered to right party or organization to acquire a well-equipped tuberculosis sanatorium in one of the prettiest towns of New Mexico at foot of mountains; fine all-the-year climate; public and high school; splendid grounds and lawns; 5-acre orchard; choice fruit, shade trees, flowers; electricity and running water; very favorable terms; investigate. Add. Doctor, 546 Surf St., Chicago, Ill. O

FOR RENT

FOR RENT—CHICAGO—MODERN OFFICE suitable for any professional in with dentist; running water; reception room well fitted on business corner next to large theater; $10 per month; also doctor's flat. Apply Dr. E. A. Levit, 3066 Armitage Ave., phone Albany 2110, Chicago, Ill. Q

ABSTRACTING, TRANSLATING

MEDICAL ABSTRACTING AND REVISION of manuscripts; rates reasonable. Add. Robert Lockhart, A.B., M.D., Owensboro, Ky.

MEDICAL BROKERS

SPECIAL ATTENTION — NATIONAL Clearing House for U. S. for doctors wanting to sell or buy practice. For doctors wanting locum tenens, permanent positions, partnerships. For doctors wanting partners, assistants, nurses, associations, etc. Medical deals handled and furnished. Service likewise for dentists, veterinarians, nurses. Drug positions. Drug stores sold and furnished. If possible come direct to Omaha for consultation, and if service desired, make deposit. Otherwise write F. V. Kniest, R.P., Bee Building, Omaha, Neb. Established 1904.

ASSISTANTS WANTED—SALARIED ASSISTANTS wanted immediately for hospitals and sanatoriums, also for general, mining, and contract practice; 1,000 medical and surgical positions already secured for our clients; medical practices bought and sold in all sections; list of practices mailed free. For further particulars write to "The Medical Echo," Lynn, Mass.

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STEEL DIE EMBOSSED STATIONERY—Distinctive and impressive for the medical profession; will send samples and prices upon request. Hammond Printing Co., Fremont, Neb.

MISCELLANEOUS COM. ADVTS.

IS YOUR EMBEDDING MATERIAL SATisfactory? If not, try Parlodion, a pure, concentrated, nonexplosive collodion. A perfectly transparent medium for embedding tissue. One dollar per ounce. Du Pont de Nemours & Co., Wilmington, Del. KK

FELLOWS AND MEMBERS OF THE A. M. A.: At the next meeting of your local medical society, why not consult with the chairman of your educational committee in reference to the organization of a Medical and Surgical Extension Course by motion pictures for your society. A class may be formed and courses arranged with monthly exhibitions of films for as reasonable dues to the individual as $5 yearly, a revelation to those who cannot attend out-of-town clinics by reason of the incident loss of time. Fill in and mail coupon on adv. page 10, this issue, and receive full particulars to present to your organization. Clinical Film Co. KK

DISCRIMINATIVE SURGEONS SHOULD have a definite knowledge of the quality of the catgut they use in their work; they should study the claims of the producers and determine the merit of the article by actual test. Send for a sample tube of catgut produced the Hollister way. A postal will bring it. We want you to observe the superiority of the new glass "Ovltube" container and test the surgical excellence of "Hollister" ligatures. Hollister Ashland Laboratories, 6620 Kimbark Ave., Chicago, Ill. (See our adv. on page 49, this issue.) KK

THE COUPON ON PAGE 35 ENTITLES you to a copy of "Statics of the Chest"—by Dr. J. M. Booher. This pamphlet covers in concise form many pertinent points on effects of respiration on the circulation; suction action on the ventricles, auricular and ventricular contraction and dilation, etc. Finally, it offers a mechanical explanation of the inspiratory and expiratory action of the Lungmotor. Life Saving Devices Co., 179 N. Market St., Chicago, Ill.

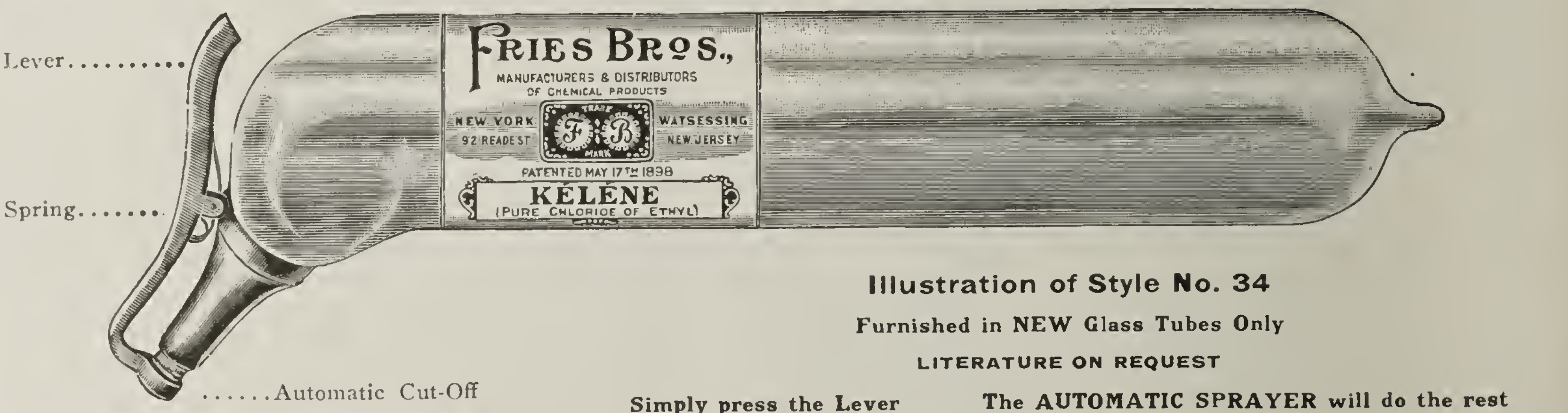
THOUSANDS OF PHYSICIANS WILL seek hotel accommodations in New York City during the Annual Session of the A. M. A. June 4 to 8. Hotel McAlpin, aside from being the headquarters of several of the Scientific Sections, is centrally located and convenient to everything that will be of interest to conventionists. Therefore make early reservation. Write to Mr. Boomer, the managing director, now, and he will see that you and your party are properly cared for. Hotel McAlpin, Broadway at 34th St., New York City. See our open letter of invitation on adv. page 56, this issue.

MALT SOUP EXTRACT IS RECOMmended for the treatment of infants suffering from marasmus and malnutrition. Our product is prepared in accordance with the original formula and used in many of the large hospitals. See adv. page 47, this issue. Upon request we will mail you samples, descriptive literature, etc. Borcherdt Malt Extract Co., 217 N. Lincoln St., Chicago. KK

FOR REFERENCE IN ADVISING YOUR orthopedic patients you should have our special orthopedic catalogue available. It contains many detailed descriptions, special suggestions, etc., which you will find helpful. Mailed free. Add. Frank S. Betz Co., Hammond, Ind. KK

REMEMBER THE "HALVERSON" WHEN in need of a dependable sterilizer. This appliance, as illustrated on page 52, embodies the requisites for efficiency and durability. It has a detachable warming attachment for heating atomizers, etc., which requires no additional current. The Halverson Co., 1114-15 N. W. Bank Bldg., Portland, Ore. Eastern office, 180 N. Dearborn St., Chicago, Ill.

Ever Ready Local Anaesthetic "KELENE"



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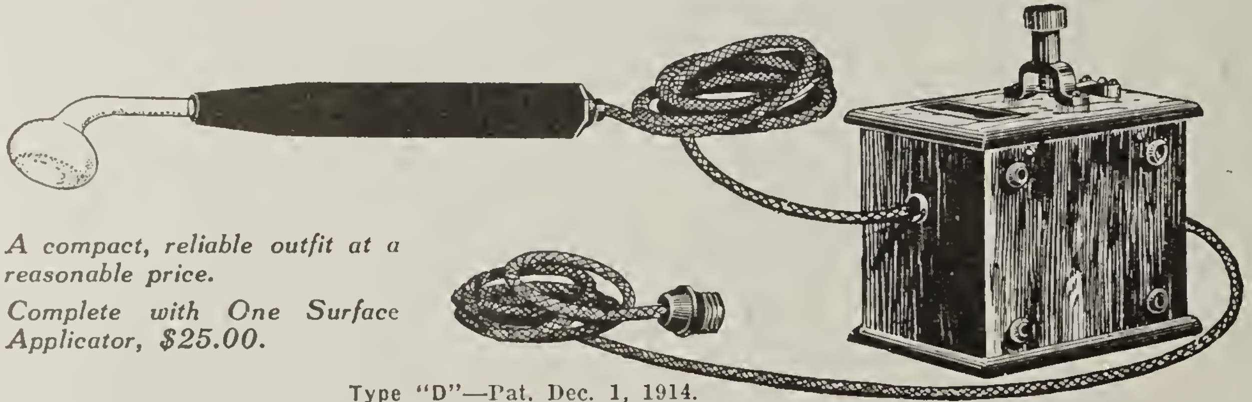
THE ROGERS VIOLET RAY HIGH FREQUENCY GENERATORS—TYPE "D"



A compact, reliable outfit at a reasonable price.

Complete with One Surface Applicator, $25.00.

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A **Violet Ray Outfit** is now a valuable instrument in the office of the modern practitioner. The value of the treatment, in many conditions, is no longer a question of doubt. We have many hundreds of letters from leading physicians, commending our machines and expressing gratification as to results obtained.

Satisfaction guaranteed or money refunded.

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Eastman X-Ray Films

Your reputation as a diagnostician is based upon your percentage of correct diagnoses. Eastman X-Ray Films not only insure the best screen results when used in stomach work, but register the details so accurately as to make the analyses easy.

Those who know their value, depend upon them in screen work.

For sale by all supply houses. Pamphlet on request.

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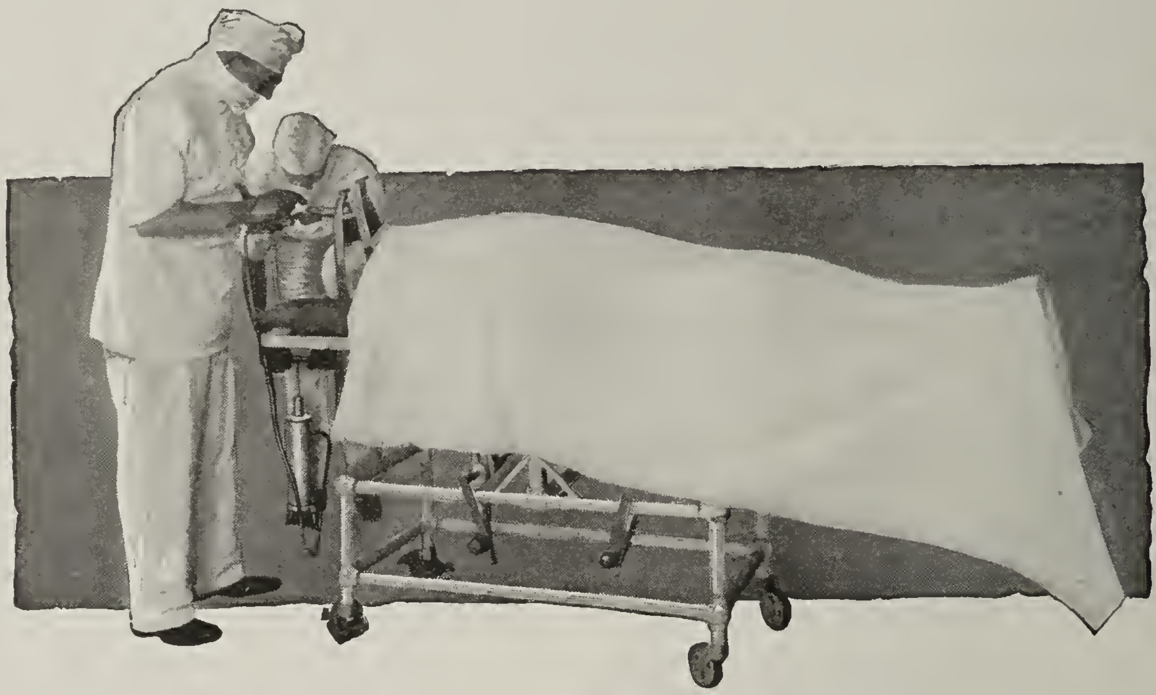
Have You a Pulmotor



THE Pulmotor is an essential part of the safety and protective equipment of every community. The complexity of our social life, the development of new industries have created conditions where the slightest mischance will expose one or more members of the community to dangers that a Pulmotor may prevent from ending tragically

Should such an accident occur today, and you be called on for assistance, would you have to depend entirely on manual methods of resuscitation?

Your responsibility as a physician and as an authority to whom your fellow citizens look to for advice in matters of this kind demand that you get complete information about this life-preserving apparatus, and call the attention of your city council to the advisability of following the example of many American cities in purchasing Pulmotors for public emergencies.

The broad field of Pulmotor usefulness is being recognized more and more by the medical fraternity. In your own practice you frequently have cases where the restoring and maintaining of respiration is of great importance. In obstetrical cases, the possibility of a still-birth makes it highly advisable to have a Pulmotor at hand.

Type "B" *Pul*

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The Pulmotor functions on the Physiological Principle of Measured Lung Pressures

Type "B" Pulmotor functions on the physiologically correct principle of *measured lung pressures.* Because of this it produces respirations closely approaching the natural breathing of the patient in depth and rhythm.

Physician knows how the lungs are acting. Indicator Gauges register the pressure in the lungs at all times, and show when they have reached their normal points of expansion or contraction and are ready to change from either inhalation or exhalation.

Physician can bring about desired lung action. He can cause the lungs to expand to vital capacity and alternate with a slight contraction, or vice versa—he can produce normal or abnormal lung action as he judges best and change from one to the other regardless of the action of the man at the pump.

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The safety of your patients and your duty as a citizen are reasons why you should investigate the Pulmotor. Write now for full particulars.

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AGENTS for Wolf Safety Lamp Co. of America
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Type "B" Pulmotor weighs only 12 lbs. with all accessories and compact carrying case. Can be carried anywhere in emergencies. Price $115 in this form. Is hand-operated and requires no oxygen flasks.

Type "B" Pulmotor adapted for use with oxygen flasks for hospital and office use. Price, complete with neat carrying case and reducing valve, $110.

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The genuine always bears the name DRAEGER

In the Treatment of

Cystitis—Urethritis Pyelitis—Prostatitis—Bacilluria

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by the Gastro-Intestinal and Urinary Tract.

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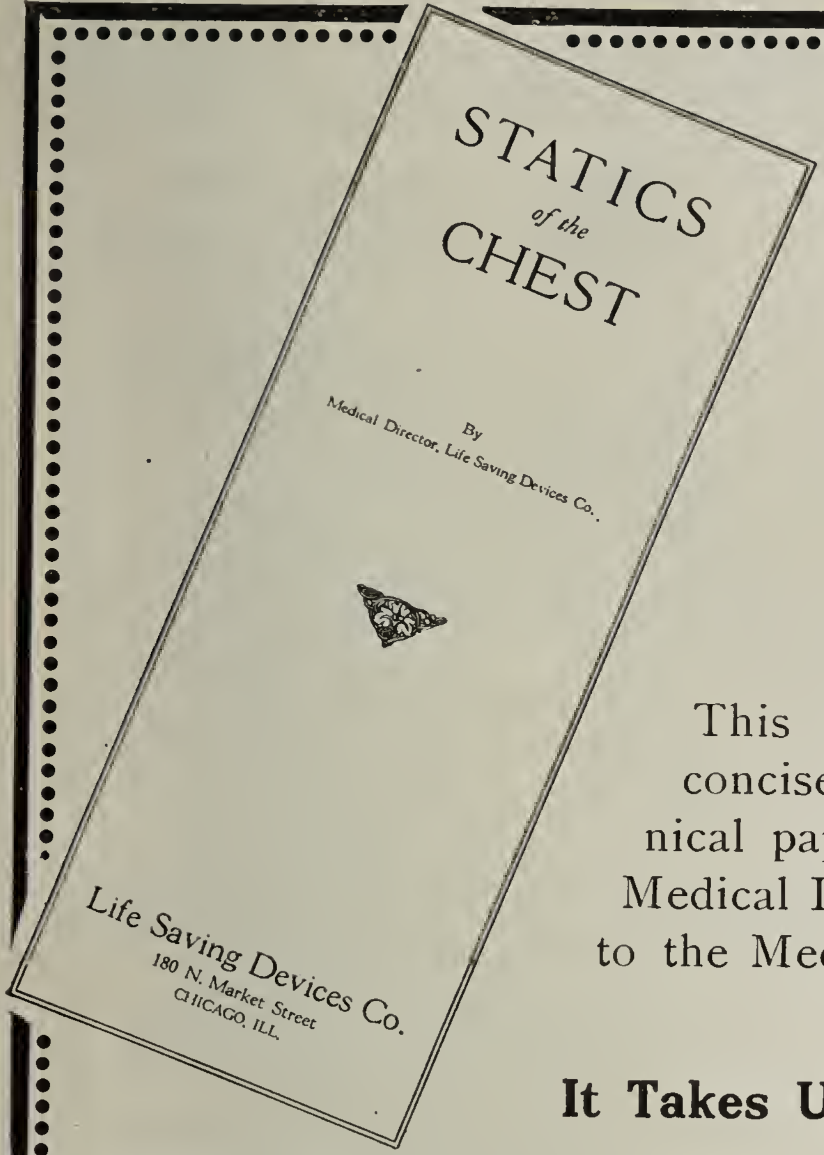

STATICS
of the
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By
Medical Director, Life Saving Devices Co.

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What Is It?

This important and interesting subject is concisely covered for the first time in a technical paper under that title prepared by our Medical Director for general distribution (gratis) to the Medical Profession only.

It Takes Up and Discusses

- The effect of respiration on circulation.
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- The Ventricular Diastole.
- How the negative pressure in the thoracic cavity is restored by the Lungmotor.
- What happens when the lungs become relatively collapsed in the normal diameter of the chest cavity.
- How this is overcome by the Lungmotor.
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Send today for this important article—learn the basic physiological principles of the Lungmotor—the secret of the Lungmotor successes in over 4,000 hospitals, municipalities, industrial concerns, etc. all over the world where they are saving lives daily.

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LIFE SAVING DEVICES CO.
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Life Saving Devices Co., 179 N. Market St., Chicago, Illinois.

Being a physician I would like a copy of your technical paper, "Statics of the Chest," which entails no obligation.

Name..........................

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I am also interested in ☐ New Breathing Apparatus
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The Spencer Non-Elastic Abdominal Support

A Substitute Abdominal Wall

The abdominal Support of the Spencer Rejuveno Supporting Corset and the Spencer Abdominal Belt give, as nearly as possible, the same effect as the normal abdominal wall.

The Support adds less than five ounces to the weight of the corset; is non-elastic, washable, durable.

Each Spencer Corset, or Support, is especially designed for the individual client without extra charge. The abdominal support is in one piece, readily adjustable from all sides of the corset and the heavy front steels of the corset are prohibited from downward pressure against the abdomen. These advantages are all exclusively Spencer.

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Spencer Supports for visceral ptoses, sacro-iliac strain, floating kidney, pertussis, ventral and umbilical hernia, post operative support, maternity and spinal supports, intestinal stasis, etc.

Look in your local telephone book for "Spencer Corsets"—if not there, write us.

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(formerly known as Van Orden-La Grecque)

Sectional view of the front joined under arm to one-piece back which supports from convexity of spine and buttock.

Surgical and Medical Corsets

Constructed on True Anatomic and Physiologic Lines

Correct support at exact points.

Gentle, but positive and unyielding uplift to abdominal walls.

Laces in front, but is adjusted from the back with an upward backward traction.

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Sacro-Iliac Supports. Post-Partum Binders.

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Specialists in Surgical Supports

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This cut shows The Hammock Cart with top and detachable side protectors. Also furnished with detachable storm front if desired.

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Costs ½ less to keep in repair.

Lasts 3 times as long (known to run 20 yrs.) Safer. Handier. ½ the bother, ½ the draft. No weight on horse's back. Easier riding—good roads or bad. No horse-motion. Can go where you can't with a buggy. A vehicle for hard service. Pays for itself in saving of horse flesh and horse feed.

Write for Circular D and Sheets of Testimony

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The Superiority of the Carnes Arm is Recognized by Leading Surgeons

See Fifth Edition of "Operative Surgery," page 1094. by Dr. J. F. Binnie; also Volume Six "Keen's Surgery," pages 918-922 inclusive. It embodies the movements of the natural hand and arm, and is built for service as well as appearance.

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The Twenty-Sixth Annual Special Course Will Commence

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and will continue three weeks at each institution. These courses which have given such satisfaction for so many years have for their purpose the presentation in a condensed form of the advances which have been made during the year previous in the following branches: Surgery, Orthopedics, Gynecology, Obstetrics, Genito-Urinary, Stomach and Rectal Diseases and in border-line medical subjects. Fee for each of the above courses $25.00.

Special Operative Work on the Cadaver and Dogs, and General and Special Laboratory Courses.
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SUMMER QUARTER COMMENCES JUNE 18, 1917.

Classes limited. Applications for admission for session of 1917-18, should be made now.

For particulars, address

RUSH MEDICAL COLLEGE, Chicago, Ill.

UNIVERSITY OF LOUISVILLE, Medical Dept.

Eightieth Annual Session begins Sept. 25, 1917. Entrance requirements for the 1917-18 session—one year of College work in Physics, Chemistry, Biology and a modern foreign language, in addition to the fourteen units' work in an accredited, standard high-school.

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MEDICAL DEPARTMENT

Bathgate Avenue and Fordham Road
Borough of the Bronx, NEW YORK

The Medical School is an integral part of the University and is in close affiliation with Fordham Hospital.

The session of 1917-18 begins on September 26. COLLEGE OF PHARMACY and the COLLEGIATE MEDICAL CLASSES September 19th.

For the annual catalogue giving full information of the courses, requirements for admission, and graduation, address **JOHN J. SHERIDAN, M.D., Secretary**

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AND

College of Physicians and Surgeons

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NEW YORK UNIVERSITY MEDICAL DEPARTMENT

The University and Bellevue Hospital Medical College

Session 1917-1918 begins Wednesday, September 26, 1917

Candidates for admission to the University and Bellevue Hospital Medical College are required to present evidence of the completion of one year of collegiate work in addition to graduation from an approved four year high school course. It is required that this year of college work include one year each of Chemistry, Physics, Biology, and two of the following languages: English, French. or German.

To meet this requirement, the Collegiate Division offers the following Medical Preparatory Courses:

1. Course extending from September, 1916 to June, 1917.
2. Course extending from February 1, 1917 to September, 1917.

The completion of either of these courses admits to the medical school for sessions 1917-1918.

The requirement for admission to the Medical Preparatory Course is any one of the following: (1) A diploma of graduation from a four-year high school course recognized by the Regents of the State of New York. (2) A certificate of the College Entrance Examination Board covering fifteen units of Secondary School Subjects. (3) Entrance Examinations of the University College covering fifteen units of Secondary School subjects. (4) A certificate of admission to the freshman class of a recognized college.

Beginning with September, 1918 (Session 1918-1919) candidates for admission to the Medical College will be required to present in addition to graduation from a four year high school course, evidence of the completion of TWO YEARS OF COLLEGE WORK, including at least one year each of Chemistry, Physics, Biology and two of the following languages: English, French or German.

New York University offers a Combined Course leading to the degrees of B.S, and M.D upon the completion of six and a half years, the first two and a half years of study to be pursued in the College and the last four years in the Medical College. Upon the completion of the first two years in the Medical College, the degree of Bachelor of Science will be conferred. For Bulletin or further information, *address*

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Medical Department

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Candidates for admission must be graduates of approved colleges or scientific schools with at least one year's instruction, including laboratory work, in physics, chemistry and biology, and with evidence of a reading knowledge of French and German.

Each class is limited to 90 students, men and women being admitted on the same terms. *Except in unusual circumstances, application for admission will not be considered after July 1st.*

If vacancies occur, students from other institutions desiring advanced standing may be admitted to the second or third year, provided they fulfill all of our requirements and present exceptional qualifications.

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The annual announcement, application blanks, and circular describing graduate courses may be obtained by addressing the

Dean of the Johns Hopkins Medical School

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1765 **SCHOOL OF MEDICINE** 1917

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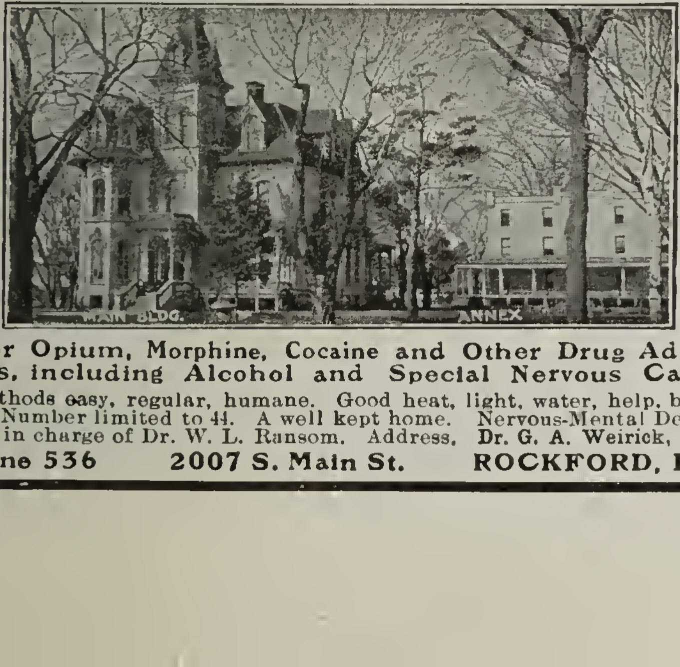

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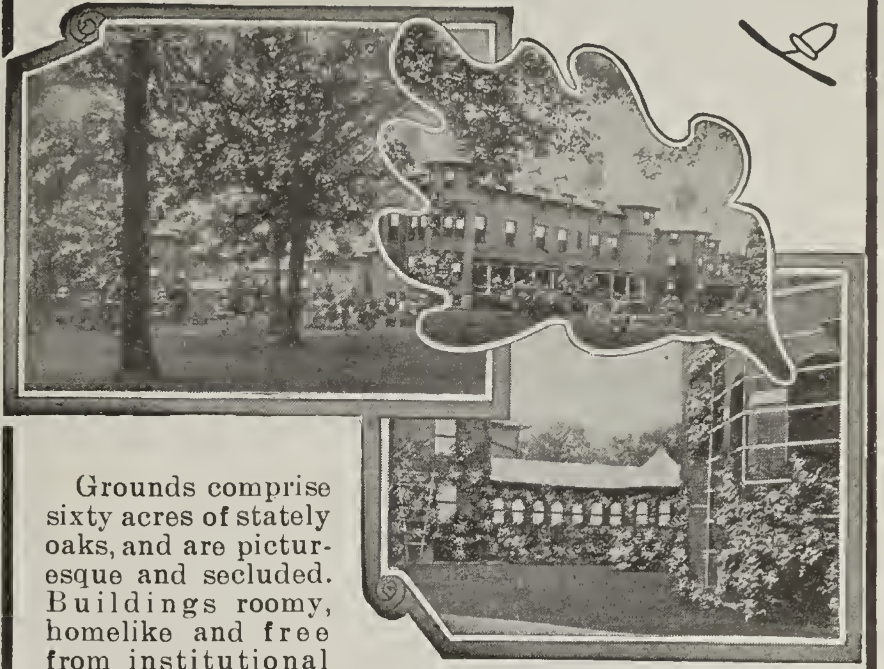

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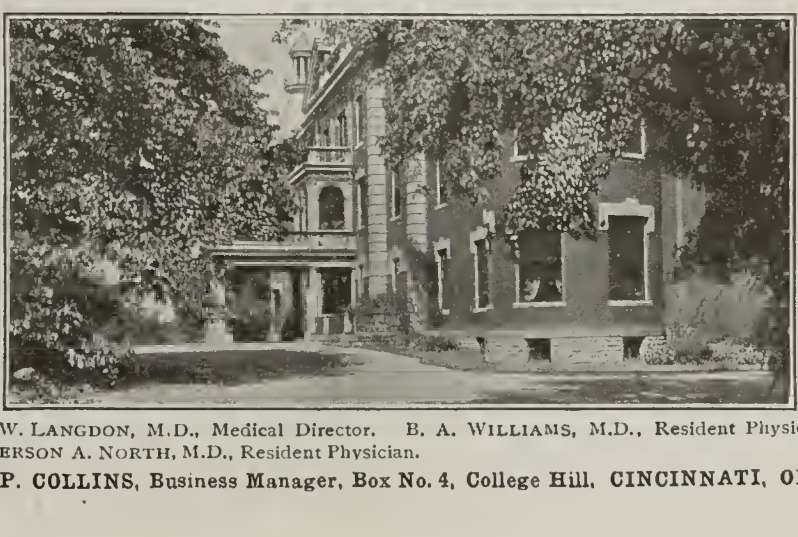

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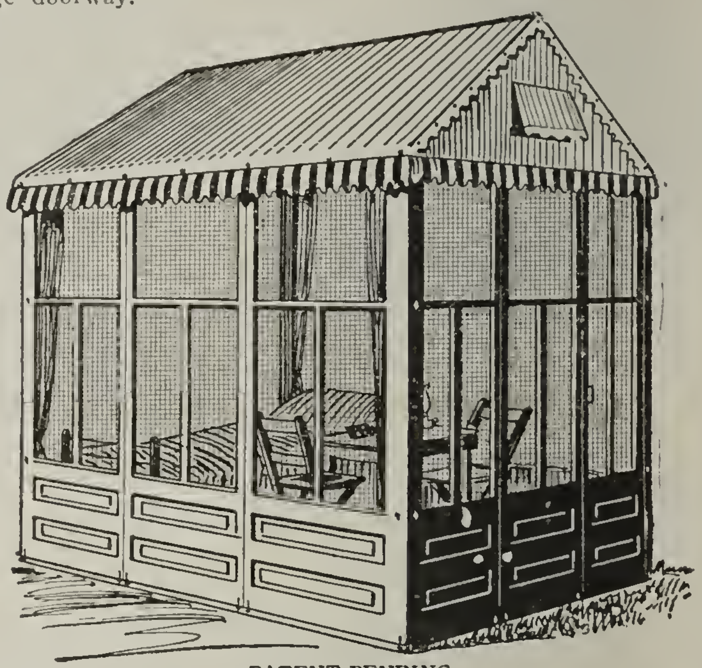

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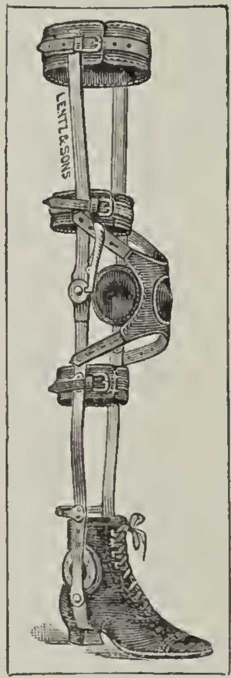

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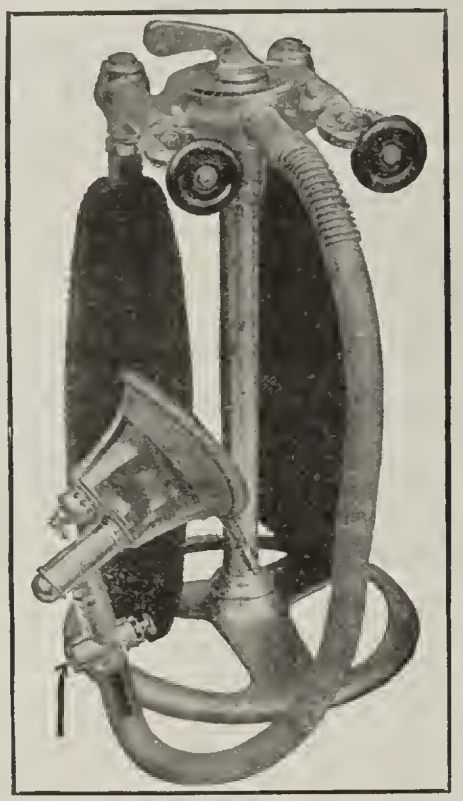

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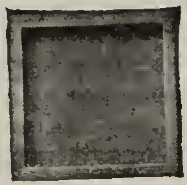

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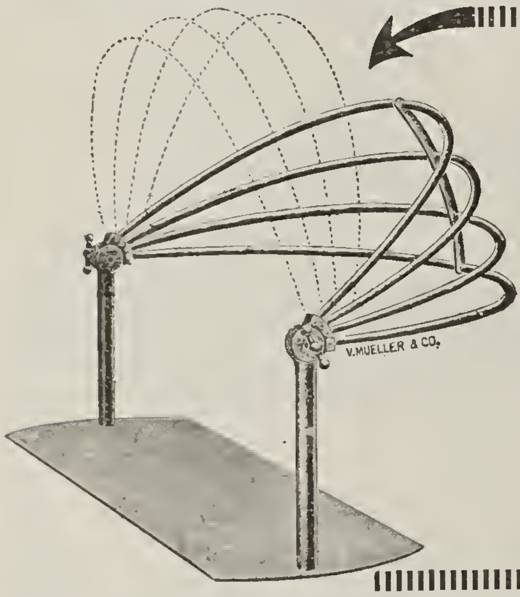
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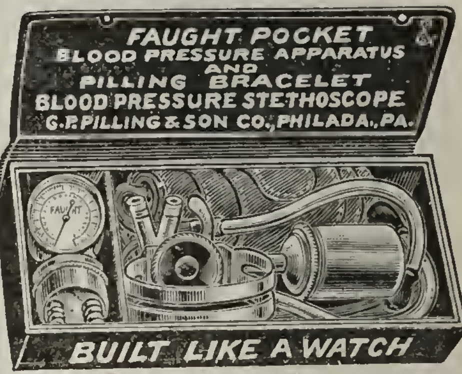
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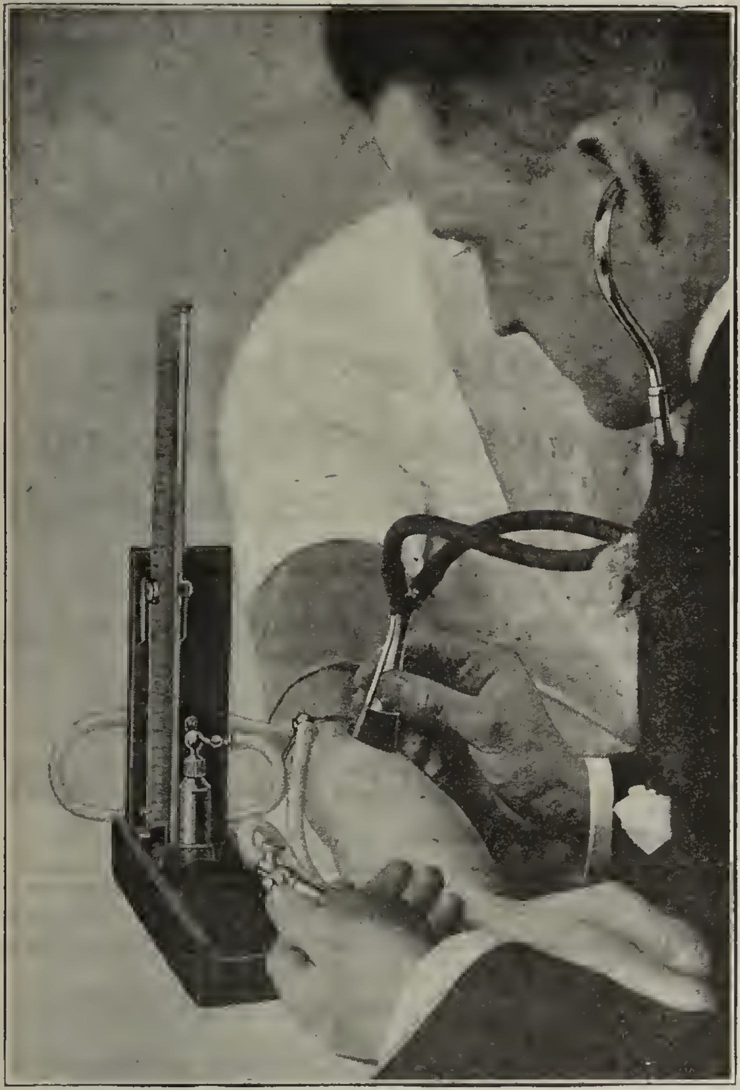

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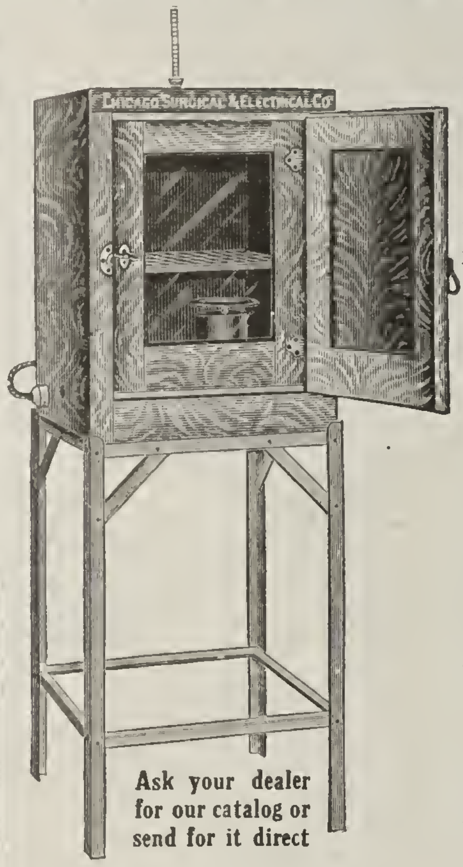

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Excelsior Quilted Mattress Protectors

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These protectors are washable, and will dry as clean, soft and white as new.

There is a size for every bed or crib.

This excellent device protects the mattress and thus adds to its life.

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Prepared in our specially constructed Laboratories, devoted exclusively to the manufacture of these preparations.

Vaccines constitute an important group of remedial agents. These Vaccines are marketed in specially devised aseptic bulk packages insuring added safety in withdrawing contents.

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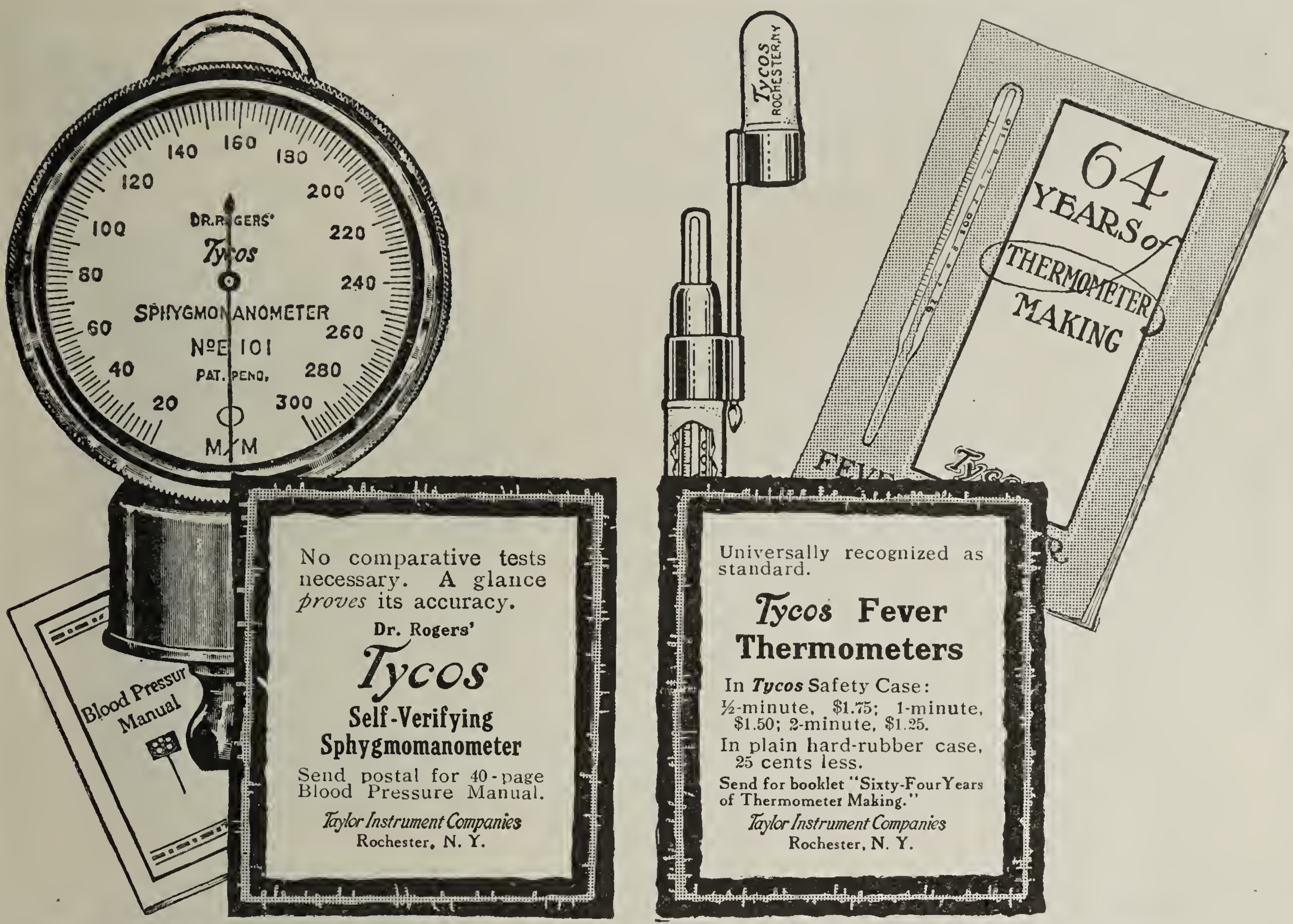

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Tycos

Self-Verifying Sphygmomanometer

Send postal for 40-page Blood Pressure Manual.

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Universally recognized as standard.

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In *Tycos* Safety Case:
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In plain hard-rubber case, 25 cents less.

Send for booklet "Sixty-Four Years of Thermometer Making."

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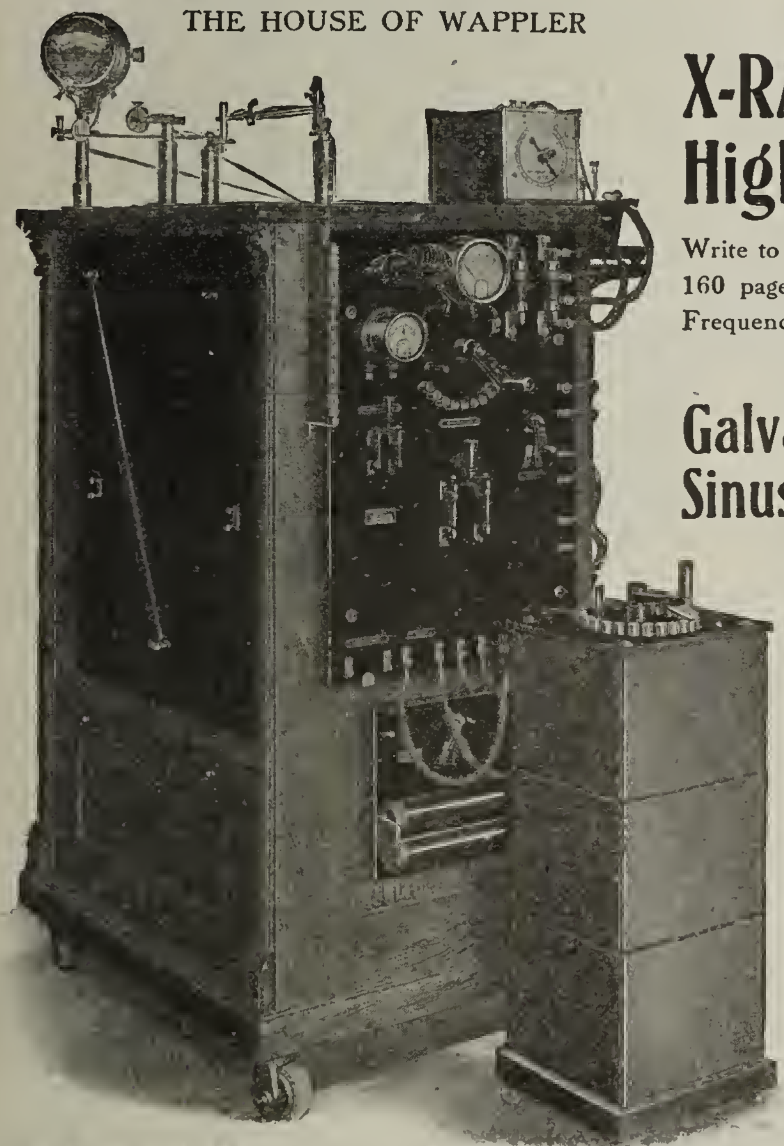

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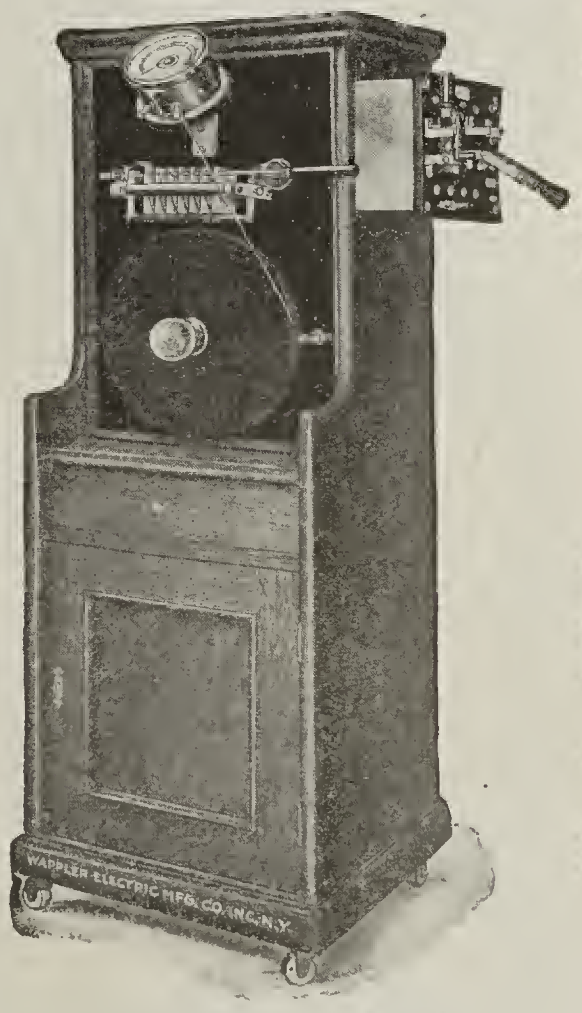

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Our Sterilizer Speaks for Itself, as it is One Appliance that is Always Ready for Service

HANDLES at both ends of lid, and always cool.

A BODY that is made of heavy copper, nickel plated.

LEGS are solid bronze, nickel plated and rubber tipped.

VERY substantial cover of double thickness of copper to prevent radiation of heat.

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RED signal light on the bottom of the Last Model indicates the current is on.

SMOOTH bottom on the inside and no depression for impurities to lodge.

OUR tray lifts automatically with ease and safety, no friction and easily removed.

NOVEL heating element, thoroughly insulated.

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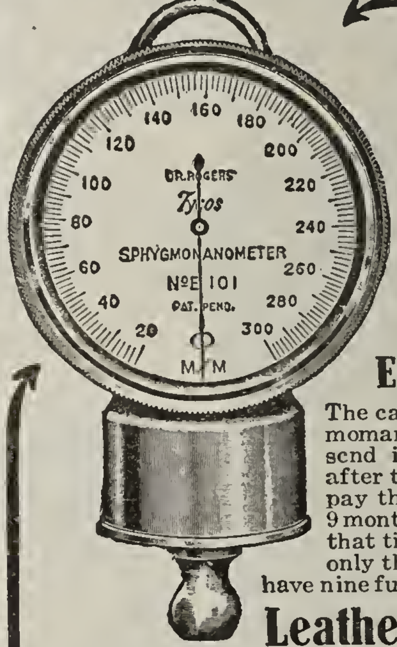

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Dr. Rogers' Self-Verifying Sphygmomanometer

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The cash price of the Tycos, Dr. Rogers' Sphygmomanometer, everywhere is $25.00. We will send it to you on receipt of only $2.50 and, if after ten days' trial, you wish to keep it, simply pay the balance—$22.50—the same as rent—in 9 monthly payments of $2.50 each. At the end of that time it is your absolute property. You pay only the cash price (no interest—no extras) and have nine full months in which to make it pay for itself.

Leather Case and Booklet Free

The celebrated Dr. Rogers' Sphygmomanometer is very accurately made and registers both systolic and diastolic pressures. With every Tycos is included Free a genuine morocco leather case. You can put your Tycos into this case and carry the entire instrument in your pocket. Besides the case, we give you Free, a 44-page booklet which explains accurately, thoroughly and plainly just how and why the Sphygmomanometer is essential to the intelligent practice of medicine.

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Send today. Just say that you saw our offer in the Journal of American Medical Association. Enclose $2.50 for first month's rent and we will immediately send you the instrument, and you will only have to pay $2.50 every succeeding month until the cash price, $25.00 is paid in full. Send that $2.50 today—first come—first served. The orders are going to come thick and fast, so you will have to hurry. We give ten days' trial and return your money if you are not satisfied. CASH PRICE. The price for all cash with order is just the same, $25.00. We make no distinction.

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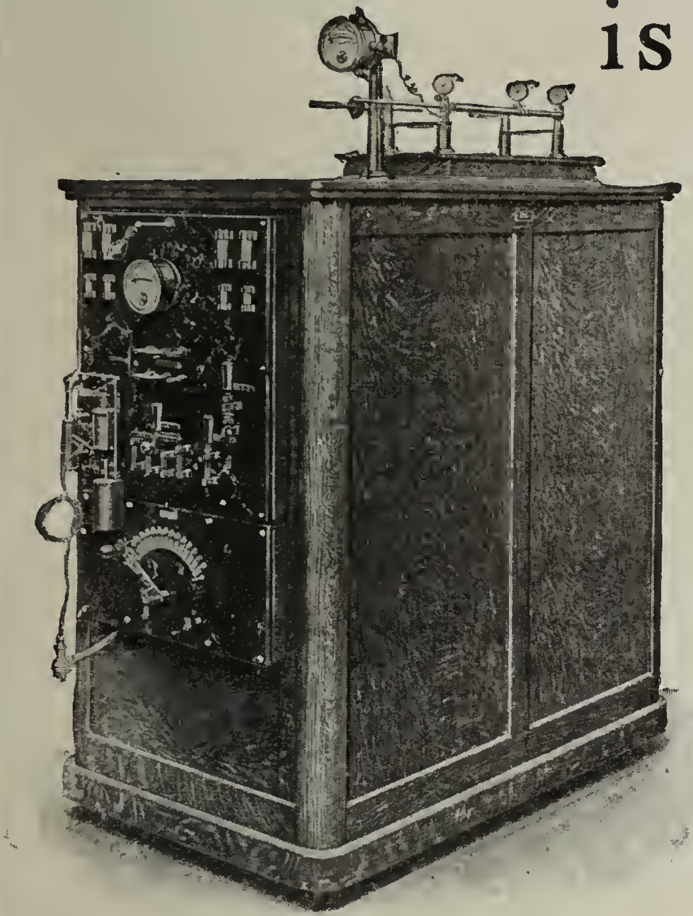

THE MEYER INTERRUPTERLESS will do Radiographic Work with *less* tube expense.

The Meyer Interrupterless will do Radioscopy of the Gastro-Intestinal tract with *less* than two milliamperes continuously.

The Meyer No. 4 Interrupterless Machine listed at $750 will deliver over 100 milliamperes through our new type X-Ray Tube. Price of tube $35.

The *Meyer System of Radiographic Technique* plus the *Meyer System of Personal Instruction* makes it possible for the beginner to obtain as good radiographic results as experienced radiographers.

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A compact, light weight and wonderfully efficient portable X-Ray apparatus, equal to any demand in Radiography, Fluoroscopy or X-Ray Therapy. Of proven efficiency alike to the general practitioner and the Professional Radiographer. Sold on a guarantee to produce a first class plate of any subject—as fine as can be made with any apparatus.

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Formulas of DR. BERNARD FANTUS

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Gain the children's confidence by removing the dread of "medicine time," and therefore obtain results not to be hoped for when drugs in unpalatable forms must be administered forcibly with a struggle alike unpleasant to the attendant and harmful to the patient.

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The *Pomeroy* is a Surgical Corset designed to give corrective support for ptosis in any form, for laparotomies or other post-operations.

It is made by *surgical appliance* manufacturers who understand the necessity of applying

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and individualizing the corset, by making each one from measurements of the one who is to wear it. These mechanical features give support directly opposite the point of leverage (making under straps or inner belts unnecessary), and also "lift" the abdomen in an upward and backward direction, which is required for corrective effect.

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Sales and fitting rooms in each of the following cities:
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SAFETY GAS-OXYGEN APPARATUS

"*Shows what it delivers*
Delivers what it shows."

A ***new*** and ***improved*** apparatus for the administration of

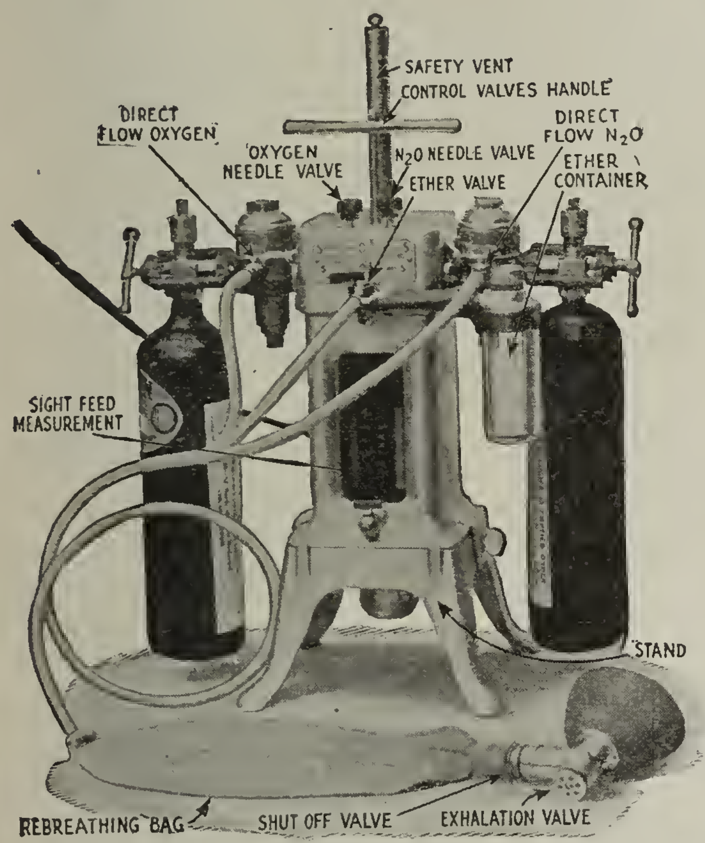
Nitrous Oxid and Oxygen

with or without ***Ether Sequence***

Major or Minor Surgery—Obstetrics, Etc.

Greater Relaxation and Ideal Anaesthesia or Analgesia

Simple to operate. Economical in application. Perfect in results.



Model "E" (Height 15 inches. Net weight 17 pounds.) Small gas tanks attached and all mounted on small aluminum stand.

A Truly Portable and Complete Outfit for Private or Hospital Use

A perfectly controlled even and continuous flow of any required mixture is assured by

THE NEW

Positive Sight-Feed-Measurement

YOU SEE
1. The flowing of the separate gases.
2. The exact ratio between the two as they are admitted to the mixing chamber through the needle valve.
3. That your mixture is being maintained as long as required.

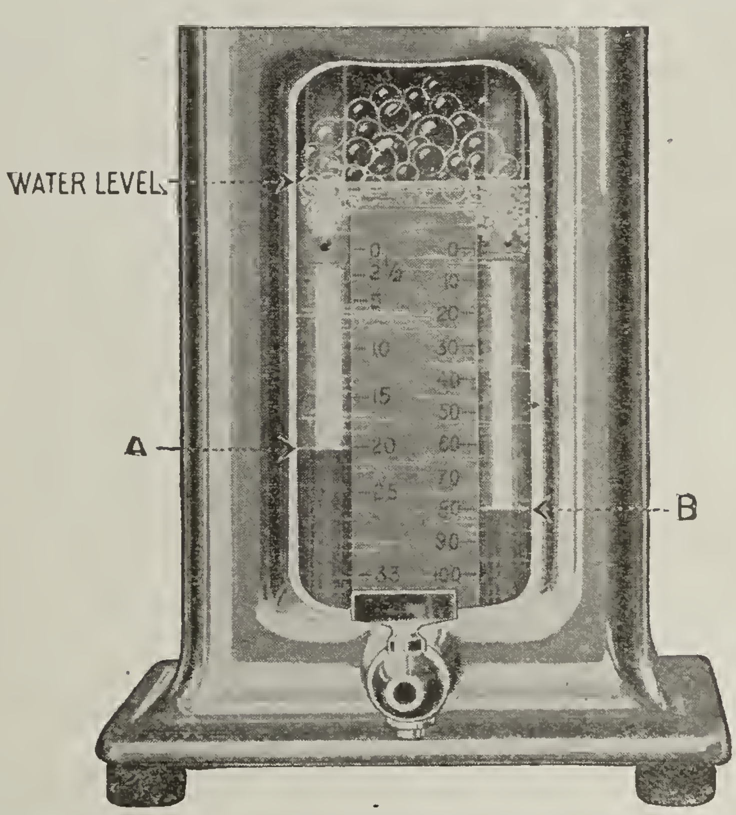
The ***Ether Sequence*** is obtained by the simple turning of the ***Ether Valve.***

Gases are ***delivered, washed, moistened*** and ***heated*** to a temperature of 100° F.

Accuracy, Efficiency, Economy, Simplicity.

Manufactured in three Models, ***"D," "E"*** and ***"F."***

Write for illustrated booklet containing full information.



Cut showing Sight-Feed-Measurement. The level "A" in the Oxygen feed tube, and the level "B" in the Nitrous Oxide feed tube fall or rise as a greater or less volume of the respective gas is admitted to the mixing chamber by the needle valves. Accuracy of mixture and **visible proof of accuracy** is thus assured.

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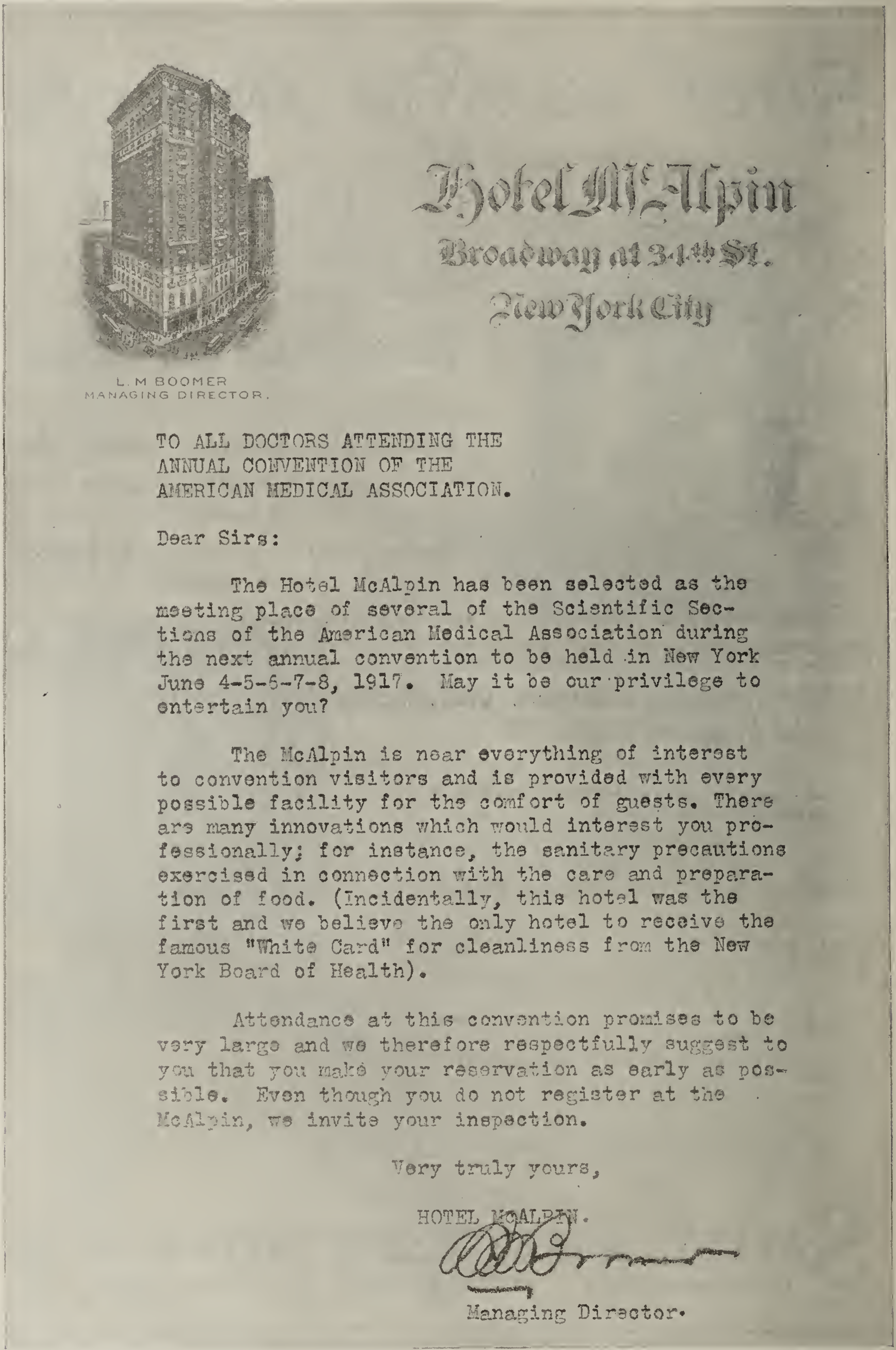

Hotel McAlpin
Broadway at 34th St.
New York City

L. M BOOMER
MANAGING DIRECTOR.

TO ALL DOCTORS ATTENDING THE
ANNUAL CONVENTION OF THE
AMERICAN MEDICAL ASSOCIATION.

Dear Sirs:

The Hotel McAlpin has been selected as the meeting place of several of the Scientific Sections of the American Medical Association during the next annual convention to be held in New York June 4-5-6-7-8, 1917. May it be our privilege to entertain you?

The McAlpin is near everything of interest to convention visitors and is provided with every possible facility for the comfort of guests. There are many innovations which would interest you professionally; for instance, the sanitary precautions exercised in connection with the care and preparation of food. (Incidentally, this hotel was the first and we believe the only hotel to receive the famous "White Card" for cleanliness from the New York Board of Health).

Attendance at this convention promises to be very large and we therefore respectfully suggest to you that you make your reservation as early as possible. Even though you do not register at the McAlpin, we invite your inspection.

Very truly yours,

HOTEL McALPIN.

Managing Director.

Let us arrange your trip to the

National Convention

of the

American Medical Association

New York City, June 4th to 8th, 1917

Solid through trains from Chicago, St. Louis, Detroit, Cincinnati, Indianapolis, Grand Rapids, Toledo, Cleveland, Dayton, Columbus, Buffalo, Rochester, Montreal, Syracuse, Utica, Albany and intermediate points via

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MICHIGAN CENTRAL

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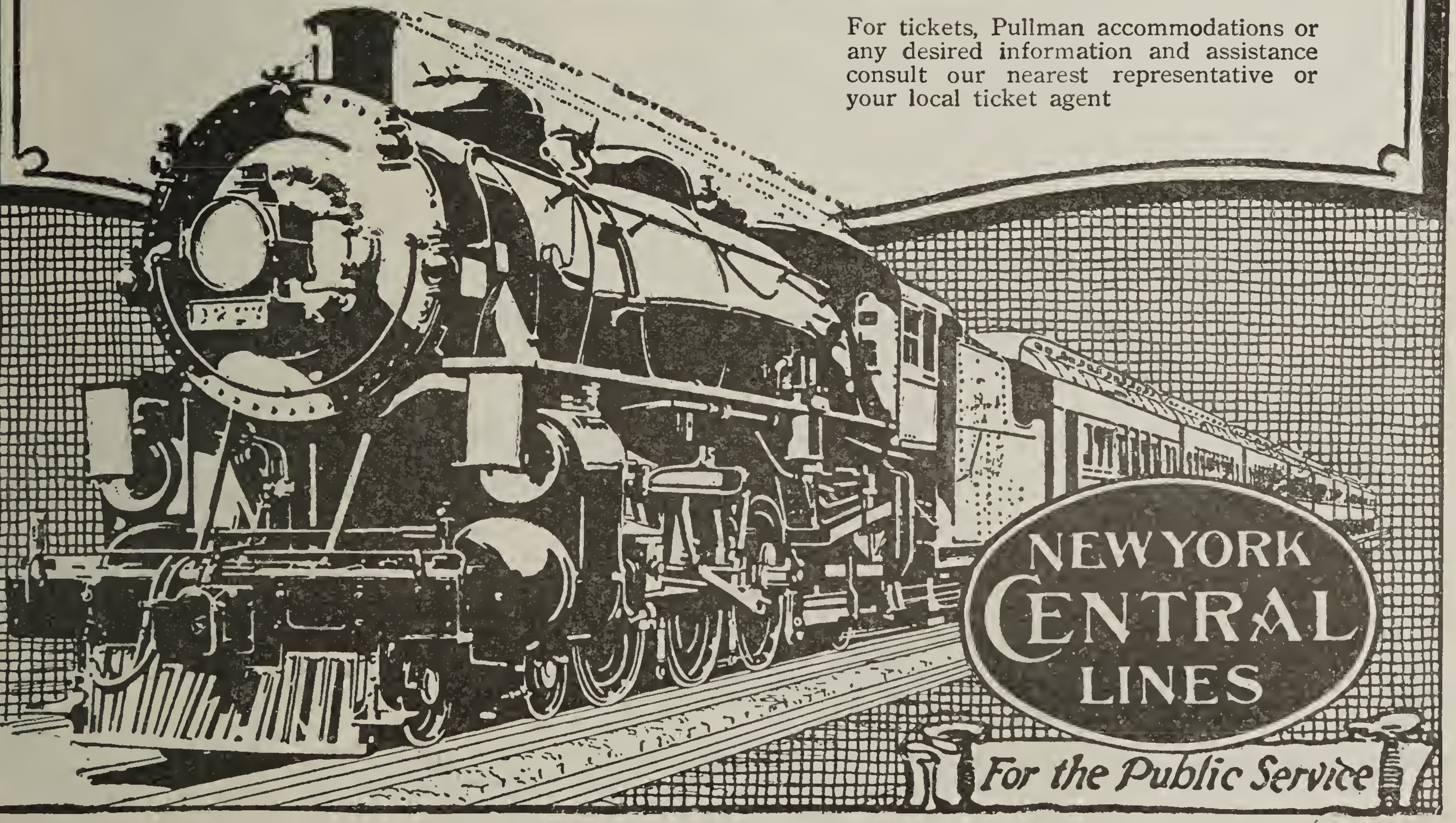
For tickets, Pullman accommodations or any desired information and assistance consult our nearest representative or your local ticket agent



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—and in a Few Months It Belongs To You!—

Doctor, you can now equip your office and have the benefit of the use of any of the celebrated outfits pictured below while paying for same in small monthly sums, so little you will scarcely miss the money.

Under our Rental-Purchase Plan for Physicians, you buy the outfit by renting it. All you have to do is pay a very small rental for a few months and the entire outfit becomes yours—you are given almost a full year to pay. No extras; no interest to pay; just dignified credit. Our physicians' rental-purchase plan is extremely liberal and absolutely free from all red-tape, restrictions and annoyances. Order one or more of these outfits today. Our 10-Day Free Trial Offer and Guarantee protects you.

This magnificent 9 piece **White Steel Aseptic Office Furniture Set** positively one of the greatest bargains ever offered. Set consists of **White Steel Cabinet, Operating Table, Irrigator, Instrument Table, Chair, Stool, Waste Pail, Costumer and Medicine Hardwood Cabinet. Regular Cash Price $150.00.** Our price $110.

You Save $40 AND HAVE A FULL YEAR TO PAY

Send only $10 with order. If not perfectly satisfactory—return at our expense and we will immediately refund your money. If, you are delighted with the outfit, you may keep the complete set by paying only $8.33 per month for 12 months until our low price of $110 is paid.

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$10 Puts this Genuine Spencer Microscope In Your Office

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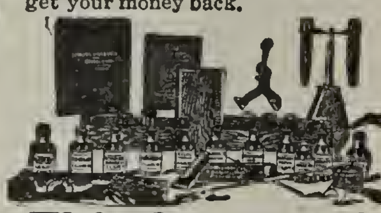

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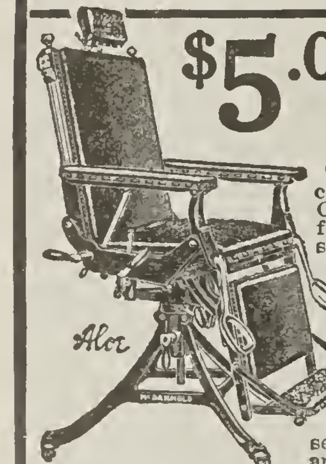
This Bacteriological Set for Examination of Sputum, Blood, Body Secretions, given FREE with Spencer Microscope or on Rental-Purchase Plan. We also include free a copy of Arneils' book on Urinary Analysis. Send only $10 for this latest model Spencer Microscope and Bacteriological outfit. If satisfactory, pay balance of our Special Price of only $100 at the rate of $10 per month. Or return it at our expense and we will refund your $10. Order direct from this page, or send for literature.



$5.00 Puts this CHAIR In Your Office

This famous McDannold Surgical and Gynecological Physician's Office Chair now direct to you for only $5.00 with order. Two styles to choose from—upholstered in imitation leather $45. Upholstered in fine dark olive, genuine leather, Price $50. Send us only $5.00 for either style. If you find everything satisfactory, pay the balance on our easy credit terms of only $5 per month. If not perfectly satisfied, just send chair back at our expense and your $5 will be refunded.

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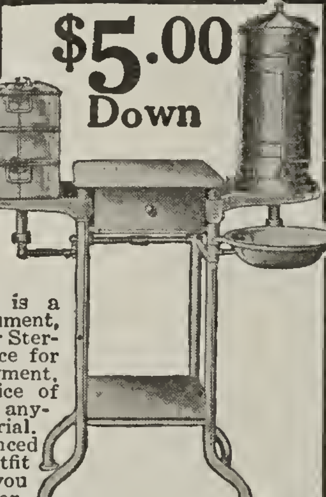
The chair that can be rotated in the partially reclined and tilted position. The chair that can be rotated with head down (the chloroform|Narcosis position). The chair that obtains any position—any angle or tilt—and rotates therein. The movements are Universal, Positive, Noiseless. All positions are obtained with patient seated in chair! No complicated mechanism—no notches, ratchets, long levers, cranks, treadles, etc. The McDannold is acknowledged to be one of the best chairs offered the medical profession. $5.00 brings it to you. Order today.

For this Sterilizing Outfit

$5.00 Down



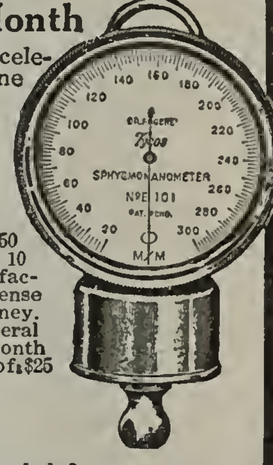
Here, Doctor, is a combination Instrument, Dressing and Water Sterilizer for your office for only $5.00 first payment, on our Special Price of only $55.00. Sent anywhere for 10 days trial. If you are not convinced after using this outfit for 10 days that you have received extraordinary value, return outfit at our expense and we'll cheerfully refund your money. Or, if entirely satisfactory, pay balance in 10 monthly payments of $5 each.

Outfit consists of **Instrument Sterilizer, Dressing Sterilizer, Water Sterilizer, Instrument Table with Steel Drawer, Sanitary Porcelain Wash Basin on Swinging Arms.** Sterilizer stand is steel, covered with enamel, baked on by tremendous heat, giving a finish that will stand severe wear. Top is of acid proof, white porcelain. Sterilizers are solid cold rolled copper, nickel plated. Gas or gasoline burner.

$2.50 a Month

This celebrated genuine

Dr. Rogers' Self-Verifying Sphygmomanometer



sent anywhere for only $2.50 as first payment and on 10 Days' Trial. If not satisfactory, return at our expense and we'll refund your money. Or keep it on our liberal terms of only $2.50 per month until the regular price of $25 is paid in full.

Leather Case and Booklet FREE

With every Tycos is included free a genuine morocco leather case. Besides the case we give you free a 44 page booklet which explains just how and why the Sphygmomanometer is essential to the intelligent practice of medicine.

Send your order in today. We give you 10 days trial and return your money if not satisfied.

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For detailed description and free particulars of any of the above office equipment. Or, better still, send in order for any outfit on our Rental-Purchase Plan for Physicians. Send small amount indicated with order. You have ten days in which to examine and test the outfit ordered. Return it or keep it as you, yourself, may decide. If you are not convinced that you have gotten extraordinary value and a wonderful proposition, we want you to send the outfit back—at our expense! We'll cheerfully refund the payment you have made. The ten days trial is to be entirely at our risk and at our expense. You have nothing to lose. Order today. Use convenient coupon or write letter as you prefer.

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Gentlemen: Enclosed find $.................for which send me

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I will pay the balance at the rate of $......................per month for

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Industrial First Aid Equipment is vitally important from the standpoint of the three classes affected, the Workman, the Employer and the Surgeon

To the workman it means protection—a reduction of the accident hazard.

To the employer it means Dollars and Cents through the shortening of the period of indemnity under the Workmen's Compensation Law, through lessening the cost of Casualty Insurance and by maintaining a more constant efficiency of the working force.

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A SYNTHETIC SULPHUR COMPOUND, UNVARYING IN COMPOSITION, ODORLESS ON USE, ANTI-PRURITIC, NON-IRRITATING

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same price as before the war

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Thigenol "Roche" does not cause permanent stains on linen.

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NEW YORK

Doctor—if You Were Asphyxiated

To the point where "breathing" had ceased and could select in advance the method of your attempted resus[illegible]on, which of the following methods would you choose? MANUAL—ANY OTHER WAY—or

The Lungmotor

WAY—Natural (mechanical) Inspiration and Expiration.

Answer in your own mind first, these four questions:

1st. How many men do you know (professional included) who are proficient in Manual Methods and could keep working for, say, an hour? (The Lungmotor can be used for hours without exhaustion of operator.)

2d. Do you breathe some 230 cu. in. of air (vital capacity) each inhalation or do you breathe some 35 cu. in. (tidal volume)? (The Lungmotor gives tidal volume.)

3d. If you couldn't get charged tanks or oxygen, wouldn't you take a chance with pure air—the kind you live on now? (The Lungmotor gives pure air or any percentage of oxygen from any kind of container.)

4th. You need the AIR in the lungs, don't you, Doctor? That's where the Lungmotor *puts* it—safely.

Why not learn more about it TODAY. Ask the

LIFE SAVING DEVICES COMPANY
179 North Market St., Chicago, Ill.

For Your Obstetric Practice

We make a small model Lungmotor, weighing only 4½ lbs., case included. Can you afford on your next case, to be without this protection?

Ask us what some of the 4,000 users of the Lungmotor have done in this line.

Remember, you get the same amount of air (no supplemental oxygen possible) in *perfectly performed* manual methods as a 5 year old child only naturally breathes.

In any manual method *how* do you *know any* air is going *into* the lung?

Ask for 42-page list (3½″x8½″ close printed) showing the users in your locality.

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In Dosage Form

Mercury Salicylate

Permanently Suspended in

STERILE AMPULES

Three Sizes: 1, 1½ or 2 Grains Each

12 Ampules in a Box, $1.00

The impalpable powder is held in solidified, neutral, water-free fat, which is liquid at body temperature.

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